Ghana Tuna – Pole and Line FIP ETP Management Strategy

Prepared by

by Key Traceability Ltd.
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Contents

1 Introduction

The Ghana pole and line tuna fishery has 3 vessels registered and active within the FIP, all flagged to Ghana. The fishery targets skipjack tuna (*Katsuwonus* pelamis), yellowfin tuna (*Thunnus* albacares), and bigeye tuna (*Thunnus* obesus). The Ghana Tuna Association (GTA) implemented their FAD management policy in April 2024 in line with the International Sustainable Seafood Foundation (ISSF) Conservation Measure 3.7. All FADs used by the fleet are made from non-entangling materials.

The FIP catches bait using its pole and line vessels in a specific bait fishery (2017 Ghana annual report ANN-017 in ICCAT – C0C 301 document[1]). The bait consists of anchovy (*Engraulis encrasicolus*), juvenile round sardinella (*Sardinella aurita*) and round scad (*Decapterus punctatus*), which are all abundant in Ghanaian coastal waters due to the local upwelling.

The MSC definition of an ETP species is:

- Species that are recognised by national ETP legislation
- Species listed in binding international agreements (e.g. CITES, Convention on Migratory Species (CMS), ACAP, etc.)
- 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).

According to the Ghanaian Fisheries Research Centre, the pole and line fishing conducted by this fleet is highly selective, and bycatch is marginal. Interaction with ETP species is rare as a result of their high selectivity. However, there are reported incidents of shark catch within the UoA between 2018 and 2022:

- 4 of silky shark (*Carcharhinus falciformis*) (ICCAT/FAO species code: FAL)
- 93 of Galapagos sharks (*Carcharhinus galapagensis*) (ICCAT/FAO species code: SPY)

Silky shark is listed as a vulnerable species by the International Union for the Conservation of Nature (IUCN) and some species of hammerheads and thresher sharks are also ETP species. The reporting of any shark encounter on the Ghanaian pole and line fleet is mandatory.

All of the Ghanaian pole and line vessels use non-entangling FADs. Entangling FADs are a particular threat to a range of marine species and habitats because anything can become trapped in the floating net portion of the FAD and risk suffocating or drowning. Entangling FADs also pose a large threat to ETP species like many shark species and turtles. If there is inconsistent use of non-entangling FADs across the fleet, then the risk to ETP species from entangling FADs is high.

[1] http://www.iccat.int/com2017/index.htm

1.1 Scope

This strategy has been created because the susceptibility of critical ETP species to overfishing warrants further documented conservative action. We endeavour to encourage and implement best practice policies to reduce the impacts that the FIP is having on ETP species. This document will act as a guide for skippers on the actions required of them to reduce all ETP species interactions and how to manage those that inevitably occur.

This document will be approved by participating companies with an obligation for skippers to sign and accept the terms of best practice. A hard copy will be required on all vessels and will be obtainable at all times.

2 ETP species

2.1 Elasmobranchs

Sharks and rays are vulnerable to global fishing effort because of their life history traits, including slow growth, late maturation, low fecundity and long lifespan, which make their populations at risk of collapse.

Despite pole and line gear being a highly selective form of fishing (Gilman & Lundin, 2008), the incidents of shark and ray catch can still be substantial to fragile ETP stocks. Any efforts in place to reduce the catch of these species' and therefore their mortality, will be beneficial for their longevity and conservation.

In the Eastern Atlantic Ocean, there are a number of ETP sharks and rays that could be at risk from the Ghana pole and line fishery.

Table 1: ETP elasmobranch species that the fishery is known to or predicted to interact with using previous catch data and research from other fisheries.

