ETP Management Strategy for the Eastern Pacific Longline Large Pelagic FIP (Martec)

MARTEC

Prepared by Key Traceability

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Contents

Introduction 3
Scope 3
Sharks and Rays 5
Issue 6
Observed Catch 6
Unobserved Mortality due to Entanglement 6
Shark Finning 7
Mitigation 7
Observed Catch 7
Shark Finning 8
Shark Handling and Release 8
Unobserved Mortality due to Poor Mitigation 11
Turtles 12
Issue 12
Unobserved Mortality due to Entanglement 12
Mitigation 12
Cetaceans 15
Issue 15
Mitigation 15
Seabirds 17
Issue 17
Mitigation 18
Non Species Specific 22
References 23
Appendix A 24
Eastern Pacific Longline Large Pelagic FIP (Martec) Fishery Catch Data - ETP Species 24
Appendix B 27
Shark Finning and ETP Bycatch Mitigation Policy 27
December 2020 27

Introduction

The Eastern Pacific Longline Large Pelagics FIP (Martec) fishery targets yellowfin tuna (*Thunnus albacares*) and mahi mahi (*Coryphaena hippurus*). The 150 longline vessels are flagged to Costa Rica and fish on the high seas and within the Costa Rica EEZ. The fishery is managed by the Costa Rican Institute of Fisheries and Aquaculture (INCOPESCA) and regionally the Inter-American Tropical Tuna Commission (IATTC).

The MSC definition of an ETP species is:

- Any species that is recognised by national ETP legislation.
- Species listed in the binding international agreements given below:
    - 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 impacts by the UoA under assessment is not endangered.
    - Binding agreements concluded under the Convention on Migratory Species (CMS), including:
        - Annex 1 of the Agreement on Conversation of Albatross and Petrels (ACAP).
        - Table 1 Column A of the African-Eurasian Migratory Waterbird Agreement (AEWA).
        - Agreement on the Conservation of Small Cetaceans of the Baltic and North Sea (ASCOBANS).
        - Annex 1, Agreement on the Conservation of Cetaceans of the Black Sea, Mediterranean Sea and Contiguous Atlantic Area (ACCOBAMS).
        - Wadden Sea Seals Agreement.
        - Any other binding agreements that list relevant ETP species concluded under this Convention.
- 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).

This document builds on previous work and details the best practices and management strategy of ETP species identified within the FIP using the preassessment drafted by MRAG similar fisheries, government reports and primary data.

Scope

This strategy has been created because as a responsible member of the fishing community we recognise ETP species are highly susceptible to overfishing and we endeavour to do our part to reduce the impacts our fishing fleet has on these species by applying best practices. This document acts as a guide for skippers on best practice and the actions they should be taking to reduce interactions with ETP species, and how to deal with any interactions that still occur.

The intention of this document is to improve Principle 2 Performance Indicator Scores explicitly, PI 2.3 ETP PIs to help us meet SG80 and in turn push us towards of achieving MSC certification.

This policy will be approved by the companies participating in the FIP and all skippers should read this document and have a hard copy accessible on the vessel at all times. Note the electronic English version shall be the master. For any issues in translations please refer back to the English version.

This strategy shall be adopted across the FIP fleet on the 1 May 2021 and shall be verified through both human and electronic observers.

For any issues or amendments please contact the author, Tom Evans at t.evans@keytraceability.com.

Sharks and Rays

Globally, pelagic longlining has the highest rate of shark catch (as a target and nontarget species) of any fishery (ISSF, 2016). Most shark species are quite vulnerable to this practice, since several aspects of their biology make them highly susceptible to overfishing, including:

1. Slow growth rates,
2. Late maturation,
3. Long pregnancies,
4. Low fertility, and
5. Long life spans.

Millions of sharks are caught with longline gear every year. It is increasingly evident that at least a few of these species are in steep decline because of this intense fishing pressure: fishers are catching fewer of them (despite an increase in effort) and those individuals that they are catching are smaller in size. One of the reasons that data collection about your shark catches is important is that it allows scientists to determine which stocks are healthy and which require additional measures to ensure that they remain a functional part of the marine ecosystem.

There are a few simple actions that can be done to reduce the incidental catch of sharks, and fewer hooked sharks means more open hooks for tuna and less time spent wrestling with sharks during hauling. Here we will briefly review the most commonly encountered sharks, effective ways to avoid catching sharks, and how to handle and release them if they are caught. Currently elasmobranchs are managed by the IATTC in the EPO through multiple resolutions such as C-16-04, C-19-05, C-11-10 and C-15-04.

ETP Shark species that this fishery are expected to interact with are as follows, note some shark are not explicitly ETP species however, they are possibly landed in designated shark sanctuaries due to the nature of aggregated data received from the fishery a precautionary approach was decided to list them as ETP species:

Table 1 - ETP Shark species that the fishery could interact with

Scoring elements	Scientific name	Justification
Silky shark	*Carcharhinus falciformis*	C-16-06, CMS Appendix II
Blacktip sharks	*Carcharhinus limbatus*	C-05-03, CMS Appendix II
Blue shark	*Prionace glauca*	C-05-03, CMS Appendix II
Oceanic whitetip shark	*Carcharhinus longimanus*	C-11-10, CITES Appendix II
Giant manta	*Mobula (Manta) birostris*	C-15-04, CMS Appendix I; CITES Appendix II
Pelagic Stingrays	*Pteroplatytrygon violacea*	C-15-04, CMS Appendix I; CITES Appendix II
Mobula *nei*	*Mobula* spp.	C-15-04, CMS Appendix I; CITES Appendix II
Crocodile shark	*Pseudocarcharias kamoharai*	C-05-03, CMS Appendix I; CITES Appendix II
Longfin mako shark	*Isurus paucus*	C-05-03, CMS Appendix II

