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Best handling and release practice guidelines for sharks in IATTC fisheries

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UPDATED BEST HANDLING AND RELEASE PRACTICE GUIDELINES FOR SHARKS IN IATTC FISHERIES

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This document provides an update to the shark best handling and release practice guidelines developed in SAC-15-11 and those adopted in Resolution C-24-05, following the request made by the 102nd Commission meeting that the IATTC scientific staff, in collaboration with the SAC and EBWG, continue to develop, taking into account the practicability for fishing vessels, and recommend to the Commission a comprehensive set of best handling and release practices for the safe release of sharks for inclusion in Resolution C-24-05 in 2025. These guidelines have undergone several rounds of review and revision by those CPCs that responsed to Memorandum 610-401 (listed below) and incorporates their and the feedback of several subject matter experts.

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SUMMARY

The incidental capture of sharks and other vulnerable and or non-target species in tuna fisheries has prompted growing efforts to improve survivorship through best handling and release practices (BHRPs). Despite existing measures within the Inter-American Tropical Tuna Commission (IATTC) on this matter, many lack clear, evidence-based guidance. In response, the IATTC staff reviewed available scientific literature, fisheries data, and stakeholder input to identify effective practices and regulatory gaps for BHRPs. Following direction from Resolutions C-23-07 and C-24-05, this document synthesizes updated

shark BHRP guidelines based on scientific evidence, input from IATTC Members and Cooperating non-Members (CPCs), subject matter experts, and industry representatives. It provides detailed, fishery-specific recommendations designed to enhance post-release survival of sharks and ensure crew safety and practical implementation.

1. BACKGROUND

Concerns about the incidental capture (i.e., bycatch) of elasmobranchs, have resulted in increased efforts to develop conservation and management measures that avoid interactions and or reduce mortality post interaction. In the Inter-American Tropical Tuna Commission (IATTC), these measures include the implementation of no retention policies, fisheries mitigation measures, and best handling and release practices (BHRPs). Although most IATTC measures allude to the use of best practices, ban certain practices, or provide general common-sense recommendations, they lack specific guidance that has been tested for efficacy and measurable impacts on survival. Thus, specific BHRP guidelines still need to be developed (for several non-target species), and/or improved (for sharks and sea turtles) and adopted into the regulatory framework and fishing gears regionally.

To address these gaps, the IATTC staff conducted a review of available literature, knowledge, research and data relevant to the development of BHRP guidance for sharks and other vulnerable species (EB-01-01). The document compiled all relevant research on survivorship and handling practices in commercial tuna fisheries, identified knowledge and data gaps, and reviewed the current vulnerable species[1] Resolutions to identify where BHRP guidelines can be implemented into the existing regulations and where additional research is required in the IATTC Convention Area of the eastern Pacific Ocean (EPO). The paper was presented to the IATTC's permanent Working Group on Ecosystem and Bycatch (EBWG) at its first meeting and the Scientific Advisory Committee (SAC) at its 14th meeting in 2023. Accordingly, the SAC-14 endorsed the EBWG-1 recommendations to: a) develop BHRP guidelines for vulnerable species and, b) for CPCs and other relevant stakeholders to support the IATTC staff in a survey to gather details of national efforts or programs that can help elucidate post-release survival rates of vulnerable species captured in the various fisheries under the purview of the IATTC.

In recognition of the above recommendations, the 101st meeting of the Commission adopted Resolution C-23-07 on sharks with paragraph 12 requiring *'the IATTC scientific staff, in collaboration with the IATTC SAC and EBWG, shall develop and recommend to the Commission a set of best handling guidelines for the safe release of sharks for inclusion in this measure in 2024'*. Following this request a Memorandum was sent by the Director of the IATTC to all CPCs (Reference: 0473-410) in September of 2023, requesting any existing guidelines or regulations on best handling and release practices and existing data that elucidates the post release fate of sharks. The memo also requested that Members and Cooperating non-Members (CPCs) identify and designate subject matter experts that could potentially assist the IATTC staff with the development of the guidelines for their fisheries. Several CPCs responded and provided information on BHRPs and a list of contacts. A document was then developed reviewing all the content provided by CPCs and all available scientific evidence on shark interactions in purse seine, longline and gillnet fisheries, focusing on strategies to improve shark survival after incidental interactions. Draft BHRP guidelines were

[1] Unless specified otherwise, including but not limited to citations to vulnerability assessments and any qualitative/quantitative scores (e.g. BYC-10 INF-B; SAC-13-11), the staff's definition of "vulnerable species" refers to the species that, in the *sensu latu*, and due to their low-productivity and life-history traits (i.e. K species in r/K selection theory), are more vulnerable to the impacts of fisheries and other anthropogenic activities on these species or their habitat and ecosystem. This includes the marine mammals, seabirds, sea turtles and the elasmobranchs.

also formulated by fishery and the document was circulated to those subject matter experts (SMEs) identified by the CPCs in response to Memo 0473-410 and other regional and global experts for review. The resulting document (SAC-15-11) was presented at the EBWG-2 and the SAC-15 meetings in 2024.