Common name	Scientific name	UoAs to which applicable	Justification
Thresher sharks	*Alopias* spp.	Ghana pole and line fishery	CMS Appendix II
Silky shark	*Carcharhinus falciformis*	Ghana pole and line fishery	ICCAT 11-08; CMS Appendix II
Oceanic whitetip shark	*Carcharhinus longimanus*	Ghana pole and line fishery	ICCAT 10-07; CMS Appendix II
Longfin mako shark	*Isurus paucus*	Ghana pole and line fishery	CMS Appendix II

Shortfin mako shark	*Isurus oxyrinchus*	Ghana pole and line fishery	CMS Appendix II
Hammerhead sharks	*Sphyrna* spp.	Ghana pole and line fishery	CMS Appendix II
Galapagos sharks	*Carcharhinus galapagensis*	Ghana pole and line fishery	CMS Appendix II

2.1.1 Issue

Observed catch

Between 2018 and 2022, the Ghana pole and line fleet encountered 93 Galapagos sharks (*Carcharhinus galapagensis*) and 4 silky sharks (*Carcharhinus falciformis*). Silky sharks and Galapagos shark species are ETP, so any type of encounter is not desired. Although these data represent a small percentage of the total catch reports from the Ghana pole and line vessels (0.001% for silky sharks, and 0.02% for Galapagos sharks, by number of individual), mitigation efforts are important to contribute to global conservation efforts.

Unobserved mortality due to entanglement

In April 2024, the FIP has produced and implemented a FAD management policy in line with ISSF conservation measure 3.7. The FAD management policy confirms the following best practices for FAD management, identified in ISSF Technical Report 2019-11, “Recommended Best Practices for FAD management in Tropical Tuna Purse Seine Fisheries“, shall be implemented:

a) Comply with flag state and RFMO reporting requirements for fisheries statistics by set type.
b) Voluntarily report additional FAD buoy data for use by RFMO science bodies.
c) Support science-based limits on the overall number of FADs used per vessel and/or FAD sets made.
d) Use only non-entangling FADs to reduce ghost fishing.
e) Mitigate other environmental impacts due to FAD loss including through the use of biodegradable FADs and FAD recovery policies.
f) For silky sharks (the main bycatch issue in FAD sets) implement further mitigation efforts.

The full FAD management policy shall be included in Annex 1.

Drifting FADs (dFADs) are also at risk of becoming lost and not retrieved from the FIP for a variety of reasons. As a result, the netting beneath the FAD may continue to catch a range of marine species without ever being utilised, also known as ghost fishing (Stelfox, et al., 2016). One of the main concerns with ghost fishing is that there is no quantifiable way of estimating the number of individuals from a species or stock that are impacted/caught by the nets. Some smaller mesh sizes reduce the likelihood of large pelagic animals like sharks and dolphins become entangled and has previously been suggested as a mitigation tactic (Morena, et al., 2018) (Zudaire, et al., 2018).

Shark finning

Shark finning is the removal of shark fins from the body of a shark and discarding the carcass back into the sea. The fins are retained on board until they can be sold upon landing the vessel. The practice is against the FAO Code of Conduct for Responsible Fisheries and the International Plan of Action for the Conservation and Management of Sharks.

The act of shark finning is barbaric, wasteful, and contributes greatly to the global rise in shark mortality and population decline. Efforts to mitigate this act are essential to global shark conservation.

2.1.2 Mitigation

Observed Catch

Live release – Following best practice on board pole and line vessels to release live sharks from the hooks can reduce mortality rates. Typically, pole and line gears will use barbless hooks when setting on tuna schools. This means that in the case of bycatch, the hooks can be easily removed (Gilman & Lundin, 2008) (Gilman, 2011).

Unobserved mortality due to entanglement

All efforts should be made to reduce the entangling potential across the fishery, this includes using non-entangling FADs, or reducing the number of FADs used collectively. Non-entangling FADs are those that have no netting on their structure. This would mean replacing the net below the FAD raft with a piece of material that has no mesh. Previous mitigation techniques included the use of ropes to wrap the nets up into long sausage-like structures beneath the FAD raft. All fishing vessels within this FIP use non-entangling FADs.

