



Indian Ocean tuna - longline (Fue Shin) FIP ETP Management Strategy

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prepared for

FSF (Fue Shin Fishery) Co, Ltd.

Prepared by

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Introduction

The Indian Ocean (IO) longline tuna fishery operated by Fue Shin Fishery Ltd. (FSF) is a multinational fleet targeting albacore, yellowfin, bigeye, and skipjack tuna across the Western and Eastern Indian Ocean ([Indian Ocean tuna - longline \(Fue Shin\) | Fishery Progress](#)). Vessels are primarily flagged to Chinese Taipei (Taiwan), China, and fish on the high seas and in the EEZs of coastal states like Mauritius and Seychelles. As a participant in a Fishery Improvement Project (FIP) since 2023, this fishery aims to meet the Marine Stewardship Council (MSC) standard by 2028 through sustainable practices. A core FIP objective is to “*strengthen Endangered, Threatened, and Protected (ETP) species management strategies and ensure the fishery is not hindering the recovery of species.*”

This ETP Management Strategy outlines how the FSF IO FIP fleet will minimize and mitigate impacts on vulnerable species, including sharks, rays, sea turtles, marine mammals, and seabirds. It builds on observer data from 2020–2024 and global best practices to guide skippers and crew in reducing ETP interactions and handling any encounters safely. By implementing this strategy, the FIP fleet seeks to not only comply with Indian Ocean Tuna Commission (IOTC) regulations but also exceed them through proactive measures, thereby promoting an ecosystem-based approach to fishing by 2028. This document is intended for use by FIP partners, company management, and vessel captains as a practical guide for ETP species conservation in daily operations. **All vessel operators in this FIP should keep a copy of this strategy in the office and ensure its provisions are followed.**

Scope

Definition of ETP Species:

For the purpose of this strategy, ETP species include any non-target species that are legally protected (e.g. no-retention species under RFMO regulations) or classified by conservation status as Vulnerable, Endangered, or Critically Endangered. This covers all marine mammals, sea turtles, and seabirds (which are “out-of-scope” species in MSC terms), as well as certain sharks and rays that are protected by international agreements (e.g. CITES Appendix I listings) or listed as threatened on the IUCN Red List.

The MSC defines an ETP species¹ as follows:

- Any species acknowledged by national ETP legislation.
- Species enumerated in the binding international agreements specified below:
 - Appendix I of the Convention on International Trade in Endangered Species (CITES), unless it can be demonstrated that the specific stock of the CITES-listed species impacted by the Unit of Assessment (UoA) under evaluation is not classified as endangered.
 - Binding agreements established pursuant to the Convention on Migratory Species (CMS), including:- Annex I of the Agreement on Conservation of

¹ This definition will change with the MSC standard version 3

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 I of the Agreement on the Conservation of Cetaceans of the Black Sea, Mediterranean Sea, and Contiguous Atlantic Area (ACCOBAMS).
 - Wadden Sea Seals Agreement; and,
 - Any other binding agreements cataloging relevant ETP species concluded under this Convention.
- Species categorized as ‘out of scope’ (amphibians, reptiles, birds, and mammals) that are listed in the International Union for Conservation of Nature (IUCN) Red List as Vulnerable (VU), Endangered (EN), or Critically Endangered (CE).

In practical terms, the ETP species of concern in this fishery include (but are not limited to): oceanic whitetip shark, silky shark, thresher sharks, mako sharks, porbeagle, mobulid rays (manta and mobula), all sea turtles, cetaceans (whales and dolphins), and vulnerable seabirds such as albatrosses and petrels.

Fishery Operations Covered:

This strategy applies to all longline fishing operations conducted by the Fue Shin FIP fleet throughout its area of operation in the Indian Ocean. This includes approximately 16 pelagic longline vessels (flagged to Taiwan (Chinese Taipei), and China) fishing in FAO Area 51 and 57 (Western and Eastern Indian Ocean) on the high seas and inside authorized EEZs. All gear configurations, target tuna sets, and seasons are within scope. The strategy encompasses both preventive measures (to avoid or reduce bycatch interactions) and reactive measures (safe handling and release of any ETP species caught).

Data and Baseline:

This document is informed by human observer data collected from 2020 through 2024 across the FIP fleet, which consists of 9 vessels when O2 sent a request to TFA. The table 1 below provides a summary of observer coverage across the FIP fleet from 2020 through 2024, including the number of vessels observed and the total number of fishing days recorded each year. During that period, ETP species interactions accounted for roughly 1% of total catch by number. Table 1 below summarizes the recorded ETP interactions by category. (Note: These figures represent observed incidents and do not necessarily indicate final survival or condition of the animal.)

Table 1. Observer Coverage by Year

Year	Number of Vessels	Number of Fishing Days
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2020	1	215
2021	2	100
2022	2	273
2023	1	99
2024	1	117

Table 2. Summary of Observed ETP Interactions (2020–2024)

Category	Species Observed (examples)	Total Interactions	Comments
Sharks & Rays	Silky shark (38 caught), Oceanic whitetip (12), Bigeye thresher (11), Shortfin mako (45), Longfin mako (61), Porbeagle (248) (<i>all sharks</i>); no mobulid rays observed.	416 sharks (+ 1,114 other rays)	416 includes only threatened/protected sharks (all oceanic whitetip and thresher were released). <i>Pelagic stingrays</i> (1,114 caught, all released) are a frequent bycatch but not classified as ETP due to their lower risk status.
Sea Turtles	Leatherback (1), Loggerhead (1), Olive ridley (1), Unidentified turtle (1)	4 sea turtles	All turtles released alive (or discarded if found dead). No turtles were retained.
Cetaceans	Indo-Pacific bottlenose dolphin (1), Unidentified small toothed whale (1)	2 marine mammals	All released alive; no cetacean retention (protected by law).
Seabirds	Albatrosses: e.g. Wandering (7), Black-browed (6), Sooty (4), Grey-headed (1), Tristan (1), White-capped (2); Petrels: White-chinned (13)	34 birds	All were found on hooks (mostly dead upon retrieval). No seabirds retained (all protected species).

Sources: FSF FIP observer reports 2020–2024 from the Fishery Agency of Taiwan.

Strategy Validity and Updates:

This ETP Management Strategy is effective as of May 2025 and applies to all FIP participants. It will be reviewed annually and updated as needed (e.g. if new regulations are adopted or new bycatch data indicate emerging issues). The strategy has been approved by Fue Shin Fishery management and partner NGOs, and compliance will be verified through ongoing observer coverage (human and electronic) and audits. Any future amendments will be communicated to all captains, and training will be provided to ensure understanding and implementation at the vessel level.