Shortfin mako shark	*Isurus oxyrinchus*	C-05-03, CMS Appendix II
Porbeagle shark	*Lamna nasus*	C-05-03, CMS Appendix II
Thresher sharks	*Alopias* spp.	C-05-03, CMS Appendix II
Hammerhead sharks	*Sphyrna* spp.	C-05-03, CMS Appendix II

The IATTC through Resolution C-05-03 require fins onboard total no more than 5% of the weight of sharks onboard, up to the first point of landing. However, as a fishery, we feel this is still open to manipulation and back the changes seen in the WCPFC where all shark carcasses are retained with fins naturally attached or partially cut and tied to the shark, as can be seen in the fisheries shark finning policy found in Appendix B.

All vessels shall not fish in known shark pupping areas and not any retain oceanic whitetip sharks (C-11-10) or silky sharks (C-16-06) with all incidental catch being reported and all vessels promptly release unharmed, to the extent practicable, whitetip sharks when brought alongside the vessel, as per the fisheries shark finning policy in Appendix B. This activity goes beyond current IATTC resolutions that ask fisheries to only limit bycatch of silky sharks to a maximum of 20% of the total catch by fishing trip in weight.

For Mobulid rays, Resolution C-15-04 lays out the rules that all vessels shall prohibit retaining onboard, transshipping, landing, storing, selling, or offering for sale any part or whole carcass of Mobulid rays (which includes Manta rays and Mobula rays) caught in the IATTC Convention Area and all vessels shall release all Mobulid rays alive wherever possible.

Issue

Observed Catch

Millions of sharks are caught with longline gear every year (ISSF, 2016). It is increasingly evident that at least a few of these species are in steep decline because of this intense fishing pressure: fishers are catching fewer of them (despite an increase in effort) and those individuals that they are catching are smaller in size. One of the reasons that data collection about your shark catches is important is that it allows scientists to determine which stocks are healthy and which require additional measures to ensure that they remain a functional part of the marine ecosystem, a reduction of mortality incurred by this fishery can contribute towards global conservation efforts (Gilman *et al* 2008).

Unobserved Mortality due to Entanglement

Certain actions can increase survivorship further once the shark have been released, reducing the fisheries impact on sharks even more.

In longliners the major contributing factor to unobserved mortality is through not adopting best practices in handling and release. This includes returning unconscious turtles to the water and cutting the line too far away from the mouth, meaning a large amount of line is trailing from the animal.

Shark Finning

Shark finning is the practice of retaining shark fins and discarding the remaining carcass while at sea (FAO, 2009). The practice is against the FAO Code of Conduct for Responsible Fisheries and its International Plan of Action for the Conservation and Management of Sharks, as well as the resolutions of a number of other international marine bodies, all of which call for minimising waste and discards. There are major uncertainties about the total quantity and species of sharks caught, and shark finning has added to this problem.

This practice is not only wasteful, but it also reduces the accuracy of catch statistics (amounts, species identifications) that scientists need in order to accurately assess all impacts of fishing on these shark populations. The use of fins to identify the different shark species and extrapolate shark biomass killed in fishing operations is approximate. Moreover, because fins can be valuable, such practices could represent an incentive for fishers to increase bycatch of sharks (e.g., not releasing live sharks)

The IATTC through Resolution C-05-03 require fins onboard total no more than 5% of the weight of sharks onboard, up to the first point of landing. However, as a fishery, we feel this is still open to manipulation and back the changes seen in the WCPFC where all shark carcasses are retained with fins naturally attached or partially cut and tied to the shark, as can be seen in the fisheries shark finning policy found in Appendix B.

Mitigation

Observed Catch

Circle Hooks - The data on the effect of hook type on shark catch rates are not very clear, but we do know that animals caught using circle hooks are not hooked as deeply, are less likely to suffer internal injury, and therefore have a higher likelihood of survival. Given the higher survival rates, the use of circle hooks—already a technology known to benefit sea turtles and seabirds—may also benefit sharks. All vessels shall use only circle hooks as per the Shark Finning and ETP Bycatch Mitigation Policy in Appendix B.

Set Depth - Shark catch rates are significantly higher on shallow-set longlines than deeper-set (deeper than 100 m) longlines (Beverly *et al* 2003 and 2004. Some studies have found shark bycatch with shallow-depth hooks to be 3 to 10 times the rate of bycatch with deeper-set hooks (Ward *et al* 2007). When in known areas of shark hotspots, vessels should endeavour when appropriate to fish outside of these areas.

Nylon Leaders - It has long been known that the use of metal wire leaders maximises the retention of hooked sharks. This is because sharks are unable to cut the wire and escape. For this reason, some countries have banned the use of wire leaders in pelagic longlining and require the use of nylon (monofilament and multifilament) leaders instead. But another reason to use nylon over wire leaders is that catch rates of bigeye tuna are significantly higher using nylon leaders. Bigeye tuna have good eyesight, so they likely are able to see wire—but not nylon—leaders (Alfonso *et al* 2012). Even when factoring in the extra cost of replacing lost hooks and nylon leaders, the financial benefit of the additional bigeye tuna catch makes the use of nylon leaders more profitable than the use of wire leaders (Ward et al., 2007). These are banned in the fishery as explained in the shark finning policy in the Appendix B.