Shark finning

The fishery currently complies with the ICCAT recommendation 18-06 which states that the vessels should not have onboard fins that total more than 5% of the weight of sharks onboard and that fishers will fully utilize the entire catch of sharks.

All vessels have shark finning policies on board to remind the crew and skippers about the appropriate procedures when handling a caught shark.

The Ghana Tuna Association (GTA) implemented a Fins Naturally Attached (FNA) policy in January 2023 which is aligned with the requirements of the new MSC Fisheries Standard v3.0 and the International Seafood Sustainability Foundation (ISSF) Conservation Measure 3.1 (c). Additionally, the FNA policy states that all shark handling and release will be carries out by trained crewmen as per the ISSF guidebook. The full GTA FNA Policy is included in Annex 2

2.2 Turtles

Turtles are long-lived species with a life history that makes them extremely susceptible to global fishing effort. As a result, all marine turtles are protected by national and international regulations. Unlike some other invasive fishing practices like longline, pole and line interactions with turtles are negligible, and if there is a caught turtle, they can be easily returned to the ocean (ICCAT Rec 13-11).

The use of circle, barbless hooks by fishers mean that if a turtle was to become hooked, the hook could be easily removed without causing significant injury to the animal (Gilman & Lundin, 2008) (Gilman, 2011).

Despite their low interaction rate with pole and line vessels, efforts to reduce and avoid fishing mortality will be beneficial for their global conservation.

Table 2 – ETP turtle species that the fishery is known to or predicted to interact with, using fishery catch data and research from other fisheries

Common name	Scientific name	UoAs to which applicable	Justification
Olive Ridley sea turtle	*Lepidochelys olivacea*	Ghana pole and line fishery	CITES Appendix I; CMS Appendix I
Loggerhead turtle	*Caretta caretta*	Ghana pole and line fishery	CITES Appendix I; CMS Appendix I
Leatherback turtle	*Dermochelys coriacea*	Ghana pole and line fishery	CITES Appendix I; CMS Appendix I
Green turtle	*Chelonia mydas*	Ghana pole and line fishery	CITES Appendix I; CMS Appendix I

2.2.1 Issue

*T*he Ghana pole and line fishery systematically uses FADs, which means that there is the potential for turtles to become entangled in the netting attached. Despite the FIP using non-entangling FADs, most FAD rafts have a layer of net that covers the floating potion of the device. Turtles notoriously use flotsam in the ocean as respite (Casazza & Ross, 2010) and may use the raft of a FAD to take a break from swimming. Once on the raft, turtles have been seen entangled in the net, from which there is minimal chance of escape. Likewise, unless there is aid provided to cut the turtle from the net, it will most likely die (Duncan, et al., 2017).

2.2.2 Mitigation

Removing all netting from the FAD raft and ensuring that the drifting net portion underneath the raft is non-entangling. If the raft requires being covered, the material used should be non-entangling, and mitigation efforts to deter the turtles for climbing on top of the raft should be implemented. Deterrents include lining the edges of the raft with cylindrical barriers, which would make it difficult for the turtle to access.

Fishers can also inspect the FAD to identify any entangled species, dead or alive and attempt to free any animal that is entangled.

2.3 Juvenile tunas

The Ghana pole and line tuna fishery targets skipjack tuna (*Katsuwonus pelamis*), yellowfin tuna (*Thunnus albacares*), and bigeye tuna (*Thunnus obesus*). The mixed species fishery increases the risk of catching small and juvenile individuals from the stock. Juvenile fish catch contributes to the global overexploitation of tunas.

2.3.1 Issue

Juvenile skipjack, yellowfin, and bigeye tuna are at risk of being caught by pole and line fisheries because they are also seen attracted to FADs, like adult individuals. Bigeye tuna has slower growth rates and becomes sexually mature later than the other two species, therefore making it's populations more vulnerable to fishing pressure.