Sharks and Rays

Current Interactions:

Sharks comprise the largest portion of the fishery's ETP interactions by number. The FIP observer data (2020–24) show frequent catches of blue sharks, pelagic stingrays, and other pelagic sharks. Many of these species are not endangered (e.g. pelagic stingray), but several threatened shark species are encountered, including silky sharks (*Carcharhinus falciformis*), oceanic whitetip sharks (*Carcharhinus longimanus*), thresher sharks (*Alopias* spp.), shortfin mako (*Isurus oxyrinchus*), longfin mako (*Isurus paucus*), and porbeagle (*Lamna nasus*). Oceanic whitetip and thresher sharks are fully protected by IOTC – retention of these species is prohibited and all must be released if caught. The observer records indicate compliance in these cases (e.g. 100% of oceanic whitetips were released). Silky sharks, while not yet banned from retention in the Indian Ocean, are considered vulnerable, so they are treated as ETP species in this strategy. The data show most silky sharks caught were retained (35 of 38), highlighting a need to improve handling of this species. Shortfin mako and porbeagle sharks are both listed as Endangered/Vulnerable globally; in these records, nearly all shortfin makos were retained, whereas porbeagles and longfin makos were released. Going forward, even legally retainable sharks will be subject to stricter handling protocols under this strategy to ensure their populations are not negatively impacted.

Mitigation Measures: The FIP fleet has adopted on a comprehensive Shark, Sea Turtle, and Sea Bird Conservation Policy that applies across all vessels. Key measures in this policy include:

- **No Targeting of Sharks:** Vessels will not engage in practices that deliberately increase shark catch rates. **Shark lines are prohibited** in this fishery. Shark lines, which target sharks in shallow depths, have been shown to significantly increase the catch of oceanic whitetip and silky sharks. Eliminating their use helps avoid intentional or incidental targeting of these vulnerable species.
- **Use of Monofilament Leaders (No Wire Traces):** All branch lines must use monofilament nylon leaders instead of wire. Wire leaders prevent sharks from biting off and escaping, leading to higher shark mortality. Studies demonstrate that switching from wire to monofilament can reduce shark catch rates by around 40%, as many sharks can

bite through the nylon and free themselves (Gilman et al., 2008, Hall et al., 2017). Monofilament leaders also make it easier for crew to cut the line close to a hooked shark for release. This measure is expected to significantly decrease the retention of pelagic sharks by allowing more to self-release before hauling.

- **No Shark Finning – Fins Naturally Attached:** The fleet upholds a strict *fins-attached* policy. **Shark finning (removing fins and discarding the body) is banned both by company policy and IOTC regulations.** Every shark landed (if any) must have fins naturally attached to the carcass. This ensures compliance with finning bans and facilitates full utilization of any landed shark. The fins naturally attached (FNA) approach is recognized globally as the best practice to enforce finning prohibitions. Crews should be trained and instructed that any violation (detaching fins at sea) will result in disciplinary action and potential expulsion from the supply chain.
- **No Retention of Prohibited or High-Risk Species:** Following RFMO rules, oceanic whitetip sharks and all thresher sharks (Family Alopiidae) caught must be released immediately, and no mobulid rays (manta or mobula) may be retained if incidentally caught. If any of these species are hooked, the crew should release them alive without bringing them on deck whenever possible. For example, upon recognizing a shark as an oceanic whitetip (white-tipped fins, rounded snout), the crew should cut the line near the hook rather than risk injuring the animal by hauling it onboard. These species should *not* be kept even if found dead, to discourage any directed attempts at them and to comply with conservation goals.
- **Best-Practice Gear and Bait:** The fishery has modified gear to reduce overall shark bycatch. In addition to banning wire leaders, branch lines are weighted to reach deeper depths faster, and hooks are set to fish at 40–100 meters depth when targeting tuna. This avoids the upper mixed layer where certain sharks (like silky sharks) are more prevalent. **Only circle hooks are used in the FIP fleet** – these hooks are not only better for turtles (as discussed in the next section) but also tend to reduce deep hooking in sharks, potentially improving post-release survival (sharks are more often hooked in the jaw with circle hooks, making release easier). Additionally, **fish-based bait** (e.g. mackerel and sardine) is used instead of squid bait. Studies have found that using fish for bait can lower some shark and turtle bycatch rates, as squid bait tends to attract a wider range of bycatch (Watson et al., 2005; Gilman et al., 2007). Fish bait and deeper-setting circle hooks primarily target tunas while being less appealing to certain

shark species.

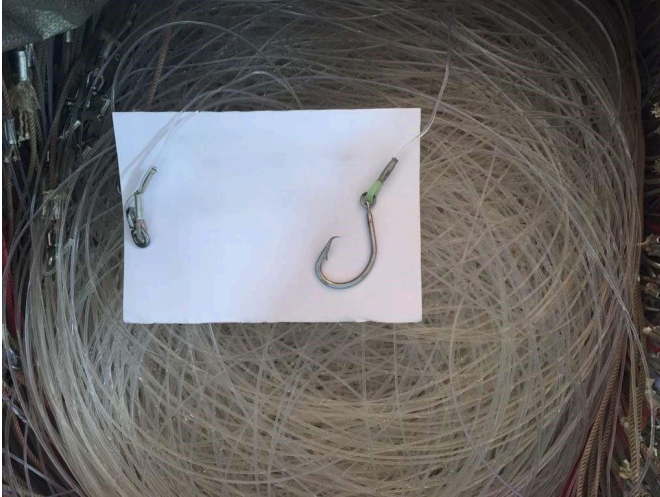


Photo: Circle hooks used by Indian Ocean fleet; Source: Kevin (Kai-Wen) Lin

- **Safe Handling and Release Training:** All crew receive training in safe handling of sharks and rays, emphasizing quick and humane release. When a shark (or ray) is observed on the line, crew should assess if it can be released without bringing it aboard. **Large sharks** should generally be released at the side of the vessel by cutting the line as close to the hook as safely possible (using a long-handled line cutter or blade). Crew are instructed *not to gaff* sharks in the body, and to **never lift large sharks by the tail or gills**, as this can cause severe injury to the animal. If a shark is brought on deck (for smaller individuals that can be handled), crew must keep it wet and minimize time out of water. Tools like bolt cutters (to cut hooks) and de-hookers are provided on vessels to gently remove hooks when feasible, or to snip the hook to speed up release. For rays (like any possible manta or large stingray caught by the line), the protocol is to avoid lifting them out of water due to risk of internal injury – instead, cut the line close to the mouth. The crew has species identification guides to recognize protected rays (e.g. mantas, which are large and easily distinguishable) and sharks, ensuring the correct handling approach is used.
- **Recording and Reporting:** Every shark or ray interaction must be recorded in the vessel logbook (see Table. 3) and reported in FIP monitoring. This includes noting species (or best identification), size (estimated), condition upon release (alive, vigorous vs. injured or dead), and whether any were retained. This data collection supports tracking the effectiveness of our mitigation measures and is shared (in aggregate) with management bodies and researchers. Enhanced data transparency is a FIP commitment to improve knowledge of shark bycatch and encourage stronger management.