Shark Finning

The fishery complies with all national and regional legislation including WCPFC's CMM 2010-07 (which is to be superseded by CMM 2019-04 in November 2020 removing the fin to carcass ratio). WCPFC prohibits this practice under CMM 2010-07 by introducing the concept of a 5% fins-to-carcass ratio and this concept shall be dropped in CMM 2019-04, which the fishery already complies with. In order to facilitate on-board storage, shark fins may be partially sliced through and folded against the shark carcass but shall not be removed from the carcass. Fin to carcass ratios do not apply to this fishery.

Fishers should ensure that the information (discarded/retained) is recorded in the logbooks. This record-keeping can be greatly improved by the deployment of on-board observers.

Shark Handling and Release

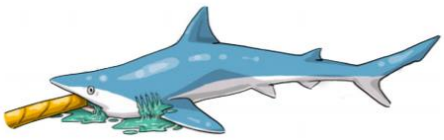
By all appearances, sharks look hardy and it would be easy to assume that they can sustain long "soak times," rough handling, or extensive exposure and still survive when returned to the sea. But sharks have a few biological weaknesses that make them susceptible to stress and injury, which can reduce their chances at post-release survival.

Most sharks must swim in order to breathe effectively, so long soak times in the water while attached to a hook could hinder their breathing. This causes stress, and in more extreme cases, suffocation. Unlike other fish, these animals do not have a hard skeleton of bone to protect their internal organs. When out of water, the weight of gravity can tear their connective tissue, resulting in crushed or damaged organs. This same tissue holds the spinal cord in place, and for this reason, animals handled from the head or tail can suffer damage as a result. A shark's head also holds a number of sensitive and fragile organs used to detect prey, and if handling damages these, then the shark—once released—could be unable to locate prey and starve.

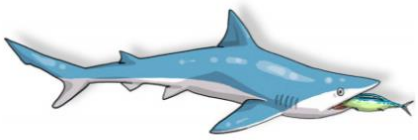
Armed with these facts about shark biology, we can ensure that our handling techniques are minimising further injury to the animal. Of course, crew safety is paramount at all times, so the fishery shall employ these best practices only when they can be done safely and securely.

Figure 1 - Shark Handling Dos (Poisson et al 2012)

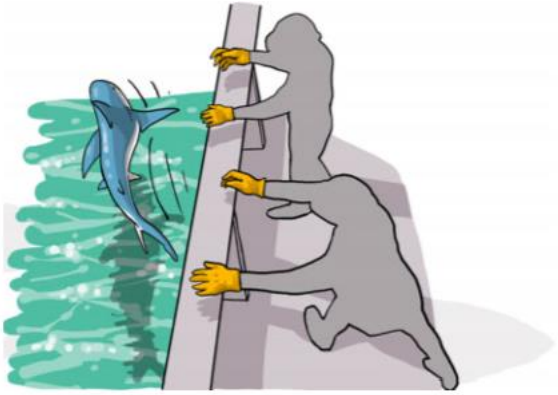
A cool, wet cloth lightly draped over its head can calm an energetic shark. (Poisson et al, 2012)



Inserting a seawater hose in its mouth might improve an animal's chance of survival if, for an unavoidable reason, the shark cannot be released right way. (Poisson et al, 2012)



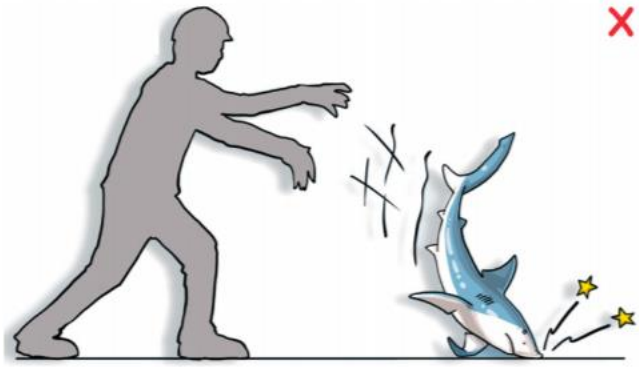
For crew safety, avoid the animal's jaws (some suggest placing a fish in its mouth to prevent bites), and regardless of the animal's state (live or moribund) be cautious at all times. (Poisson et al, 2012)



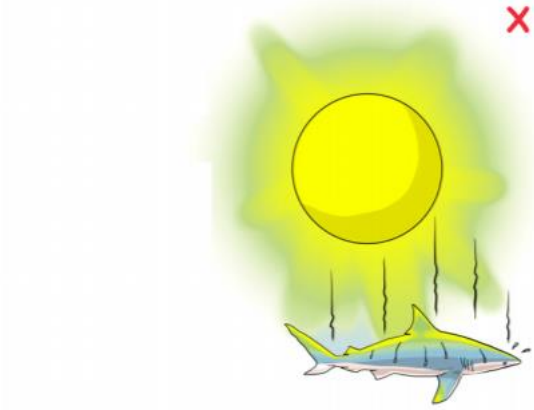
Most importantly, attempt to release the animal AS SOON AS POSSIBLE. (Poisson et al, 2012)

Figure 2 - Shark Handling Don'ts (Poisson et al 2012)

DO NOT lift the animal by its head or tail, as this can severely damage the spinal cord (Poisson et al, 2012)