An updated shark Resolution C-24-05 was adopted in 2024 at the 102nd Annual Commission Meeting, amending and replacing Resolution C-23-07. Resolution C-24-05 contains BHRP guidelines that were derived from the best available scientific advice provided in SAC-15-11. The Resolution also, in paragraph 12, requires:
*"The IATTC Scientific Staff, in collaboration with the IATTC SAC and EBWG, shall **continue** to develop, taking into account the practicability for fishing vessels, and recommend to the Commission a comprehensive set of best handling and release practices for the safe release of sharks for inclusion in this measure in 2025. In the meantime, CPCs may elect to use the safe handling and release guidelines described in Annex 3 and as appropriate, the tools identified in Annex 3.1 of this Resolution".*

This document was created in response to the above request to continue developing BHRP guidelines for sharks. To this end a follow-up Memorandum (Reference: 0601-410) was sent to all CPCs in November 2024, inviting CPCs to provide the Secretariat with:

1. Their existing guidelines or regulations on BHRP for sharks as well as seabird, sea turtles and rays for fisheries under the purview of the IATTC.
2. Existing data that elucidates the post release fate of sharks and other vulnerable species.
3. Subject matter experts that could potentially assist with the development of the guidelines referred to above for each taxa.
4. Designated industry representatives that can provide guidance on implementation and practicality of BHRP guidelines and other mitigation actions in fisheries operations to also address the SAC-15 recommendation that, *"a program of dialogue be established between the scientific staff, managers, and captains of tuna fleets across CPCs with respect to the implementation of new methods for BHRPs".*

Several CPCs (Canada, Chile, China, Costa Rica, El Salvador, European Union, French Polynesia, Mexico and Peru) responded to the Memorandum and provided the information requested to assist in the development of this document. The content provided was reviewed and integrated into the shark BHRP guideline recommendations presented herein. This document and the resultant BHRP recommendations are a synthesis of: i) all available scientific evidence and data (from SAC-15-11) that supports the recommended practices and identifies those that should be avoided; ii) the BHRP guidelines adopted and recommended in Resolution C-24-05; iii) the information provided by CPCs in response to Memorandum 610-410; iv) the feedback received during the EBWG-2, the SAC-15 and those subject matter experts providing reviews; and v) taking into account safety and practicality for widespread adoption and use in fisheries settings as suggested by industry representatives and personnel that reviewed earlier versions of this document.

Like document SAC-15-11, this document provides background information and justifications for all of the recommendations across fisheries, and by fishing stage for the purse seine fishery in Section 2. Section 3 contains additional considerations from the staff on organization of the document for consistency across BHRP guidelines for all taxa and a request for funds to support the development of training and outreach materials and activities. In the Annex, the IATTC staff has compiled the updated shark BHRP recommendations into two formats, first as a comparison table of what is currently in the Resolution text (column 1), to the BHRP recommendations based on the best available scientific information and the reviews conducted by SMEs and industry partners (column 2). The tables faciliate visualization of the

differences between what is currently in the Resolution and where additions, modifications or deletions may improve the existing guideance. Second, and as requested by some CPCs, they are available as a redlined version of the text adopted in C-24-05 Annex 3 and 3.1.

In the last section of this document we report on the perspectives of purse seine sector skippers and deck bosses on BHRP for elasmobranchs, gathered through an informal survey administered during the annual skipper's workshop organized by the IATTC staff in January 2024. The survey was also later shared with several fishing organizations to increase the breadth of participation expand the knowledge gained through this endeavor. The skipper surveys are voluntary and anonymous and designed following the guidelines established for the collection of local ecological knowledge (as described in SAC-16-INF-S).

This document has been circulated and reviewed by CPCs, industry personnel and other subject matter experts identified by the CPCs in response to Memorandum 601-410. All comments and revisions received were considered for inclusion to strengthen the veracity of this document and to ensure the recommendations are in line with the best scientific evidence available to improve the safety of the crew and reduce mortality to incidentally captured sharks.

2. DRAFT SHARK BHRP GUIDELINES BY FISHING GEAR

2.1. Purse seine

IATTC purse seine fisheries interact with several species of sharks, but species composition of the elasmobranch bycatch is dominated by juvenile silky sharks (*Carcharhinus falciformis*, SAC-14-11). Several studies have been conducted across ocean basins to investigate post release survival (PRS) rates and handling and release methods that improve survival of silky and other shark species captured in purse seine fisheries (SAC-15-11; Table 1). The following recommendations are listed in order of the progression of the purse seine fishing operation: from encirclement to the net hauling stage, the sacking up stage, and finally, the brailing stage, where fish are brought on board - because the methods for BHRPs are somewhat specific to fishing stage.