Overfishing, by catching too many adults and juveniles is particularly detrimental for a slow-growing population of animals. Removing juveniles from a population ensures that they have not yet been able to reproduce and replace themselves in the population. Likewise, removing too many adults will also be detrimental to the continuation and longevity of a stock. Catching fish of different sizes leads to changes in potential yield. From a theoretical point of view, there is an optimum size at which the maximum sustainable yield (MSY) would be highest if all the fish were caught at that size, depending on the life history of the species (growth, maturity, natural mortality and spawner-recruit relationship). This optimum can never be achieved exactly because it is not possible to design a fishing gear that will catch all the tuna at the same size. But there are fisheries whose size selectivity will be close to this optimum size and, if those fisheries are the main source of fishing for the stock, then MSY will be close to the theoretical optimum. In contrast, if the main source of fishing is from fisheries that catch fish of sizes away from the optimum (either too small or too large), then MSY will be less than the optimum (Restrepo, et al., 2017).

2.3.2 Mitigation

Reducing the use of FADs will help to prevent an aggregation of both adult and juvenile tuna species in a fishing area and therefore reduce the catch rate from different sizes of tuna. Reducing the number of FADs or shifting to free school fishing and locating tuna schools via fish tracking and telemetry systems, will reduce the aggregation of juveniles around a floating object.

Setting catch size limits will ensure that fishers return undersized/juvenile tunas back into the ocean, rather than retaining them as part of the vessel catch. The use of circle, barbless hooks also help to ensure that the tuna can be returned without fatal injuries. A study of the management of tuna and billfish stocks by RFMOs found that implementing and enforcing total allowable catches (TACs) had the strongest positive influence on rebuilding overfished stocks (Pons, et al., 2017).

2.4 Cetaceans

There are a number of cetaceans that are declared ETP species, primarily due to their vulnerability to global fisheries. In pole and line fisheries, cetacean bycatch are rarely witnessed due to the selectivity of their method, however as with the other ETP species discussed, the use of FADs can have detrimental implications for cetaceans.

Table 3 - ETP cetacean species that the fishery is known to or predicted to interact with, using fisheries catch data and research from other fisheries **(Cruz, et al., 2016)**

Common name	Scientific name	UoAs to which applicable	Justification
Common dolphin	*Delphinus delphis*	Ghana pole and line fishery	CITES Appendix II; CMS Appendix I

2.4.1 Issues

Their long life history traits, including slow growth, late sexual maturity age and low fecundity mean that even low numbers of bycatch can have significant implications for a population.

Dolphins often migrate with tuna schools and follow them when hunting so there is a risk that a dolphin may become entangled in a FAD net after being attracted by the aggregation of tuna around it.

2.4.2 Mitigation

Direct capture of cetaceans on a pole and line gear is unlikely but using circle, barbless hooks on the end of the line is the most effective way to reduce the injury to a hooked animal, if it does occur. Fishers should be trained in the removal of hooks from an animal before releasing, without causing further injury to the animal.

Reducing the use of entangling FADs is another method to reduce the amount of cetacean bycatch incidents.

Reporting all incidents of cetacean catch and interactions to record the species' identity. Knowing the species identity is important in understanding the health of a population and therefore influences conservation efforts.

2.5 Birds

Some bird species, including several boobies, gulls, and albatross are ETP due to their life history traits. Albatross and petrels can live for over 60 years, reproducing only once every year or two (Lewison & Crowder, 2003). Many albatross species also mate for life and bycatch incidents with even a small number of individuals is severely detrimental for global populations. There are 22 species of albatross; 17 are threatened with extinction.

Common name	Scientific name	UoAs to which applicable	Justification

Atlantic yellow-nosed albatross	*Thalassarche chlororhynchos*	Ghana pole and line fishery	CMS Appendix II

2.5.1 Issues

Being large migratory birds, these animals often encounter operating fisheries and are particularly at risk from longline and purse seine vessels (Lewison & Crowder, 2003). Although incidents of bycatch are rare in pole and line fisheries, fishers and crews should be fully prepared when handling the birds in a bycatch event.