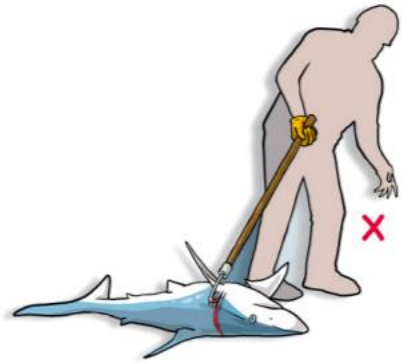
DO NOT throw, hit, or squeeze the animal. Prevent the animal from battering itself against the deck or other hard objects. (Poisson et al, 2012)



DO NOT leave the animal in the sun. If possible, handle the animal in the shade or otherwise reduce its exposure to the sun. (Poisson et al, 2012)

DO NOT yank or push the animal sharply. (Poisson et al, 2012)

DO NOT insert hands or objects into the gill openings. (Poisson et al, 2012)



DO NOT insert a gaff, hook, or other pointed object to drag or lift the animal. (Poisson et al, 2012)

Unobserved Mortality due to Poor Mitigation

Any shark that is too large to be brought safely aboard, for either the crew or the shark, and an attempt to dehook the shark in the water is impossible the crew must cut the line as near to the mouth and hook as possible. The shorter the length of trailing line the greater the chance of shark post release survivorship.

Turtles

Marine turtles have life histories that make them highly vulnerable to fishing. They are also protected by many national and international treaties and regulations such as IATTC Resolution C-07-03. In total there are five species of sea turtles that this FIP could interact with:

Table 2 - ETP turtle species that the fishery could interact with

Scoring elements	Scientific name	Justification
Olive ridley turtle	*Lepidochelys olivacea*	C-07-03; CMS Appendix I; CITES Appendix I; Vulnerable on IUCN Redlist
Green turtle	*Chelonia mydas*	C-07-03; CMS Appendix I; CITES Appendix I
Hawksbill turtle	*Eretmochelys imbricata*	C-07-03; CMS Appendix I; CITES Appendix I
Loggerhead turtle	*Caretta caretta*	C-07-03; CMS Appendix I; CITES Appendix I
Leatherback turtle	*Dermochelys coriacea*	C-07-03; CMS Appendix I; CITES Appendix I; Critically Endangered on IUCN Redlist

The IATTC through Resolution C-07-03 asks that all vessels implement the FAO Guidelines to reduce the bycatch, injury, and mortality of sea turtles in fishing operations and to ensure the safe handling of all captured sea turtles, in order to improve their survival.

Issue

Unobserved Mortality due to Entanglement

All sea turtles are protected internationally, as these long-lived animals face a number of environmental challenges (breeding ground destruction, boat collisions, ingestion of marine debris, disease linked to ocean pollution), including interactions with fishers. There are 7 species of sea turtle, with 4 commonly encountered during tuna longline fishing (Pacific Islands Regional Office, 2010).

Mitigation

Fishing Method Modification - While there are many fishing methods and gear modifications that can reduce sea turtle interactions in longline fisheries, the following practices are known to be highly effective without compromising catch rates of target species:

- Use only circle hooks, that are as wide a hook as possible that maintains acceptable catch rates of market species to reduce hard shelled sea turtle catch rates where necessary

Circle hooks appear to reduce the capture of turtles because they are wider at their narrowest point than J hooks and tuna hooks, making it difficult for the circle hook to fit inside a turtle's mouth. If a turtle does bite a circle hook, they are less likely to be deeply hooked (where the hook is swallowed down the throat or pierces the roof of the mouth), making it easier to dehook the turtle. Lightly hooked turtles also have a greater chance of surviving than deeply hooked turtles (Gilman *et al*

2007, 2010). All vessels shall use only circle hooks as per the Shark Finning and ETP Bycatch Mitigation Policy in Appendix B.

- Use fish, rather than squid, for bait

Turtles eat squid differently than they eat fish. With squid, they tend to swallow the whole animal in one gulp, whereas with fish they take several, smaller bites. For this reason, fishing with squid-baited hooks captures turtles at a higher rate than fishing using mackerel or other baitfish, where turtles are more likely to eat around the hook instead of ingesting it. All vessels shall use only fish for bait as per the Shark Finning and ETP Bycatch Mitigation Policy in Appendix B.

- Set hooks deeper than turtle-abundant depths (40–100m)

If economically viable, setting gear deeper than 100m is a good way to avoid turtle interactions (as turtles tend to prefer shallower water). There are several ways to set gear more deeply:

1. Make the branch lines next to buoys longer, as those lines are effectively the shallowest set hooks
2. Leave a longer gap on each side of the buoy line before adding branch lines
3. Increase the length of buoy lines rather than having short buoy lines and longer branch lines

Dehooking or Untangling a Turtle - Though avoiding sea turtles is preferable it is somewhat inevitable that the fishery will encounter some hooked or tangled turtles. With minimal tools, quick action, and some best practice techniques, we can ensure that the turtle has its best chance at survival. As soon as a hooked or entangled turtle is seen, bring the boat to a stop while releasing tension on the mainline. Using constant pressure, pull the branchline in gently to bring the turtle alongside the vessel. Never use a gaff or other sharp object to handle a turtle. This is the point where a decision must be made whether to bring the turtle on board, which will be influenced by the size of the turtle and the conditions at sea, or dehook the turtle alongside the vessel. Gear removal is easier if a turtle can be brought on board, but if for size or safety reasons it is not practical to bring the turtle on board, assess the placement of the hook and remove the gear using the appropriate long-handled dehooking device. Do not pull on the line of a deeply hooked turtle; this will only cause further injury. Often, help from a crew member is needed to manoeuvre the turtle and operate the dehooker.