2.1.1. Avoidance

There is overwhelming scientific evidence (e.g., Poisson et al. 2014; Hutchinson et al. 2015; Eddy et al. 2016) that survival is compromised once sharks have been confined to the sack portion of the net during the purse seine fishing operation. Therefore, the most effective means of reducing shark mortality in this fishery is to either avoid sharks all together or to remove sharks that were encircled, from the net while it is still open and sharks are free swimming, prior to sacking up. Presently, there are no practical or efficient means of removing sharks from inside the open net that are being utilized with regularity (Restrepo et al. 2018). Thus continued efforts to examine strategies for both avoidance and removing encircled sharks must be pursued.

2.1.2. Sharks entangled in the net during the net haul back

Research has shown that survival rates of entangled sharks can be high (80-84%) when BHRP are used, likely because these individuals were never subjected to confinement in the sack and the associated conditions (e.g., anoxia, crushing), and are released early in the operation (Poisson et al. 2014; Hutchinson et al. 2015; Onandia et al. 2021). Thus returning these animals to sea using BHRP and as quickly as possible is paramount. In these situations the safety of the crew is of particular concern. Therefore it is suggested that the net area containing the entangled shark, be rolled over the turntable and then the main boom should be moved to starboard or to port (depending on the vessel's orientation) and the net should be rolled back (or 'dropped') so that the shark is lowered to the deck and not thrashing in the air on a rolling

vessel. Fishers can then disentangle the shark, manuever them into a stretcher and release them back to the sea on the opposite side of the vessel from the net.

BHRP Recommendations for sharks entangled in the net

Do:

-Drop the net so the entangled shark is lowered to the deck to allow the crew to safely cut the net away from the animal.

-Maneuver sharks into a stretcher/cradle or ramp immediately and take them to the opposite side of the vessel from the net for release.

-Release sharks immediately.

Do not:

-Roll sharks through the power block.

-Use gaffs or hooks to maneuver sharks.

-Leave sharks abandoned on deck.

-Hang sharks by the tail.

-Drag sharks across the deck by the tail.

2.1.3. Sharks brought on board via brailing

Survival rates of sharks that are present on the top of the sack and brought on board during the first few brails have been shown to be higher (13-57%) than for those sharks that are brought on board in later brails (6-30%) (Hutchinson et al. 2015, Onandia et al. 2021). Therefore, the release of visible sharks on top of the sack at the commencement of brailing operations should be prioritized.

All post release survival studies show that survival rates are seriously compromised once the animals have entered the loading hatch and release is initiated from the lower (well) decks (Eddy et al. 2016; Onandia et al. 2021; Poisson et al 2014a). Vessels should, where possible, separate bycatch on the working/main deck so that sharks are released back to the sea prior to going down the loading hatch to the lower deck, to significantly improve PRS probabilities. Effective bycatch separation methods include the use of Bycatch Reduction Devices (BRDs; e.g., hopper with a controlled door) detailed in Murua et al. (2023). Smaller vessels that do not have space for a hopper on the working deck should allow sharks to be separated from the catch on the main working deck. For larger vessels with hoppers, a hopper with a ramp extension is the safest, quickest, and most effective method for returning sharks to the sea (Murua et al. 2023; Poisson et al. 2014b).

BHRP Recommendations for sharks brought on board via brailing:

Do:
-Prioritize the release of sharks that are visible on top of the sack.
-Ensure sharks are sorted on the work deck and do not go down the loading hatch (i.e. require BRDs; hoppers, ramps).
-Maneuver sharks into a stretcher/cradle or ramp immediately and release it on the opposite side of the vessel from the net.
-In cases when the passage of sharks through the loading hatch can not be avoided, sharks should be released as quickly as possible (e.g. via a bycatch waste chute, or using stretchers).

Do not:
-Allow visible sharks to pass through the loading hatch.
-Use gaffs or hooks to maneuver sharks.
-Leave sharks abandoned on deck
-Hang sharks by the tail.
-Drag sharks across the deck by the tail.

Tools for BHRP in the purse seine fishery:

Required:
Stretcher or cradle.

Recommended:
Bycatch sorting devices for work deck/main deck (e.g., hopper with a door, ramp).
Bycatch/waste chute on lower/well deck.

2.1.4. Whale Sharks

Deliberate encirclement of whale sharks for the purposes of setting purse seine gear was banned in the IATTC in 2019 (Resolution C-19-06). However, incidental interactions do occur rarely when whale sharks are not sighted prior to commencement of the set. When incidental interactions happen, Resolution C-19-06 requires CPCs to ensure that all reasonable steps are taken to ensure its safe release. Resolution C-24-05 in paragraph 11.e states,

"prohibit the lifting of whale sharks (Rhincodon typus) onboard the vessel and prohibit the towing of whale sharks out of a purse-seine net, e.g., using towing ropes."

Here, we detail safe release practices based on the generally recognized practices developed by Poisson et al. (2014b) and existing PRS data validating the efficacy of these practices (Escalle et al. 2016 & 2017; Hutchinson et al. 2019).

BHRP Recommendations for whale sharks encircled by purse seines:

Do:

-Leave whale sharks in the water for release.

-Prioritize release of whale sharks prior to brailing or when the shark surfaces.

-If the whale shark is at the side of the vessel and its head pointed towards the stern of the boat, a crewmember can open the net and/or cut a few meters of net in front of the shark's mouth to release it.