Table 3. Elogbook Data Requirements

Field Name	Description
Number	Unique entry number
Version	Version of the logbook template
Vessel Name	Name of the observed fishing vessel
Date	Date of the fishing operation
Latitude (Lat.)	Latitude of the set location
Longitude (Lon.)	Longitude of the set location
GPS Latitude	GPS latitude
GPS Longitude	GPS longitude
Temperature	Sea surface temperature at the time of setting
Branch Line Length	Length of each branch line used
Buoy Line Length	Length of each buoy line
Branch Line Number	Total number of branch lines set
Distance Between Buoys	Distance between buoy lines
Hooks	Total number of hooks set
Baits	Type of bait used
Measure	Measurement approaches (e.g., Estimation on board, weighing on board, visual measurement)

Operation	Type of fishing operation (e.g., fishing, navigating)
Location Source	How the location data was obtained (e.g., GPS, manual)
Issue	Any issues observed during the operation
Company ID (統一編號)	Company identification number
Operation Date (作業日期)	Date of the fishing operation
Species (魚種)	Common name of the caught species
Count (尾數)	Number of individuals caught
Weight (重量)	Weight of the catch
Handling Type (處理型態)	Handling or fate of the catch

Through the above measures, the FIP fleet aims to **minimize shark and ray mortality**. Internal compliance will be monitored via observer audits – for instance, checking that no wire trace is present on gear, and verifying all finning policies are followed. Vessels that consistently implement the best practices (e.g. those joining the ISSF ProActive Vessel Register and passing audits) will be recognized, while any violations will trigger corrective actions or suspension from the FIP and supply chain of FSF.

Sea Turtles

Current Interactions:

Interactions with sea turtles in this fishery are relatively infrequent. Observer data from 2020–2024 documented *four* sea turtle captures in total: one leatherback (*Dermochelys coriacea*), one loggerhead (*Caretta caretta*), one olive ridley (*Lepidochelys olivacea*), and one unidentified turtle (species could not be confirmed, but likely a hard-shelled turtle). All were released, and none were reported dead upon retrieval (though their post-release survival was not verified). These species are ETP by definition – all marine turtles are protected and vulnerable to population declines. The Indian Ocean region is home to important turtle populations (Wallace, B. P., Tiwari, M., & Girondot, M., 2013; IUCN, 2024). Even low interaction rates warrant strong preventive measures because each individual turtle is long-lived and of high conservation value.

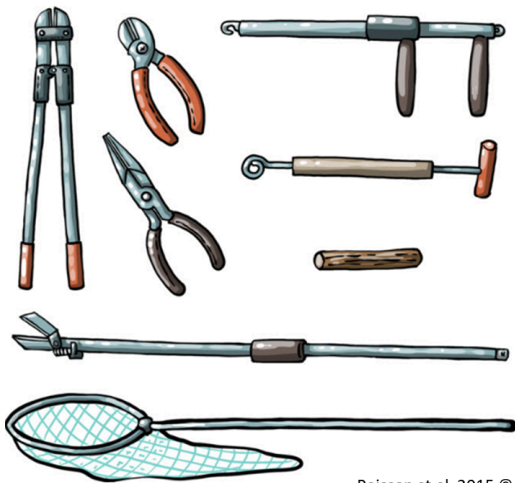
Mitigation Measures:

The FIP fleet has implemented the following turtle bycatch mitigation strategies, consistent with FAO and IOTC guidelines for longline fisheries:

- **Circle Hooks Only:** All vessels use large circle hooks (size 18/0 or larger) instead of traditional J-shaped hooks for pelagic longlining. This measure is highly effective in reducing sea turtle hooking and mortality (ISSF, 2023). Circle hooks have a widened gape and the point turned inward, which makes them less likely to lodge in a turtle's throat if swallowed. Turtles that do get hooked on circle hooks are usually caught in the mouth or jaw, rather than suffering internal hooking. This greatly increases the chance of survival upon release, as the hook can often be removed and internal injuries are minimized. Studies have found circle hooks can reduce hard-shelled turtle catch rates significantly without reducing tuna catch. The FIP fleet instituted a 100% switch to circle hooks, and this is now a mandatory requirement in our Longline Vessel Bycatch Mitigation Policy (Gilman et al., 2007; FAO, 2009a; Pacific Islands Regional Office, 2013).
- **Use of Fish Bait:** As a fleet-wide practice, only fish bait (e.g. mackerel, sardine) is used on hooks, not squid. Turtles are more attracted to squid and tend to swallow squid bait whole, which leads to deep hooking (Gilman et al., 2007). With fish bait, turtles bite off pieces instead of swallowing it in one gulp, reducing the chance of hooking. Empirical research supports that using finfish bait instead of squid can significantly lower sea turtle bycatch rates (Gilman et al., 2007; Watson et al., 2005; ISSF, 2009). This practice has been adopted by our vessels and is in line with recommended best practices from regional fisheries and conservation groups.
- **Deeper Hook Deployment:** Whenever targeting tuna, our vessels set hooks **below 100 meters depth** when possible. Most sea turtles, especially hard-shelled species like olive ridley and loggerhead, tend to feed in upper waters (top 40–80 m) (Beverly et al., 2009). By setting hooks deeper (>100 m), we reduce the overlap with the depths where turtles are commonly encountered (ISSF, 2023). In practice, branch lines are lengthened or extra weight added so baited hooks sink faster and reach deeper strata. This technique, combined with strategic timing (see next point), lowers the probability of turtles encountering our hooks.
- **Night Setting:** Although not always feasible for all sets, vessels are encouraged to deploy gear at night. Many turtle species are less active or feeding less at night, and night setting has been shown to reduce interactions for both turtles and seabirds with careful lighting control (Gilman et al., 2005; Bolten & Bjorndal, 2003). In equatorial waters where turtles are present year-round, captains may choose to set after dusk and complete setting before dawn to minimize overlap with turtle visual foraging times. This measure is applied as needed based on risk (e.g. if a vessel reports a turtle capture in a

certain area, subsequent sets in that area will be shifted to night-time).