For an Entangled Turtle Still in the Water:

- Secure the loose hook with a long-handled device, such as a dehooker or gaff (but never gaff the animal itself)
- Cut the line with line cutters

For an Entangled and Hooked Turtle in the Water:

- Use a long-handled dehooker or gaff to pull on the portion of line as close to the hook as possible
- Pull the line into an inverted V-shape
- Remove the hook using a long-handled dehooker

- Cut away excess line to free the turtle

If you are able bring a turtle on board, assess its general health, and determine whether it is deeply or lightly hooked. When handling, do not lift the turtle by its flippers or use sharp objects (e.g., gaffs) to bring it aboard. An active turtle can be placed on a tire or similar platform to immobilise it. For a lightly hooked turtle, use a dehooker and other hand tools like long-nosed pliers. You might also want to use a mouth gag or opener to prop the turtle's mouth open and allow room to remove the hook. If you are holding the line in your left hand and the dehooker in your right, use the following procedures:

- Lay the dehooker on the line with the open end of the pigtail facing up
- Pull the dehooker toward you to engage the line, and then turn the dehooker a quarter turn clockwise
- Slide the dehooker down the leader until it engages the shank of the hook
- Bring your hands together; make sure the line is tight and parallel with the dehooker
- Give a slight thrust downward
- Pull the dehooker out with the hook

In the following "deep-hooked" situations, do not remove the hook, as doing so could cause more damage to the turtle than allowing the hook to remain in place:

- The hook's barb is not clearly visible.
- The hook is in the glottis (the opening at the back of the tongue that leads into the windpipe)
- The hook could be in the braincase or roof of the mouth In these situations, use line cutters to cut the line as close to the hook as possible. If you can, use bolt cutters to cut the hook near the barb or the eye and then pull it out.

If the turtle appears unconscious, place the turtle on an angled surface so that its hindquarters are approximately 15cm or 6in above its head, allowing water to drain out of its lungs. Again, keep the turtle wet with a damp towel over its shell and at a temperature above 15°C (60°F). Check the turtle's reflexes by touching its tail or eyelid every three hours. An unconscious, but live, turtle may not react. If, after 24 hours, the turtle still shows no reflex reaction, it is likely dead. However, if it does recover, release it gently into the water.

Cetaceans

Cetaceans infrequently come into contact with longline fishing gear, however, it is important to identify any that could possibly become entangled or interact with hooked fish.

Table 3 - ETP cetacean species that the fishery could interact with

Scoring elements	Scientific name	Justification
False Killer Whale	*Pseudorca crassidens*	CITES Appendix II
Sperm Whale	*Physeter macrocephalus*	CITES Appendix II
Spotted dolphins	*Stenella attenuata*	CITES Appendix II
Spinner dolphins	*Stenella longirostris*	CITES Appendix II
Rough Toothed Dolphin	*Steno bredanensis*	CITES Appendix II
Short-Finned Pilot Whale	*Globicephala macrorhynchus*	CITES Appendix II
Common Dolphin	*Delphinus capensis*	CITES Appendix II
Melon-Headed Whale	*Peponocephala electra*	CITES Appendix II

Issue

Cetaceans generally are reproductively unproductive with single removals of individuals having large effects on populations.

Fisheries bycatch is considered to be one of the most significant causes of mortality for many marine species, including vulnerable megafauna. Entangled marine mammals can also be an issue for crew safety. They can be extremely dangerous because they are powerful and unpredictable. Entanglement in longliners are rare and interactions generally occur with pilot or sperm whales taking tuna off the lines, they are often not observed doing so.

Mitigation

Disentangling Equipment - The vessels shall have disentangling equipment readily available – somewhere on deck where crew can get it quickly when a whale or dolphin is caught. All disentangling must be done aligned with ISSF protocols and these include:

- Do not enter the water to untangle marine mammals, they are powerful animals and have dehooking and line-cutting equipment ready.
- If whales or dolphins are eating your caught fish, or you catch a marine mammal, consider moving 100 nautical miles or more before making your next set.

For small whales/dolphins:

- Avoid sudden actions, do not use gaffs, and facilitate animal reaching the surface to breathe

- If entangled move vessel close to use a long-handle line cutter and cut as much line as possible.
- Wait for the animal to move away before resuming fishing.
- If hooked move close to vessel but without pulling the line to bring the animal onboard. If superficially hooked use the dehooked if close enough. If you can´t then cut with the long-handled line cutter as close to the hook as possible.

For large whales:

- If the animal poses a threat to the boat or crew, cut the line away from the vessel.
- If it is considered safe then get the animal as close as possible to the vessel and cut the line with long-handled cutters and wait for the whale to move away.

Reporting – Improving reporting is a vital tool to better understand interactions and mitigate against potential future interactions. Any interactions should be described with a description of the animal and its injuries. Take photos if possible. Use your species ID book to try to identify the animal. Record all required information on your logbook form. When skippers have interacted or observed a cetacean, they should notify other captains in the fleet to prevent the same area to set fishing.

Seabirds

Commonly encountered seabirds in longline fisheries include shearwaters, storm petrels, and boobies, but the birds that are affected most by longline gear are albatrosses and petrels (BirdLife International 2011). Albatrosses and petrels can live for over 60 years and lay only one egg every one to two years. This means that any birds killed have an impact on the population. They also generally mate for life, and one bird's death means that its partner may never reproduce again. There are 22 species of albatross; 17 are threatened with extinction. The preassessment identified the fishery could interact with seven of these albatross species.