-If the head of the whale shark is pointed towards the bow of the boat, the crew in charge of the net hauling operation can maneuver the winch and the capstan to bring the whale shark close to the hull, then stand the animal on the net and to roll it outside the sack corkline.

-A rope placed under the animal and attached to the float line could help to roll the whale shark out of the net.

-For small whale sharks the brailer may be used to push the animal up and over the purse seine net.

Do not:

-Land or bring a whale shark on board the purse seine vessel regardless of size.
- Start a brailing process if it endangers the survival of the whale shark.
-Pull or tow a whale shark by the tail or caudal peduncle.

2.2. Longline Fisheries (also applicable to other surface fleet fisheries)

Several studies have been conducted across ocean basins to assess shark bycatch PRS rates in longline fisheries (see review conducted in SAC-15-11). Several of these studies also analyzed the impacts of handling and release methods on PRS rates and provided guidance for BHRPs (e.g., Francis et al. 2023; Hutchinson et al. 2021). Throughout the available scientific literature, PRS rates were shown to be species-specific and dependent on the condition of the animal at capture, the handling and release methods used, the amount of trailing gear[2] left on the shark, and the gear composition (i.e., wire versus mono; Bowlby et al. 2020; Francis et al. 2023; Hutchinson et al. 2021; Musyl & Gillman 2018). The following BHRP guidance is based on these studies (conducted in commercial fishery settings alongside fishery personnel), as well as the content provided in response to Memorandums 0473-410 and 0610-410, discussions during the EBWG-2, SAC-15 and 102nd Commission meeting in 2024, the language that was agreed upon in Resolution C-24-05 and the feedback provided by subject matter experts and industry personnel.

2.2.1. Summary of data supporting the BHRP recommendations for hook and line fleets

Most PRS studies on sharks have shown that removing them from the water for gear removal reduces survival rates and increases time to recovery (Bowlby et al. 2020, Campana et al. 2016, Hutchinson et al., 2021). In some PRS studies, sharks that were left in the water for tagging and release from the fishing gear had lower mortality rates by 50% as opposed to sharks brought on board (Bowlby et al. 2020). In the Pacific Ocean two PRS studies on silky sharks in the industrial longline fleets showed higher survival rates for sharks tagged in the water (Francis et al. 2023; Hutchinson et al. 2021) than in studies where silky sharks were brought on board for tagging (Musyl & Gilman 2018). Leaving sharks in the water decreases

[2] Trailing gear is the fishing gear left on the animal after release. It includes the hook, where it is attached to the animal and any materials between the hook and where the line is cut. Trailing gear is often in excess of 20 m and may include weights in some fisheries (Hutchinson et al. 2021).

stress and air exposure but is particularly important for vessels with high freeboard[3], where the difficulty of lifting sharks to the deck is often mediated using multiple gaffs. This not only adds physical trauma to the animal but often gaff wounds penetrate organs and can cause lethal and sublethal injuries. While two studies conducted in small-scale longline fisheries where vessels are smaller and the freeboard height is lower, found high survival rates for sharks brought on board for tagging and removal of fishing gear (Schaeffer et al. 2019 & 2021). In these studies fishers developed a safe method to bring sharks onboard for tagging and gear removal using a lasso (gaffs were not used), and most animals survived, even with the additional handling and air exposure on deck.

Studies have also shown that the amount of trailing gear left on an animal has a negative effect on post-release survival for multiple species (Francis et al. 2023; Hutchinson et al. 2021) and is correlated with high delayed mortality rates of blue sharks (*Prionace glauca*), bigeye thresher sharks (*Alopias superciliosus*), silky (*C. falciformis)*, oceanic whitetip (*C. longimanus*) and shortfin mako (*Isurus oxyrhincus*) sharks (Hutchinson et al. 2021). Large quantities of trailing gear is not only energetically costly for the animal, but may also introduce infection, present an entanglement hazard, and increase susceptibility to predation (reviewed in Hutchinson et al. 2021). Bringing sharks to the side of the vessel for gear removal will not only improve post release survival probabilities but will also facilitate accurate identification to species and aid in the determination of condition (alive, injured, dead), key information to improve assessment capabilities, efficacy of mitigation measures and data quality of observer and electronic monitoring programs. If fishers remove as much trailing gear as possible, ideally leaving less than 1 meter, survivorship can be improved by as much as 40% (Francis et al. 2023; Hutchinson et al. 2021).

BHRP guidance for longline fisheries (both industrial and small-scale) are similar and applicable to other hook and line fisheries. The guidance is simple, sharks should be left in the water and the gear cut away from the animals, leaving no more than 1 meter of trailing gear and ensuring that any weights are removed. Across EPO longline fisheries there are vast differences in vessel characteristics and fishing strategies as well handling and release practices. Generally sharks captured in the industrial tuna fleets are released while still in the water by cutting the line as soon as it is determined it is a shark on the line. However, the small scale fleets fishers often board sharks to retain their gear and hooks. With this generalization in mind, SAC-15-11 separated the BHRP guidance by vessel freeboard height to accommodate the typical *modus operandi* of the disparate longline fleets using a demarcation of 2 meters of freeboard – to reduce and or mitigate the injuries that inevitably occur whilst animals are being hoisted onboard.