- **On-Board Handling Gear for Turtles:** Every vessel carries a dedicated turtle release kit, which includes long-handled line cutters, long-handled dehookers, dip-nets or slings for gently lifting turtles, and equipment to safely handle large individuals. The crew are trained in the proper use of these tools. If a turtle is noticed on the line, the line is hauled in slowly and the turtle is brought alongside the vessel carefully (engine speed can be adjusted to reduce tension). Crew must never lift a turtle by the line alone, and gaffs are strictly prohibited for turtles. Instead, for smaller turtles a dip-net may be used to lift it on deck; for larger turtles (e.g. adult leatherback) the vessel may use a wide sling or support netting to bring it on deck for hook removal, or preferably keep the animal in the water alongside if it is too large or heavy.



Poisson et al. 2015 ©



Photo: Onboard Turtle Handling Tools; Source: Poisson et al. 2015; ISSF; Kevin (Kai-Wen) Lin

- **Safe Release Protocol:** Once the turtle is accessible, crew will assess hook placement. If the hook is in the mouth and the turtle is relatively calm, a long-handled dehooker or bolt cutter is used to gently remove the hook or cut the barb. If the hook is deeply ingested and cannot be removed, the line is cut as close to the hook as possible (ideally leaving no more than a few centimeters of line). All hooked turtles are **released alive** whenever feasible. After removal of gear, turtles may be given a brief period to recover

at the surface; crew often hold the turtle in the water (supporting its weight) to allow it to breathe and regain strength before release. In cases where a turtle appears exhausted or injured, the vessel will hold it onboard in a shaded, ventilated place splashed with seawater and contact any relevant rescue network if in range (though on the high seas this is usually not possible, so the focus is on rapid, safe release). The entire handling process is done as quickly as possible to reduce stress – ideally under 10 minutes. Crew members should have been trained in these techniques following FAO best practice guidelines for sea turtle handling, which stress minimal injury and expeditious release (FAO, 2009).

Thanks to these measures, turtle interactions have remained very low. The continuation and strict enforcement of circle hooks and fish bait in particular are expected to keep turtle bycatch to a minimum. We will continue to monitor for any turtle captures; each incident is reviewed to see if additional measures could have prevented it (e.g. was gear set shallow by exception, was the hook a proper circle, etc.). The ultimate goal is to reach a point of **zero turtle mortality** in this fishery. Even one turtle mortality is taken seriously and will prompt investigation and remedial action (such as retraining crew, adjusting gear, etc.). We also coordinate with IOTC Working Parties and turtle conservation experts to stay updated on the latest mitigation research (for instance, trials of alternative hook designs or attractors that could further reduce turtle interactions).

Cetaceans (Whales and Dolphins)

Current Interactions:

Interactions with marine mammals in pelagic longline fisheries are relatively rare, and the FSF Indian Ocean fleet has only two documented cases over 2020–2024. These were an **Indo-Pacific bottlenose dolphin** (*Tursiops aduncus*) and an **unidentified small toothed whale** (possibly a pygmy sperm whale or similar) that were incidentally hooked. Both were released alive. No large whales (like humpback or sperm whales) have been reported entangled or hooked in the FIP observer data, although depredation (whales taking fish from lines) is occasionally observed. Nonetheless, any interaction with cetaceans is of high concern given their protected status. All marine mammals (dolphins, porpoises, and whales) are protected under various international agreements (e.g. CMS, IWC) and national laws; deliberate harm or retention is strictly forbidden. Longline gear can pose a risk if a cetacean takes bait or a hooked fish and gets snagged, or becomes entangled in the line. The strategy's aim is to keep such incidents as close to zero as possible.

Mitigation Measures:

Preventing cetacean bycatch and ensuring safe release if it occurs involve both operational decisions and crew preparedness:

- **Avoidance of Marine Mammals:** Vessel captains are instructed to be vigilant for the presence of dolphins or whales when setting gear. If a group of dolphins is bow-riding or feeding around the vessel, do not set the longline until they have left the vicinity. Likewise, if whales are spotted feeding (e.g. diving on prey) in the area, the vessel should consider moving a few nautical miles before setting, or wait until the animals have passed. This “move-on rule” is a precautionary measure to avoid setting lines in the immediate presence of cetaceans. While it’s not always possible to see them (especially at night), daytime sets allow visual monitoring. Crew should be trained to notify the captain immediately if they observe marine mammals during setting or hauling.
- **Depredation Management:** Depredation (whales or dolphins taking caught fish) not only causes catch loss but can lead to hooking or entanglement of the animals. To reduce depredation risk, the fleet follows best practices such as not leaving gear soaking longer than necessary (shorter soak times mean less opportunity for predators to find the line). If there are persistent depredation issues in a particular area (e.g. pilot whales frequently stealing catches), vessels will relocate to a different fishing area to avoid continued interactions. Some vessels have begun trialing acoustic pingers or deterrent devices on longlines to deter marine mammals; however, effectiveness in pelagic longline is uncertain. We will monitor emerging technologies (such as acoustic deterrents or stiff hooklengths) that might reduce dolphin interactions without affecting target catch.
- **Gear and Hook Modifications:** The fishery is exploring the use of weak hooks or release hooks on branchlines. The concept is to use hooks that straighten or break under the force of a large animal (like a whale) but still hold the smaller target species. Research in other longline fisheries (e.g. for pilot whale bycatch) suggests that carefully calibrated hooks or weak links can allow large cetaceans to free themselves if hooked (Werner et al., 2015). Any implementation will be tested to ensure they don’t lead to excessive target fish loss. Additionally, as noted, monofilament leaders are already in use (which also helps for cetaceans — a dolphin or whale can more easily chew through or break a mono line than a wire).
- **Safe Handling and Release:** In the rare event a cetacean is found hooked or entangled, crew must follow a **strict safe release protocol**:

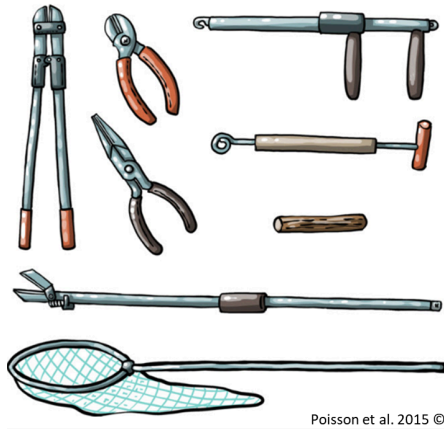


Photo: Onboard Handling Tools; Source: Poisson et al. 2015

- **Do Not Harm:** Under no circumstances should crew injure or kill a cetacean, even if it is causing damage or is incidentally caught. Firearms or sharp gaffs are prohibited for use on marine mammals. The priority is the animal's welfare and crew safety.
- **Stop the Winch:** As soon as a whale or dolphin is noticed on the line during hauling, the crew should stop the retrieval to avoid dragging the animal by force. If the animal is large and pulling, the crew should cut the line upstream to remove tension.
- **Release in Water if Possible:** Ideally, the animal should be released without ever bringing it onto the vessel. Crew will use a long line-cutter or dehooker pole to cut the branch line as close to the hook as they safely can reach - **Release in Water (Minimal Handling):** Ideally, the animal should be disentangled or the line cut while it remains in the water alongside the vessel. Crew will use a long-handled cutting tool to sever the line as close to the hook or entanglement point as possible. If a hook is lightly hooked in a dolphin's mouth and the animal is calm, a crew member may use the dehooker to gently back the hook out. However, safety of the crew is paramount – nobody should enter the water to assist, and physical contact should be minimized to avoid stressing the animal. In most cases, simply cutting the leader near the animal is the fastest way to free it. **Monofilament leaders** (as mandated by our shark policy) facilitate this – they can be cut quickly and will also deteriorate faster if a piece remains attached, as opposed to wire.
- **On Deck Only if Necessary:** Bringing a cetacean on deck is avoided except for very small individuals that are already immobile. For example, if a small dolphin

were somehow entangled and incapacitated, crew might bring it on deck to remove netting or line, following the *safe handling guidelines for small cetaceans* (keeping it moist, not lifting by tail, covering the eyes to calm it). This scenario is highly unlikely in pelagic longlining and has not occurred in our fishery to date.

- **Post-Release Observation:** After cutting the line, the vessel will stand by for a short period to observe the animal. Typically, dolphins swim away quickly once freed. If a large whale were ever entangled and freed, the crew would document its condition (e.g. any gear still attached, swimming behavior upon release) to report to authorities and scientific networks. All marine mammal interactions are reported to IOTC per requirements and to relevant national authorities.
- **Crew Training and Guidelines:** The FIP, with advice from experts (e.g. the WWF and CMS Bycatch Group), has distributed "[Dolphin and Whale Safe Handling Guidelines](#)" to all vessels. These one-page guides (in the languages of the crew) outline the do's and don'ts of handling cetacean bycatch.

Key principles include: *do not panic* (maintain a calm environment to avoid agitating the animal), *do not tie up or restrain the animal more than needed, never drag by the tail or head*, and *release as quickly as possible*. Crew are taught that marine mammals are highly intelligent and often will cooperate if not threatened – for instance, a hooked dolphin might stay calm during the release if the crew works gently. Annual training refreshers should be provided, sometimes with participation from marine mammal experts or using training videos that demonstrate proper techniques.

- **No Dolphin Targeting & “Dolphin Safe” Commitment:** As part of company policy, the fleet reaffirms that it does not target dolphins (for either capture or use as bait, which has occurred illegally in some regions). Fue Shin has a Dolphin Safe policy aligned with Earth Island Institute standards, meaning no intentional setting around dolphins (a practice more relevant to purse seine, but nonetheless the company adheres to zero tolerance for dolphin harm in any gear). This is more of a formality in longlining but underscores our commitment to protecting cetaceans.

Overall, the risk to cetaceans in this fishery is low, but our responsiveness is high. By avoiding known interactions and being prepared for the unexpected, we strive for **zero cetacean deaths**. Should any incident occur, it will be reviewed in depth. For example, if a particular gear configuration is found to have entangled a whale, we would adjust that gear design (such as removing any slack lines or floats that could form loops). Additionally, we collaborate with initiatives looking into acoustic deterrents or gear modifications that might reduce marine mammal bycatch (recognizing that solutions must not increase bycatch of other species or reduce target catch too much). We also support research and data-sharing: any sightings of cetaceans by our vessels are logged (to contribute to understanding distribution), and if feasible,

we would participate in tagging or release programs (e.g. if a whale is freed with gear, informing researchers who might later encounter that individual).

Seabirds

Current Interactions:

Seabird bycatch is a concern primarily in the southern extents of the Indian Ocean where albatross and petrel species overlap with longline fishing. The observer data (2020–2024) recorded 34 seabird interactions, which included at least five species of albatross (wandering, black-browed, grey-headed, sooty, and Tristan albatrosses) and one species of petrel (white-chinned petrel). All of these birds are classified as Vulnerable, Endangered, or Critically Endangered on the IUCN Red List. For instance, Tristan and wandering albatrosses are critically endangered and face significant threats from longline bycatch. All birds retrieved were dead on the hooks, as is common in longlining (seabirds typically get hooked during line setting and drown). This level of interaction indicates that when our vessels operate in certain areas (likely south of ~25°S latitude, near subtropical convergence zones), seabird bycatch can occur if mitigation is not fully effective. Notably, white-chinned petrels (13 individuals) were the most frequent, and this species is known to be one of the most commonly caught birds in tuna longline fisheries. Albatross catches were fewer per species (ranging from 1 to 7 each), but each instance is of high concern given the small population sizes of those birds. These interactions underscore the need for rigorous seabird mitigation measures whenever the fleet fishes in higher-risk areas (generally the southern Indian Ocean, especially during winter months when seabirds are most active around fishing vessels).