Table 4 - ETP bird species that the fishery could interact with

Scoring elements	Scientific name	Justification
Antipodean albatross	*Diomedea antipodensis*	C-05-01, CITES Appendix I, Endangered on IUCN Redlist
Black-footed albatross	*Phoebastria nigripes*	C-05-01, CITES Appendix I
Galapagos albatross	*Phoebastria irrorata*	C-05-01, CITES Appendix I, Vulnerable on IUCN Redlist
Laysan albatross	*Phoebastria immutabilis*	C-05-01, CITES Appendix I, Vulnerable on IUCN Redlist
Black-browed albatross	*Thalassarche melanophrys*	C-05-01, CITES Appendix I, Endangered on IUCN Redlist
Short-tailed albatross	*Phoebastria albatrus*	C-05-01, CITES Appendix I, Vulnerable on IUCN Redlist
Black petrel	*Procellaria parkinsoni*	C-05-01, CITES Appendix I, Vulnerable on IUCN Redlist

Issue

Seabird often see baited hooks as a free meal when being set and often become hooked or entangled often resulting in their death, those that survive need to be dehooked and released effectively. Commonly encountered seabirds include shearwaters, storm petrels, and boobies, but the birds that are affected most by longline gear are albatrosses and petrels. Albatrosses and petrels can live for over 60 years and lay only one egg every one to two years. This means that any birds killed have an impact on the population. They also generally mate for life, and one bird's death means that its partner may never reproduce again. There are 22 species of albatross; 17 are threatened with extinction. Albatrosses fly thousands of kilometres on a single feeding trip, mostly in cooler, higher-latitude waters, although many are globally distributed. But other seabirds are in warmer waters or specific to a region.

Hooked bird (Dimas Gianuca, Projeto Albatroz)

Mitigation

All five tuna RFMOs have established requirements for longline fishing vessels, resolution C-11-02, to use a combination of bycatch reduction measures in areas overlapping with albatross and petrel distribution to reduce the number killed accidentally as bycatch. In addition to helping reduce the catch of seabirds, these techniques can also help minimise bait loss and ensure that baited hooks are available to the target species (Løkkeborg, 2011).

The IATTC require their longline vessels of more than 20 meters length overall that use hydraulic, mechanical, or electrical systems and that fish for species covered by the IATTC in the EPO north of 23°N and south of 30°S, plus the area bounded by the coastline at 2°N, west to 2°N-95°W, south to 15°S-95°W, east to 15°S-85°W, and south to 30°S to use at least two of the following mitigation measures, including at least one from Column A. Vessels shall not use the same measure from Column A and Column B.

Table 5 - IATTC Bird Mitigation Measures

Column A	Column B
Side-setting with bird curtains and weighted branch lines	Tori line
Night setting with minimum deck lighting	Weighted branch lines
Tori line	Blue-dyed bait
Weighted branch lines	Deep-setting line shooter
	Underwater setting chute
	Management of offal discharge

Avoiding certain areas (possibly at certain times) is also a potential strategy for avoiding the incidental capture of seabirds. Vessels fishing in the EPO other than the area mentioned in paragraph 2, are encouraged to voluntarily employ at least one of the mitigation measures and as a FIP we encourage this also.

Bird-scaring Lines - A bird scaring line, also known as tori line or bird streamer line, is a line (often 100 meters long) that is towed from a high point near the stern from which streamers are suspended at regular intervals. The streamers flap as the vessel pitches and rolls, and this deters the birds from flying near the stern of the vessel. The bird scaring line is most effective when the streamers are flapping directly above the baited hooks. The wind must be taken into consideration; if crosswinds blow the streamers to the side of the longline, then the baited hooks are exposed to the seabirds. If feasible, the most effective setup is to fly two tori lines, one to port and one to starboard of the baited hooks. As a FIP we actively endeavour to go above and beyond these requirements and all vessels must use tori lines at all times, regardless of geographic location as per Appendix C.

Weighted Branch Lines - When weight is added to a branchline, the baited hook sinks faster and reduces the time that seabirds can access it. This is commonly done using weighted swivels on the branchline. The weight should be at least 45g within 1 m of hook, at least 60 g at less than 3.5 m from hook and at least 98 g at less than 4 m from the hook. Some have expressed a reluctance to use leaded swivels due to safety concerns, as weighted swivels could cause serious injury if they recoil

back at the crew in the event of a line breakage. By employing “safe leads,” which are designed to slide off the branchline in the event of a breakage, this risk can be minimised.

Night Setting - Since many seabirds, including the vulnerable albatross, do not feed at night, you can minimise interactions by setting gear then. Night setting involves starting to set gear after nautical dusk and finishing setting before nautical dawn. Deck lighting should be kept to a minimum, using only as much vessel light as you need to comply with navigational rules and best safety practices. This is to be done where and when appropriate.

Management of Offal Discharge - In the North WCPFC and IATTC areas, vessels may use offal management as one of the seabird bycatch mitigation measures. Vessels may either ensure no offal discharge during setting or hauling or use strategic offal discharge from the opposite side of the boat to setting/hauling, to actively encourage birds away from baited hooks. Of course, if there are no seabirds present, offal discharge management is not necessary.

Side Setting - Unlike traditional stern setting, setting off the side of the vessel (at least 1 meter forward of the stern, or more if possible) reduces the time that baited hooks are near the surface and visible to seabirds. By tossing the baited hook forward and close to the hull, under the protection of a bird curtain, the hope is that by the time the baited hook has passed the stern it has sunk beyond the reach of the birds. Another advantage of side setting is that it requires only one work area and eliminates the chore of moving gear and bait between setting and hauling station, however this is not suitable for all vessels and must be decided on a case by case basis.