In this iteration of the shark BHRP development it has been suggested that it may not be necessary to separate the BHRP guidance by freeboard height but instead to provide guidance for those situations when sharks are left in the water for gear removal as well as when sharks are brought onboard, and these are reflected below. If it is the preference of CPCs to keep the BHRP guidance separated by vessel height, the staff is recommending that the vessel height be changed from a delineation of 2 meters of freeboard to 1 meter of freeboard. The rationale is to keep BHRP recommendations relatively consistent across taxa (i.e. vessel height and tool recommendations for all vulnerable and non-target species). More importantly, a freeboard height of 1 meter determines whether or not fishers are able to reach the water level and bycatch manually as opposed to requiring tools to bring bycatch onboard for gear removal. Anything higher than 1 meter will require nets, or alternative tools, to bring animals onboard.

[3] Freeboard refers to the distance between the waterline and the main deck of a ship and the waterline to the rail of a small boat.

BHRP Recommendations:

The BHRP guidance below are data driven, robust recommendations with measurable impacts on shark mortality reduction in longline fisheries as well as safe, practical and easily implementable in fishery settings. When incidental sharks are captured in IATTC longline fisheries, sharks should be left in the water for release from the gear. The vessel should slow to safely bring the shark close to the vessel for identification, assessment of condition (when data collection is required) and to remove the animal from the fishing gear. When the hook is visible, fishers shall remove the hook safely without damaging the jaw. If the hook is not visible (i.e., swallowed) attempts to retrieve/remove the hook must be avoided. When hooks are not removed fishers shall cut the line as close to the hook (or mouth) as possible, using a long-handed cutter if necessary, leaving no more than 1 meter of trailing gear and ensuring any weights or other terminal tackle are removed.

Many fishers may wish to remove the hooks from sharks to retrieve their gear. Often this requires fishers to hoist sharks onboard for gear removal. In these cases, fishers should use a net or lasso to lift sharks onboard because the soft cartilaginous bony tissues of sharks are not robust to the lifting forces under the weight of the body in air. If the hook is not visible, fishers shall not attempt to remove the hook or lift the shark onboard using the line attached to the hook. If the hook is clearly visible, fishers should use a de-hooker or pliers to remove the hook. Fishers shall not cut into the jaw or damage the jaw during hook removal. Fishers should also take care to reduce the amount of time sharks are exposed to air on deck during gear removal and return animals to the sea promptly.

Handling sharks on deck is dangerous. To reduce the risk of injury to the crew and to the sharks brought on board, fishers should carry and utilize stretchers/cradles.. To manually restrain sharks, fishers should maneuver sharks by the pectoral fins and caudal peduncle (for large sharks, two crew members are required for safe manual restraint of a shark on deck: one on the pectoral or dorsal fins and one on the caudal peduncle; small sharks can be manually restrained by one person). Placing a wet cloth over the eyes of sharks also calms them for easier and safer handling.

When removing sharks from fishing gear, fishers should endeavor to reduce harm to incidental sharks destined for release. Thus several practices must be avoided including: i) do not use 'lazy' or 'drag[4]' lines to drag sharks behind vessels, ii) do not use electrified prods to stun or electrocute sharks, iii) do not lift or maneuver sharks by the gill slits, or spiracles, iv) do not punch holes in the bodies of sharks (e.g., to pass a cable through or for lifting or manipulating the shark with a gaff), v) do not damage the jaw during hook removal, vi) do not leave sharks on deck exposed to sun and air, and vii) release them immediately.

[4] Lazy/drag lines are lines attached to the vessel that the branchlines/gangions with sharks on them are attached to – to allow the sharks to die on the line before removing from the gear.

BHRP Recommendations for incidental sharks captured in longline fisheries

Do:

-Slow the vessel and line hauling rate (if applicable) to bring the shark alongside the vessel for identification and removal of gear.

- Avoid bringing sharks on board for gear removal, if possible.

oIf attempting to remove hooks, use pliers or dehookers or long-handled de-hookers for vessels with high freeboards (i.e. > 1 meter).

oWhen hooks are not removed, use line cutters to cut the line as close to the hook or mouth as possible leaving no more than 1 meter of gear attached to the animal and ensuring that weights are removed.

-If sharks are brought on board for gear removal:

oUse a net, lasso or second point of attachment to help lift them onboard

oManeuver shark using manual restraint of the pectoral fins and the caudal peduncle (this may require two crew members depending on the size of the animals)

oUse a stretcher or cradle for handling and restraint for the safety of the crew and to reduce injury to the animal.

-Return the animals to the sea as quickly as possible.