2.5.2 Mitigation

Crew and skipper training on how to safely remove a hook from a caught bird without inflicting more injury is an important mortality mitigation effort that should be required on each vessel. Likewise, the use of circle, barbless hooks will also prevent more injury and permits the quick release of the animal after being caught.

Reporting any incidental catches down to the size, weight, and species will help to assess the population sizes of the species.

2.6 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 B*
- *Keep abreast of new science and promote* research to further develop best practices for handling and safe release
- 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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Annex 1

FAD MANAGEMENT POLICY ISSF CM 3.7

(ISSF Conservation Measure 3.7)

Ghana Tuna Association, an environmentally responsible organization, hereby publicly states that starting on April 1,2024 ([1]), the following best practices for FAD management, identified in ISSF Technical Report 2019-11, "Recommended Best Practices for FAD management in Tropical Tuna Purse Seine Fisheries", shall be implemented:

a) Comply with flag state and RFMO reporting requirements for fisheries statistics by set type.

We commit to:
Filling out completely and accurately the logbooks, including FAD logbook information, by set type required by the flag state and submitting them by electronic reporting to the required authority and/or tRFMO.

Maintaining, as has been the case since 2015, 100% observer coverage, even if not required by the tRFMO, on all fishing trips through the use of a combination of human observers and voluntary Electronic Monitoring (EM). For EM, best-practice minimum standards developed by ISSF, or those developed by the tRFMO, will be followed.

Collecting data on the number of active FADs and FAD activity (deployments, visits, sets and loss) as required by tRFMO and submitting them to the required authority and tRFMO.

b) Voluntarily report additional FAD buoy data for use by RFMO science bodies.

We commit to:
Report FAD buoy daily position data to the scientific institution AZTI with a maximum time lag of 90 days, and request that these data be made available to the relevant tRFMO for scientific purposes. The data submitted must include the vessel name and IMO number (if available). When possible, deployments should be identified in the data submission. In cases where data is being reported to scientific institutions or the flag State, we shall request that these data be made available to the relevant tRFMO for scientific purposes.

Provide FAD buoy echo-sounder acoustic biomass data to the scientific institution AZTI with a maximum time lag of 90 days, and request that these data be made available to the relevant tRFMO for scientific purposes. The data submitted must include the vessel name and IMO number (if available)
c) Support science-based limits on the overall number of FADs used per vessel and/or FAD sets made.

We commit to:
Abiding by the limit of active number of FADs adopted by tRFMOs.
Deploying only FADs with satellite tracking buoys.

Managing the activation and deactivation of buoys taking into account the corresponding tRFMO´s measures.

Abiding by the time area closure (including FAD area closures) established by the corresponding RFMO.

d) Use only non-entangling FADs to reduce ghost fishing.

We commit to:
Only deploying or redeploying FADs that are completely non-entangling (i.e., without any netting), even when is not a requirement of the tRFMO, according to the ISSF Guide for Non-Entangling FADs ([2]).

Not deploying any "high entanglement risk" FAD according to the ISSF Guide for Non-Entangling FADs (i.e., those using large open netting either in the raft or in the underneath part of the FADs: >2.5 inches or 7 cm mesh).

Retrieving from the water and modifying the design of "high entanglement risk "FADs according to the ISSF Guide for Non-Entangling FADs that are reused by the fleet, to make them non-entangling as per the ISSF classification ([3]).

e) Mitigate other environmental impacts due to FAD loss including through the use of biodegradable FADs and FAD recovery policies

We commit to:
Studying the feasibility of using FADs with only biodegradable material in their construction except the floatation structure of the raft. The association and its members are looking to start implementing BioFAD in its fishing activities.

Participating in tests of locally-sourced biodegradable materials in collaboration with AZTI, ISSF or any other scientific institution.