Handling and Release of Hooked and Entangled Birds - Most seabirds are caught during line setting and are therefore dead by the time gear is hauled. However, in the event that you discover a live seabird on the line, release the tension on your mainline by slowing your vessel to a stop. Ease the bird to the side of the vessel by steadily bringing in the line. Do not make sudden jerks. If available, use a long-handled dip net to bring the bird on board. Seabirds can be quite large and will bite, so gloves, eye protection, long sleeves and the help of a crewmember are all useful to have.

The following are essential tips for the correct way to hold a bird:

- Hold it behind the head at the top of its neck
- Fold the feathers and wings back into their natural position against the body
- Do not accidentally restrict its breathing by covering its nostrils or squeezing the body too tightly
- Cover its body with a towel to protect the bird’s feathers from oils and other things that could damage it during handling

If the bird is lightly hooked in the bill, leg, or wing, and you can see the barb of the hook: remove the excess line, cut off the barb with bolt cutters, and then back out the rest of the hook.

How to CORRECTLY hold a bird. (John Paterson, ATF Namibia)

How NOT to hold a bird. (Juliano Cesar, Projeto Albatroz)

If the bird is deeply hooked in the body or throat (i.e., you cannot see the barb), cut the line as close to the hook as possible, leaving the hook in the bird. Removing a deeply embedded hook can cause more harm than good. Never try to pull on the leader to remove a hook.

A bird's feathers must be dry in order for it to fly properly, and it can take between 30 minutes and 4 hours for them to dry if wet. A cardboard box with a dry towel or blanket is a good place for it to rest and recuperate before being released. Do not give the bird food or water. A fully recovered bird can:

- Stand on its feet
- Hold its head up
- React to sound
- Breathe without making noise
- Retract its wings into a normal position against its body

To release a bird, stop the vessel and set the bird on the water's surface. Do not throw it into the air. Wait until the bird is clear of the vessel before reengaging the motor. If you encounter a banded (tagged) bird, record its number, the time and place of its capture, and note the mitigation measures that were employed at the time. This information can help scientists evaluate which mitigation measures are most effective. Remember that seabirds, and albatrosses in particular, are sensitive bycatch species.

Reporting – It is important to at least attempt to identify any seabirds you catch. If you are unable to identify them, consider taking a photograph. Use the provided commonly encountered species posters to help identification.

Non Species Specific

In addition to the species specific strategies mentioned above, the fishery shall:

- Avoid all known ETP hotspots and communicate effectively between vessels to tell other fishers where these are.
- Comply with both the shark finning and ETP policies in Appendix A
- Keep abreast of new science and promote research to further develop best practices for handling and safe release
- Improve the low human observer coverage
- All skippers shall attend and engage in the Skipper Training program being run through the FIP work plan
- Vessels should accurately record all ETP interactions including reporting interactions and fate of any releases (e.g., released alive; discarded dead, injuries), and collecting any data requested by scientists (e.g., photographs). Including documenting the inventory and use of equipment for the handling and safe release techniques.
- Collaborate with the RFMO to adopt mandatory handling and safe and live release best practices for ETP species.
- Facilitating research that addresses mitigation of ETP species bycatch, and voluntarily adopt best practices when these become known including participating in research programs that reduce mortality of ETP species outside the fishery — for example, ISSF projects
- Collaborating with other fleets to estimate overall interaction of ETP species and research on mitigation measure to reduce the cumulative impacts.
- Follow best practices of live release methods to minimise mortality and document their use of all ETP species and support mandatory adoption of these practices by the flag state and RFMO.
- Estimate, monitor and manage potential sources of unobserved mortality (post release, entanglement, etc).

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Appendix A

Eastern Pacific Longline Large Pelagic FIP (Martec) Fishery Catch Data - ETP Species

Table 6 – Presumed potential ETP Interactions

Component	Scoring elements	Scientific name	Justification	Data-deficient
ETP	Olive ridley turtle	*Lepidochelys olivacea*	C-07-03; CMS Appendix I; CITES Appendix I; Vulnerable on IUCN Redlist	No, as fishery impact can be analytically determined
	Green turtle	*Chelonia mydas*	C-07-03; CMS Appendix I; CITES Appendix I	No, as fishery impact can be analytically determined
	Hawksbill turtles	*Eretmochelys imbricata*	C-07-03; CMS Appendix I; CITES Appendix I	No, as fishery impact can be analytically determined
	Leatherback turtle	*Dermochelys coriacea*	C-07-03; CMS Appendix I; CITES Appendix I; Critically Endangered on IUCN Redlist	No, as fishery impact can be analytically determined
	Loggerhead turtle	*Caretta caretta*	C-07-03; CMS Appendix I; CITES Appendix I	No, as fishery impact can be analytically determined
	Antipodean albatross	*Diomedea antipodensis*	C-05-01, CITES Appendix I	No, as fishery impact can be analytically determined
	Black-footed albatross	*Phoebastria nigripes*	C-05-01, CITES Appendix I	No, as fishery impact can be analytically determined
	Galapagos albatross	*Phoebastria irrorata*	C-05-01, CITES Appendix I, Vulnerable on IUCN Redlist	No, as fishery impact can be analytically determined
	Laysan albatross	*Phoebastria immutabilis*	C-05-01, CITES Appendix I, Vulnerable on IUCN Redlist	No, as fishery impact can be analytically determined
	Black-browed albatross	*Thalassarche melanophrys*	C-05-01, CITES Appendix I, Endangered on IUCN Redlist	No, as fishery impact can be analytically determined
	Short-tailed albatross	*Phoebastria albatrus*	C-05-01, CITES Appendix I, Vulnerable on IUCN Redlist	No, as fishery impact can be analytically determined