Do not:
-Use drag or lazy lines or drag sharks behind the vessel until the hook rips free of the jaw or until the animal is easier to handle.
-Electrocute or stun sharks.
-Lift sharks onboard without a net or second point of attachment to support the weight of the animal, noting it is not recommended to lift sharks onboard the vessel.
-Attempt to remove a hook from a live shark if the hook is not visible.
-Cut into or damage the jaw to remove hooks.
-Lift or maneuver sharks by the gill slits, or spiracles.
-Insert gaffs, hooks, or similar instruments into the bodies of live sharks.
-Lift and drop sharks from the vessel height to rip the hook from the shark's jaw.

Tools:

Required
Net
Pliers
Short handled de-hooker
Long-handled de-hooker (equal or greater in length than the vessel's freeboard)
Line cutter- capable of cutting through all lines used in the gear
Long-handled line cutter (equal or greater in length than the vessel's freeboard)
Wire/bolt cutter capable of cutting all hooks used on the vessel

Recommended
Stretcher/cradle

2.3. Gillnet

The gillnet fisheries across IATTC are typically coastal, small-scale, seasonal, mixed target and mixed gear fisheries and sharks captured using this gear are often retained (SAC-11-13). For those that may be released either because of low market value or retention prohibitions there is limited information available on the at-vessel condition and their PRS rates (Bach, 2019). In the few existing studies, PRS rates appear to be species-specific and depend on the soak time of the gear and when the individuals become entangled (see review by Ellis et al. 2016). Most studies of commercial gillnet catch composition show high at vessel mortality rates for elasmobranchs, with particularly high mortality rates for species from the family Sphyrnidae: 62%- 98.3% (Reid & Krogh, 1992, Braccini et al., 2012). In scientific gillnet studies, soak times were shorter, and at-vessel mortality rates were correspondingly lower for Sphyrnidae: 30.8%-71.5% (Hueter et al., 2006; Manire et al., 2001; Thorpe and Frierson, 2009). At-vessel mortality rates will help us infer how effective a no-retention measure and concomitant BHRP guidelines may be for sharks captured in this fishery. Thus, data on interactions and condition are needed for this fishery.

Presently, and in the absence of detailed data and subsequent analysis, the IATTC staff can offer only general and common-sense BHRP guidance for sharks captured in gillnet fisheries that will not be retained and thus released. The following practices may help improve PRS for sharks that are alive when released from gillnets.

BHRP Recommendations for Gillnet Fisheries:

Do:
Prioritize release of live non-retained sharks. Leave sharks in the water for gear removal. Carefully cut the net away from the animal, allowing it to swim away from the gear. Ensure the weight of the net below the entangled animal is supported during gear removal.

Tools Required:

Line cutter capable of cutting through all materials used in the gillnet.

3. ADDITIONAL CONSIDERATIONS FOR THE UPDATED SHARK BHRP GUIDELINES

3.1. Structure and format

The staff strongly believes that using the 'Do' and 'Do not' subheadings in the guidance is the best option, as this is consistent with other RFMO formats, BHRP guidelines already widely in use (e.g., Poisson et al. 2014) and ease in the generation of graphics for training materials for use across the Pacific Ocean basin. The 'Do' or 'Do not' guidance will also improve accuracy in interpretation for enforcement agencies.

Throughout Annex 3 of Resolution C-24-05 sometimes the 'Should' guidance comes first while in other sections the 'Should not' comes first. The staff suggests that the do or do not recommendations, or should and should not, whatever the commission agrees upon, ought to also decide which is described first to improve consistency and flow of the document and reduce opportunities for confusion of the recommended practices and those that are discouraged as noted in Tables A2 and A3 of the Appendix.

3.2. Training

For BHRPs to be an effective vulnerable species mortality mitigation tool they must be integrated into normal fishing operations. Thus, it is imperative that fishers are made aware of the approved practices and trained in their correct implementation and usage. Accordingly, fishers must also be made aware of practices that are banned and or practices that must be avoided. Several IATTC Resolutions (C-04-05 Rev

2, C-04-07 [C], C-19-04; C-24-05) call for training of fishers on BHRPs. Resolution C-04-05 Rev 2 [8.b. & c.] requests the IATTC staff to '*educate fishermen through information dissemination activities, including distributing informational materials and organizing seminars on, inter alia, reducing bycatches of sea turtles and safe handling of incidentally caught sea turtles to improve their survivability*'. Resolution C-24-05 Annex 3 also states, '*To maximize the efficacy and utility of adopted BHRPs, CPCs should ensure crew are educated and trained by qualified staff on these practices regularly. Illustrated best handling and release practice guidelines should be available on the vessels.'*

To address these requirements, we propose that the IATTC staff generate outreach, education, and training materials. This will include the creation of infographics to accompany adopted practices and the formulation of BHRP guideline 'posters' that can be posted visibly on all vessels in areas where crew are able to review them for all vulnerable taxa in all fisheries (where appropriate). The material could also be posted on the IATTC website, under an specific BHRPs section. The timeline for development of these materials is proposed to begin immediately after the adoption of official BHRP guidelines. The timeframe for content creation is estimated to be one year from BHRP guideline adoption to posting and circulation, provided that funds are made available. Training of the fishing crew and fishing authorities and fishing organizations will need to be continuous, with updated training material created as needed. IATTC staff could support CPCs with training by creating training materials and by supporting, coordinating, (co)organizing and participating in training workshops and courses, as required. These workshops are also an excellent opportunity to learn directly from fishers and industry representatives on potential techniques and strategies for either mitigating interactions or devising new BHRPs. This activity will require a dedicated budget for infographics, content creation and the organization and delivery of training workshops.