Mitigation Measures:

The FIP fleet complies with IOTC Resolution 12/06 and the updated Resolution 23/07, which entered into force on July 1, 2024, and mandates that vessels operating south of 25°S implement at least two seabird bycatch mitigation measures from the approved list—including bird-scaring lines, weighted branch lines, and night setting—to minimize seabird interactions in longline fisheries. Our strategy not only meets these requirements but aims to exceed them by using a combination of measures simultaneously, following best practice advice from Agreement on the Conservation of Albatrosses and Petrels (ACAP). The key seabird mitigation measures are:

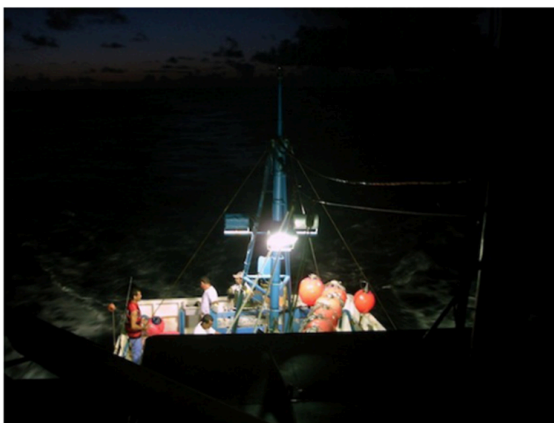
- **Bird-Scaring Lines (Tori Lines):** Every vessel carries at least two tori lines and must deploy them *during every daylight set* south of 25°S. A bird-scaring line is a line mounted on a high pole at the stern, with streamers that flap and cover the area where baited hooks enter the water, thus scaring birds away from the sinking hooks. Our tori lines are designed to meet best practice specifications (long aerial extent ~100 m, brightly colored streamers or foreshadow sections that reach the water). When properly deployed (often one off each stern quarter), tori lines have proven highly effective at reducing seabird attacks on baited hooks (ACAP, 2023). Crew are trained to set up tori lines correctly and to adjust them for wind conditions (to maintain coverage over the sinking baits). We

replace or repair streamers as needed to ensure functionality. Tori lines are one of the primary defenses against albatrosses and petrels during line setting.



Photo: Tori Lines; Source: ISSF

- **Night Setting:** Vessels are encouraged to set lines at night (between nautical dusk and dawn) when fishing in areas or seasons of high seabird abundance. Many seabirds are less active or cannot see baited hooks as easily in the dark. Setting at night (especially with minimal deck lighting that could attract birds) greatly reduces seabird interactions. In practice, some vessels plan their schedule to begin setting an hour after sunset and finish before sunrise in risky areas like south of 30°S in winter. If any setting must occur in early morning, it is ideally completed before first light. We recognize night setting as one of the IOTC options and a best practice when used in combination with other measures (ACAP, 2023).



Night setting (Photo: Ricardo Hoinkis, Projeto Albatroz)

Photo: Night Setting; Source: ISSF

- **Branch Line Weighting:** All branch lines in the FIP fleet are encouraged to gain weight to accelerate the sink rate of hooks. By attaching weights (e.g. >60 g) at specified distances from the hook (say 0.5m to 1m from the hook), hooks sink faster out of reach of birds. Our aim is to meet a sink rate of >0.3 m/s for the hooks so that within 10 seconds or so after deployment they are beyond the depth a bird can dive. Different vessels use slightly different weighting regimes (some use 60 g lead swivels at 1 m from hook, others 100 g at 3 m, etc., following what works best for their gear configuration), but all meet or exceed the IOTC minimum standards. Proper weighting, combined with tori lines, has been shown to dramatically reduce seabird mortality in pelagic longlines (ACAP, 2023). We monitor crew compliance by checking gear periodically; the use of weighted branch lines is mandatory in the southern fishing grounds.



Photo: Branch lines weight; Source: ISSF

- **Hook Shielding Devices:** Our fleet is evaluating new hook-shielding devices (such as the Hookpod) that encase the point and barb of the hook until a certain depth is reached. Three such devices (Hookpod-LED, Hookpod Mini, and Smart Tuna Hook) have been recently approved as standalone mitigation measures (they can replace the combination of other measures if used) (ACAP, 2023). A few vessels used to trial deployments of Hookpods, which automatically release the hook at ~10 m depth, thus virtually eliminating shallow-water bird catches. Initial feedback is positive in preventing bird attacks, though there are cost and operational considerations (added time to attach devices, etc.). Until proven, we continue to implement the traditional three-pronged approach (tori lines, night setting, weighting) as the default.



Photo: Hook Pod; Source: ISSF

- **Offal Management:** Seabirds are often drawn to vessels by offal (fish waste) and bait discards. Crew are instructed not to discharge offal during line setting or hauling in the presence of birds. Any processing of catch that generates offal is ideally done when lines are not in the water, or if during hauling, on the opposite side of the vessel from the hauling station to distract birds away from hooks being retrieved. Good offal management (retaining waste or releasing it in controlled ways) can reduce the frenzy of birds around the vessel.



Photo: Offal discharge management; Source: ISSF

- **Crew Awareness:** Captains and crew were shown the correct deployment of mitigation tools and educated on the conservation importance of species like albatrosses. Each vessel has an onboard seabird ID guide and a reporting form to note any seabird catches (species, band numbers if any on leg, etc.). This information is shared with scientific researchers and conservation bodies. The crew understand that preventing seabird bycatch is not only a regulatory requirement but also a company priority and an ecological responsibility. The concept of “save the albatross” has been emphasized – for example, by explaining that some albatross populations are declining and even a few deaths can impact their survival. This has fostered a stewardship ethic among the

fishers.

By using **multiple mitigation measures simultaneously**, we align with ACAP and ISSF best practice advice that a combination of measures (specifically night setting *plus* tori lines *plus* line weighting) is most effective. Indeed, It recommends that to nearly eliminate albatross bycatch, all three should be used together whenever possible. Our goal is to reach **near-zero seabird bycatch**. The 34 birds recorded over 5 years is not extremely high, but each incident likely occurred when mitigation was suboptimal (e.g. perhaps daylight setting without adequate tori lines or weight). With stricter compliance and improved measures, these incidents should dwindle.

We will actively monitor seabird interaction rates. If any vessel consistently has no seabird catches while another does, we will investigate why (perhaps differences in techniques) and standardize the best practices across the fleet. Additionally, we support efforts at the IOTC to refine seabird measures – for example, extending the geographic scope if needed (north of 25°S, if data show bycatch up to 30°S, etc.), or requiring deeper hook shielding devices fleet-wide. Our internal policy is already more precautionary than the minimum: we require *three* measures in high-risk areas, not just two. Moreover, even outside the mandated latitude range, if birds are observed, vessels will deploy tori lines as a precaution (e.g. occasionally species like shearwaters can be an issue in tropical areas when feeding around vessels).

Finally, any seabird mortalities that do occur are reported. If a bird is found alive (rare, but perhaps if entangled but not hooked), crew will follow a release procedure: gently covering the bird with a towel, removing the hook or line carefully (using pliers to dehook a bird's bill or wing), and then releasing it away from the vessel (giving it a chance to take off without immediately hitting the ship). Birds exhausted but alive may be kept briefly to recuperate and then tossed aloft to encourage flight.