Studying the feasibility of deploying simpler and smaller FADs.

Participating in trials of biodegradable FAD designs and tests with the participation of tRFMO science bodies and/or CPCs or ISSF scientist.

Endorsing risk and feasibility research programs aimed to determine deployment areas that are highly likely to result in stranding, in countries where FAD recovery policies could be put in place.

Participating in cooperative efforts, such as the FAD-Watch in the Seychelles, to remove stranded FADs, in the case the fleet operates in the determined area(s).

Gradually replacing FAD components with biodegradable materials as soon as such are proven efficient.

Not disposing of any FAD component at sea, unless it is proven biodegradable: should a FAD be mended and/or any component replaced, the remainder material must be reused or disposed at port

Whenever possible, use supply vessels to recover FADs that might be in risk of sinking or stranding.

Promoting the use of bio-based material to make FADs.

Promoting a definition of BIODEGRADABLE materials applicable to marine environment.

f) For silky sharks (the main bycatch issue in FAD sets) implement further mitigation efforts.

We commit to:
Applying Best Practices for safe handling and release of sharks and rays brought onboard.

Participating/supporting studies to evaluate the contribution of purse seine fisheries to catches of silky sharks, and the impact of implementation of the Good Practices on post-release survival.

Participating in projects aiming to develop and test new tools to release sharks and mobulids in tuna purse seiners that maximize their survival and are practical to use onboard.

President
GHANA TUNA ASSOCIATION
This policy was adopted on APRIL 27, 2024

Annex 2

GUARANTEE OF A SUSTAINABLE FUTURE

GHANA TUNA ASSOCIATION

Public Shark Finning Policy

Introduction

Globally, incidental shark captures in purse seine fisheries are not as common as in longline fisheries. However, there is still a significant issue within these net fisheries due to the non-selective nature of the fishing gears, and potential risk to vulnerable shark and ray populations. The slow growth rates, late maturation, low fecundity, and long life spans of these animals means that the removal of individuals from a population can have cascading effects on the food web. Sharks also suffer from stress during the handling and release procedure of becoming caught in fishing gear. This stress induces dangerous concentrations of chemicals into the blood of the shark, which can lead to death even after it has been released from the vessel alive. Therefore, any sharks that are not retained by the vessel should be released using the safest and most efficient methods.

Shark finning is the practice of retaining shark fins and discarding the remaining carcass while at sea. 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. As part of the new MSC Fisheries Standard (v3.0), there is a new requirement that all sharks that are retained by a fishing vessel must have their fins naturally attached (FNA) to the carcass. This means that sharks will not be accepted upon landing if there are no fins attached to the body. Therefore, the companies operating in the Ghana pole and line tuna fishery would like to highlight the actions being taken by the fishery to prevent shark finning onboard its vessels.

Public policy

The Ghana Tuna Association (GTA) make this public policy stating that shark finning is prohibited aboard all vessels and does not occur. GTA adopts the "fins naturally attached" rule for sharks aligned with the requirements of the new MSC Fisheries Standard (v3.0), and the International Seafood Sustainability Foundation (ISSF) Conservation Measure 3.1(c). Any sharks that are retained, stored, and landed will be reported and shark fins must be naturally attached to the carcass. For storage capacity and space, partially cutting the fins to fold them around the body is acceptable.

However, all fins must remain attached to a large part of the carcass. Shark carcasses with fins artificially attached to the body, via ropes, wire, or other unnatural materials will constitute a violation of this policy. Any sharks that are landed should be photographed to be used as evidence of compliance with the policy. No shark species that are prohibited by national law or RFMO regulations will be landed.

All shark handling and release will be carried out by trained crewmen as per the ISSF guidebook. This includes best practice handling and release methods to ensure both crew and shark safety during release procedures.

On behalf of the Participant (GTA):

Signature: ____________________

Name and job title: Samuel Boye Ayertey

Date: 24th January, 2023