	Black petrel	*Procellaria parkinsoni*	C-05-01, CITES Appendix I, Vulnerable on IUCN Redlist	No, as fishery impact can be analytically determined
	False Killer Whale	*Pseudorca crassidens*	CITES Appendix II	No, as fishery impact can be analytically determined
	Sperm Whale	*Physeter macrocephalus*	CITES Appendix II	No, as fishery impact can be analytically determined
	Rough Toothed Dolphin	*Steno bredanensis*	CITES Appendix II	No, as fishery impact can be analytically determined
	Spotted dolphins	*Stenella attenuata*	CITES Appendix II	No, as fishery impact can be analytically determined
	Spinner dolphins	*Stenella longirostris*	CITES Appendix II	No, as fishery impact can be analytically determined
	Short-Finned Pilot Whale	*Globicephala macrorhynchus*	CITES Appendix II	No, as fishery impact can be analytically determined
	Common Dolphin	*Delphinus capensis*	CITES Appendix II	No, as fishery impact can be analytically determined
	Melon-Headed Whale	*Peponocephala electra*	CITES Appendix II	No, as fishery impact can be analytically determined
	Blacktip sharks	*Carcharhinus limbatus*	C-05-03, CMS Appendix II	No, as fishery impact can be analytically determined
	Pelagic Stingrays	*Pteroplatytrygon violacea*	C-15-04, CMS Appendix I; CITES Appendix II	No, as fishery impact can be analytically determined
	Silky shark	*Carcharhinus falciformis*	CMM 2013-08; CMS Appendix II	No, as fishery impact can be analytically determined
	Blue shark	*Prionace glauca*	CMS Appendix II	No, as fishery impact can be analytically determined
	Crocodile shark	*Pseudocarcharias kamoharai*	CMM 2013-08; CMS Appendix II	No, as fishery impact can be analytically determined

	Oceanic whitetip shark	*Carcharhinus longimanus*	CMM 2011-03; CITES Appendix II	No, as fishery impact can be analytically determined
	Giant manta	*Mobula (Manta) birostris*	CMS Appendix I; CITES Appendix II	No, as fishery impact can be analytically determined
	Mobula *nei*	*Mobula* spp.	CMS Appendix I; CITES Appendix II	No, as fishery impact can be analytically determined
	Longfin mako shark	*Isurus paucus*	CMS Appendix II	No, as fishery impact can be analytically determined
	Shortfin mako shark	*Isurus oxyrinchus*	CMS Appendix II	No, as fishery impact can be analytically determined
	Porbeagle shark	*Lamna nasus*	CMS Appendix II	No, as fishery impact can be analytically determined
	Thresher sharks	*Alopias* spp.	CMS Appendix II	No, as fishery impact can be analytically determined
	Hammerhead sharks	*Sphyrna* spp.	CMS Appendix II	No, as fishery impact can be analytically determined

Appendix B

Shark Finning and ETP Bycatch Mitigation Policy

December 2020

As a responsible member of the fishing community, we are aware that unintended bycatch poses a significant danger to non-target marine life. We recognize that most shark species are highly susceptible to overfishing, and many are considered threatened or endangered. Furthermore, we understand the wasteful practice of shark finning (the removal and retention of shark fins and discarding of the carcass at sea) contravenes many international rules and regulations, including those of all major regional fisheries management organizations (RFMOs).

Sea turtles are also especially vulnerable to fishing related activities due to their habitats and shared food sources with target tuna species. Additionally, sea turtles are a long-lived marine animal and require lengthy timeframes to meet reproductive maturation. Several species of sea turtles, including green sea turtles and leatherbacks, are already considered vulnerable or endangered by the scientific community.

In order to protect these vulnerable animals, our company is committed to implementing measures to reduce the negative impacts of fishing on their populations. Our company recognizes the ISSF Skippers' Guidebook to Sustainable Longline Fishing Practices and acknowledges the best practices for mitigating bycatch, handling, and release of sharks and sea turtles[1]. All handling and release will be carried out under the supervision of trained crewmen who have undergone extensive training.

In order to better protect sharks and sea turtles, our company adheres to the following best practices at a minimum:

1. Does not actively target sharks
2. Does not set shark lines on buoys
3. Prohibits the use of wire traces
4. Prohibits the practice of shark finning and our policy is posted on the vessel for crew awareness
5. Do not retain oceanic whitetip or silky sharks
6. For other sharks that are landed, the carcass is retained with fins naturally attached or partially cut and tied to the shark
7. Record the species in the fishing logbook for all sharks and sea turtles that are landed
8. Use only circle hooks, and use as wide a hook as possible that maintains acceptable catch rates of market species to reduce hard shelled sea turtle catch rates where necessary
9. Use only monofilament lines
10. Promotes the transition of fish rather than squid for bait
11. When feasible, set hooks deeper than typical sea turtle-abundant depths (40-100m)
12. Do not engage in trading with fishing companies that do not observe the above practices
13. Promotes best practices for bycatch handling and release of sharks, turtles, cetaceans and birds and the fishery does everything possible to release these individuals alive

Please see the attached appendix for the vessels covered by this policy.

Company: _____

Owner: _____

Signature of Owner: _____

Date: _____

[1] 1 The guidebook is available for download at the following location http://www.issfguidebooks.org/downloadable-guides