Policy Compliance and Internal Monitoring

This ETP strategy not only outlines best practices but also establishes compliance and monitoring mechanisms to ensure those practices are adopted across the FIP fleet:

- **Fleet-wide Policy Adoption:** All FIP participant companies and vessel owners have formally agreed to the ETP measures described. This strategy document serves as an official policy directive. It is distributed in the working language of the crew (e.g. Chinese, Indonesian) so that all levels – from company managers to fishermen – understand the rules and rationale. Each captain has signed an acknowledgment of the receipt of these guidelines and a commitment to implement them.
- **Training and Drills:** Prior to each fishing trip, captains conduct a briefing on bycatch procedures. New crew receive hands-on training in using dehookers, line cutters, and other release gear. Periodic drills (for example, simulating a turtle entanglement or a

dolphin on the line) are performed so that in a real event, crew respond calmly and correctly. These trainings are often done in port or during transit, and occasionally with NGO observers or trainers present. We also use illustrated flipcharts and laminated posters on vessels as visual reminders of key steps (e.g. “Sea Turtle Release Steps” posted near the hauling station).

- **Observer Coverage:** The FIP has committed to high levels of observer coverage (human and/or electronic). Currently, at least **5% of trips** have human observers on board collecting data on ETP interactions, and electronic monitoring (EM) systems with video will be expanded to complement coverage. Observers and EM footage verify that mitigation measures (like tori lines, night setting) are indeed being used and that handling protocols are followed. Any discrepancies or non-compliance noted by observers result in feedback to the vessel manager, FSF and/or FIP management. For instance, if an observer reports that a crew handled a shark improperly (e.g. finned a shark or failed to deploy a tori line), immediate corrective action is taken – which could include retraining the crew, issuing warnings, or removing that vessel from the FIP and supply chain if violations persist.
- **Audit and Review:** The FIP will conduct annual internal reviews of ETP practices. This includes document checks (logbooks, observer reports) and interviews with crew. It may also involve port inspections of gear (to ensure, for example, no wire leaders or illegal gear modifications are being used). The audit team, which can include NGO partners or independent consultants, will produce an annual ETP performance report. This will highlight compliance levels, successes, and any gaps. These findings feed into the continuous improvement loop.
- **Enforcement of Consequences:** The companies in the FIP have agreed that non-compliance with this ETP strategy has consequences. Minor issues lead to warnings and mandatory training; serious breaches (e.g. intentional killing of a dolphin, or systematic shark finning) will lead to the vessel’s suspension or removal from the FIP and potential termination of contracts. Because the market partners require FIP compliance, there is a strong economic incentive for vessels to follow the rules. This “carrot and stick” approach – training and support on one hand, and sanctions on the other – helps ensure fleet-wide adherence.

By maintaining robust internal monitoring and showing a culture of compliance, the FIP can confidently demonstrate to stakeholders, certifiers, and regulators that the fishery is meeting its responsibilities for ETP species protection. The regular data collected is also used to inform any needed strategy adjustments (adaptive management). For example, if audits find that crew struggle with a certain procedure, we can refine that procedure or provide better tools. If new regulations emerge (say IOTC strengthens a measure), we update our policy accordingly and train crews on the new requirement.

Policy Recommendations and Actions

While this strategy focuses on current practices within the FIP fleet, it is also forward-looking. The following are recommendations and next steps to continuously improve ETP species management:

1. Strengthen Regional Regulations: The FIP will actively engage with the Indian Ocean Tuna Commission (IOTC) and flag State governments to advocate for stronger bycatch measures that align with our best practices. For instance, we support proposals to require *fins-naturally-attached* for all sharks in the Indian Ocean (if not already fully mandated), to mandate circle hooks for longliners to benefit turtles, and to expand seabird mitigation requirements to areas north of 25°S if data show a need. By sharing our positive experiences (e.g. demonstrating that circle hooks did not reduce target catch significantly but helped turtles), we can encourage wider adoption. A current priority is urging IOTC to adopt a comprehensive shark management measure (covering catch limits for vulnerable species like mako, and requiring safe release of those species) – our FIP data can illustrate the feasibility of releasing species like silky and mako sharks without undue burden.

2. Improve Data Collection and Electronic Monitoring: We aim to increase observer or electronic monitoring coverage on FIP vessels in the next 2–3 years. This will provide complete verification of ETP practices. We will continue to refine EM systems (camera placements to capture deck and hauling views) to ensure even interactions at night or on the side of the vessel are recorded. Additionally, we plan to support trial programs for *electronic tracking of bycatch*. For example, using sensors that detect when heavy animals (like a turtle or shark) are on the line could alert crew earlier. We will also explore tagging opportunities: working with researchers to satellite-tag any released animals of interest (like oceanic whitetip sharks or turtles) to monitor their survival and movements post-release. All these efforts will enhance the scientific basis of our strategy and contribute to global knowledge.

3. Continuous Crew Capacity Building: Next steps include organizing regular (at least annual) workshops with crew and skippers to share experiences and lessons learned. Peer-to-peer learning will be encouraged – for instance, a captain who perfected a technique for releasing big sharks can demonstrate it to others. We will also invite NGO experts or fisheries trainers to these workshops. Providing updates on regulations (e.g. new CITES listings of species, or new handling techniques) will keep the crew knowledge current. We are developing a “Bycatch Mitigation Handbook” in multiple languages as a reference for crews, incorporating illustrations and simple text for key procedures. This will be updated as new info comes in (e.g. if a new hook type is introduced).

4. Enhanced Release Success: A next step is to improve post-release survival rates of ETP species. It’s not enough to release animals; we want them to survive. We plan to work with scientists to identify indicators of survival (for example, blood sampling of some sharks or turtles to assess stress, attaching survival tags to a few individuals, etc.). Based on findings, we might tweak handling – e.g., extra steps to revive stunned turtles (like keeping them on deck in shade

with water for a bit longer until active) or better methods to cut hooks from large sharks. We will also explore obtaining and using resuscitation equipment for rarely caught species (for instance, a canvas stretcher and seawater hose for a big manta ray to support it and push water over gills if ever one is caught, increasing chance of survival on release).