4. PURSE SEINE SKIPPER SURVEYS

A total of 208 skippers participated in the 2025 Skipper Survey. The survey covered a wide range of topics of interest to the Commission and the Scientific Advisory Committee (SAC), in line with SAC-15 recommendations. These included biodegradable FADs, fishing strategy changes, and best handling and release practices (BHRP) for vulnerable taxa. This document reports on the results relevant to bycatch mitigation and BHRP (Table 1; see SAC-16-INF-S for results related to other survey topics).

Participants were asked whether they had received training in BHRP for vulnerable species. A majority (92%) indicated that they had, while 6% had not but expressed interest in receiving such training. When asked which species their BHRP training had covered, 90% of respondents reported training on sharks, over 80% on sea turtles and manta rays, 50% on whale release, and 22% on seabird handling.

Given the potential of bycatch release devices (BRDs)—such as stretchers, grids, hoppers, and ramps—to improve post-release survival (PRS) of sharks and other non-target species, the survey included questions on their use. Thirty-eight percent of respondents reported that BRDs were used on their vessels 100% of the time, 32% used them more than half the time, and only 2% indicated they never used them due to not having them onboard. When asked about the most effective strategy for releasing large animals on deck, 58% of fishers identified stretchers, 34% preferred ramps, and 22% favored hoppers. These responses suggest that many skippers have positive experiences using BRDs and find them helpful in facilitating rapid release. The survey also addressed the perceived feasibility of selectively removing large sharks or rays from the surface of the sack. Thirty-six percent of respondents said this was possible most of the time, 32% said it was never possible, and another 32% believed it was possible sometimes.

Fishers' perspectives on the most effective stage of the operation to reduce mortality were also explored. Sixty percent indicated that the best time to reduce mortality was before the set, reinforcing the idea that avoidance remains a preferred strategy. A third of respondents identified the set itself as the most effective stage, while only 8% believed post-set measures were most effective for reducing shark mortality.

When asked about the most effective measure to reduce shark interaction rates, 54% suggested technologies that could discriminate species before the set. Other suggestions included shark catch limits (20%), improved communication systems (12%), prediction maps for shark hotspots (8%), and shark retention requirements (6%).

Overall, the survey results demonstrate a strong interest among skippers in reducing interactions with and mortality of sharks and other vulnerable species. Notably, many skippers identified pre-set decision-making as key to avoiding such interactions. These findings underscore the value of understanding skipper attitudes and perspectives, which can inform the development and testing of more effective mitigation strategies. It was also encouraging to learn that the majority of skippers had received BHRP training and showed openness to continued education and tool development.

TABLE 1. Skipper survey questions and answers. For each question the number of respondents is noted and the proportion of those responding for each answer.

Preguntas/Questions	**# de respuestas # of Responses**	**% de respuestas % of Responses**
¿Ha recibido capacitación sobre mejores prácticas de manipulación y liberación de especies vulnerables como tiburones, mantas, tortugas, aves marinas? *Have you received training in best practices for handling and releasing vulnerable species such as sharks, manta rays, turtles, and seabirds?*		
Sí/Yes	180	92%
No, pero me gustaría/No, but I would like to	10	6%
No	4	2%
¿Conoce las mejores prácticas de manipulación y liberación para los grupos mencionados abajo? Seleccione todas las que crea necesarias. *Do you know the best handling and release practices for the groups mentioned below? Select all that you consider necessary.*		
Mantarrayas/Manta rays	170	82%
Ballenas/Whales	102	50%
Aves marinas/Seabirds	47	22%

TABLE 1. Skipper survey questions and answers. For each question the number of respondents is noted and the proportion of those responding for each answer.

Preguntas/Questions	**# de respuestas # of Responses**	**% de respuestas % of Responses**
Todas las especies vulnerables/All vulnerable species	1	0%
Tiburón ballena/Whale sharks	1	0%
¿Cuántas veces se usan los dispositivos de liberación de captura incidental en su embarcación? Por ejemplo, camillas, rampas, tolvas, etc. *How often are bycatch release devices used on your vessel?*		
100% de las veces	69	38%
75-95% de las veces	37	20%
10% de las veces	21	12%
50-75% de las veces	21	12%
25-50% de las veces	19	10%
10-25% de las veces	11	6%
Nunca, no tenemos/ Never, we don't have them	4	2%
¿Cuál cree que sería el mejor momento para reducir la mortalidad de las especies vulnerables? *What do you think would be the best time to reduce the mortality of vulnerable species?*		
Antes del lance	100	60%
Durante el lance	54	32%
Después del lance	12	8%
No tengo respuesta	1	0%
¿Cuál piensa usted que es la mejor alternativa para liberar animales grandes en cubierta? *What do you think is the best bycatch reduction device for releasing large animals on deck?*		
Camilla/Stretcher	122	58%
Rampa desde parque de pesca o cubierta/Ramp on the main deck or the wet deck	69	34%
Canaleta, tolva / Chute, Hopper	47	22%

TABLE 1. Skipper survey questions and answers. For each question the number of respondents is noted and the proportion of those responding for each answer.