5. Collaboration with NGOs and Fishery Improvement Community: This strategy will be shared with partner NGOs (such as Ocean Outcomes, ISSF, Global Tuna Alliance) for feedback and to serve as a model for similar fisheries. We are open to independent reviews of our ETP measures. Through FisheryProgress and other FIP networks, we will report progress transparently. One planned action is to create an ETP Performance Report (public-facing) by the end of 2026 that documents our interaction rates, what was done, and the outcomes (e.g., “turtle bycatch reduced by 50% after circle hooks implemented”). This helps build confidence among seafood buyers and certification bodies that the fishery is meeting sustainability metrics without explicitly referencing MSC scores.

6. Adaptive Management and Next Revision: Finally, this is a living document. As we implement these strategies, we will learn and adapt. By the end of 2025, the FIP will review this strategy in light of two years of data under full implementation. We will consult crew and observers to see which measures are most effective and which need improvement. The strategy will then be updated for 2026–2028. Potential additions could include stricter measures if necessary (for instance, if seabird bycatch hasn’t dropped enough, we might mandate use of hook pods fleet-wide), or simplifications if over-achieving (for example, if zero shark finning incidents occur for 3 years, perhaps focus can shift more to recording biological data on released sharks to aid research). The adaptive approach ensures that we remain effective and practical.

In conclusion, the Fue Shin Indian Ocean longline tuna FIP is fully committed to protecting ETP species as part of its journey toward sustainability. By mirroring and expanding upon the successful measures from similar FIPs and adhering to international best practices, we have developed a robust ETP Management Strategy. The strategy is comprehensive – covering sharks, rays, turtles, marine mammals, and seabirds – and is backed by data, training, and enforcement. Implementing this strategy across our fleet will not only mitigate the fishery’s ecological impacts but also instill a culture of stewardship among our fishermen. We recognize that the prosperity of our tuna fishery is intertwined with the conservation of ocean biodiversity. Therefore, we will continue to improve and lead in this arena, working closely with management bodies and conservation partners. With these steps, we move closer to our FIP’s ultimate goal: a fishery that is sustainable, responsibly managed, and ready for MSC certification – one that earns the trust of regulators, consumers, and environmental stakeholders alike, by demonstrating that tuna fishing and ETP species protection can go hand in hand.

Table 2. Human Observer data from 2020 to 2024²

Species	Scientific Name	Catch (weight)	Catch (Number)	Retained Catch (Weight)	Retained Catch (Number)	Discarded Catch (weight)	Discarded Catch (number)
Albacore	Thunnus alalunga	333237	26534	333237	26299	0	235
Barracudas nei	Sphyraena spp	124	33	5	1	119	32
Bigeye sand tiger shark	Odontaspis noronhai	0	1	0	0	0	1
Bigeye thresher	Alopias superciliosus	0	11	0	0	0	11
Bigeye tuna	Thunnus obesus	104922	2847	104893	2681	29	166
Black marlin	Makaira indica	691	9	691	8	0	1
Black-browed albatross	Thalassarche melanophrys	0	6	0	0	0	6
Blue marlin	Makaira nigricans	3758	72	3758	69	0	3
Blue shark	Prionace glauca	16715	881	16489	626	226	255
Butterfly kingfish	Gasterochisma melampus	178	19	0	0	178	19
Common dolphinfish	Coryphaena hippurus	1670	482	1670	477	0	5
Crocodile shark	Pseudocarcharias kamoharai	0	22	0	0	0	22
Escolar	Lepidocybium flavobrunneum	12213.5	1742	12211.5	1728	2	14
Grey-headed albatross	Thalassarche chrysostoma	0	1	0	0	0	1

² Please be advised that not all vessels were accessible for the observer data. However, the Fishery Agency of Taiwan provided the raw data for the fleet where available.

Indo-Pacif. bottlenose dolphin	Tursiops aduncus	0	1	0	0	0	1
Indo-Pacific sailfish	Istiophorus platypterus	1653	104	1653	102	0	2
Lancetfishes nei	Alepisaurus spp	0	2422	0	0	0	2422
Leatherback turtle	Dermochelys coriacea	0	1	0	0	0	1
Loggerhead turtle	Caretta caretta	0	1	0	0	0	1
Long snouted lancetfish	Alepisaurus rostratus	0	3726	0	0	0	3726
Longbill spearfish	Tetrapturus pfluegeri	78	4	78	4	0	0
Longfin mako	Isurus paucus	147	61	0	0	147	61
Marine turtles nei	Testudinata	0	1	0	0	0	1
Ocean sunfish	Mola mola	40	12	40	2	0	10
Oceanic whitetip shark	Carcharhinus longimanus	27	12	0	0	27	12
Oilfish	Ruvettus pretiosus	1181	132	1181	132	0	0
Olive ridley turtle	Lepidochelys olivacea	0	1	0	0	0	1
Opah	Lampris guttatus	9953	920	9953	911	0	9
Other fishes	Other fishes	26	32	20	5	6	27
Pelagic stingray	Dasyatis violacea	0	1114	0	0	0	1114
Pelagic thresher	Alopias pelagicus	0	1	0	0	0	1

Pomfrets, ocean breams nei	Bramidae	875	386	736	151	139	235
Porbeagle	Lamna nasus	476	248	0	0	476	248
Rudderfish	Centrolophus niger	206	28	206	28	0	0
Sharptail mola	Masturus lanceolatus	0	1	0	0	0	1
Shortbill spearfish	Tetrapturus angustirostris	795	72	795	71	0	1
Shortfin mako	Isurus oxyrinchus	2667	45	2667	44	0	1
Silky shark	Carcharhinus falciformis	645	38	645	35	0	3
Skipjack tuna	Katsuwonus pelamis	71	47	60	11	11	36
Snake mackerels, escolars nei	Gempylidae	0	3	0	0	0	3
Sooty albatross	Phoebetria fusca	0	4	0	0	0	4
Southern bluefin tuna	Thunnus maccoyii	48945	1852	47151	1533	1794	319
Striped marlin	Tetrapturus audax	1251	32	1251	31	0	1
Swordfish	Xiphias gladius	8724	256	8703	225	21	31
Tiger shark	Galeocerdo cuvier	0	1	0	0	0	1
Toothed whales nei	Odontoceti	0	1	0	0	0	1
Tristan albatross	Diomedea dabbenena	0	1	0	0	0	1

Wahoo	Acanthocybiu m solandri	3403	373	3403	370	0	3
Wandering albatross	Diomedea exulans	0	7	0	0	0	7
White-capped albatross	Thalassarche steadi	0	2	0	0	0	2
White-chinned petrel	Procellaria aequinoctialis	0	13	0	0	0	13
Yellowfin tuna	Thunnus albacares	46052	1673	45755	1491	297	182

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