Preguntas/Questions	**# de respuestas # of Responses**	**% de respuestas % of Responses**
Salabardo modificado/Modified brailer	34	16%
La Sarria/	24	12%
Depende de qué animal se trate/Depends on the animal	2	0%
Cuando se captura una manta o tiburon grande y está en la superficie, ¿es posible liberarla directamente desde la bolsa? *When a large manta or shark is caught and is on the surface, is it possible to release it directly from the sack?*		
Sí, la mayoría de las veces/Yes, most of the time	65	36%
A veces/Sometimes	58	32%
No, nunca/No, never	57	32%
Con el salabado/With the brailer	1	0%
En su opinión, ¿qué medida sería más efectiva para reducir la interacción y captura de tiburones? *In your opinion, what measure would be most effective in reducing shark interaction and capture?*		
Tecnologías que ayuden a su discriminacion antes del lance/ Technologies that help discriminate before the launch	77	54%
Límites de captura de tiburones/ Shark catch limits	27	20%
Sistema de comunicación en tiempo real, p. ej., entre la flota y el helicóptero, etc./Real-time	16	12%

TABLE 1. Skipper survey questions and answers. For each question the number of respondents is noted and the proportion of those responding for each answer.

Preguntas/Questions	# de respuestas # of Responses	% de respuestas % of Responses
communication system e.g. between the fleet and the helicopter, etc.		
Mapas de predicción de tiburones/ Shark prediction maps	12	8%
Obligación de retención de tiburones/Shark retention obligation	9	6%
Comunicación desde la cofa/ Communication from the top	1	0%

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7. APPENDIX

7.1. Shark Best Handling and Release Practice Guidelines for all Fisheries

In the following sections, recommendations for updating the shark BHRP text in C-24-05, both in the body of the Resolution [mandatory provision] and Annex 3 and 3.1 [voluntary provisions], are provided for CPC consideration. Based on the language in paragraph 12, the comments and amended text recommendations provided by the staff are inline with the intent for all BHRP guidelines in C-24-05 to be improved. The updated and recommended BHRP text, outlined above, is listed below in two formats as requested by some CPCs. In section 7.1.1 Tables are provided to ease comparisons across what is already in the Resolution (column 1) to what updates are suggested (column 2), along with the rationale for the suggested changes (column 3). In section 7.1.2 The recommended updates to the text of Annex 3 and 3.1 are provided as a redlined version of Annex 3 and 3.1 as requested by some CPCs.

7.1.1. Shark BHRP Comparison Tables.

The following section contains three tables which provide comparisons of the Resolution BHRP text (first column) to the updated staff's recommendations (second column) and the rational and justifications for the suggested revisions by the staff (third column). Table A.1 reviews the language adopted in Paragraph 11 within the Resolution. Table A.2 reviews the full suite of BHRP guidelines that were adopted in Annex 3 of the Resolution. Table A.3 reviews the list of recommended tools for each fishery.

Table A.1. Comparisons of the shark BHRP recommendations adopted in the body of Resolution C-24-05 (column 1) to the updated staff's recommendations from this document (column 2). If changes or updates to the text are recommended, these are identified and the rationale behind the suggested changes are provided in column 3.

Language in Resolution C-24-05	Recommended updates	IATTC staff rational
HANDLING and RELEASE		
All fisheries		
Paragraph 11. CPCs shall require their vessels to promptly release unharmed all sharks (alive or dead) that are not retained, the extent practicable [sic], as soon as they are seen on the line, entangled in the net, or brailed on the deck, taking due consideration the safety of any person on board, using the following procedures.	CPCs shall require their vessels to promptly release unharmed all sharks (alive or dead) that are not retained, to the extent practicable, as soon as they are seen on the line, entangled in the net, or brailed on the deck, taking due consideration for the safety of any person on board, using the following procedures.	Minor changes to improve language
For purse seine vessels:		
a. when seen entangled in the net, disentangle the sharks and release them into the ocean as soon as possible.	**a.** when seen entangled in the net, disentangle the sharks and release them into the ocean as soon as possible. Do not allow sharks to go through the power block.	The addition of the following text is recommended here: 'Do not allow sharks to go through the power block'. EBWG-2 and SAC-14 recommended identifying and banning harmful practices. Rolling sharks through the block is considered a harmful and deadly practice and those that do go through block alive do not survive.
b. sharks brailed on deck must be returned to the water as soon as possible, either utilizing a ramp from the deck connecting to an opening on the side of the vessel, or through escape hatches. If ramps or escape hatches are not	**b.** sharks brailed on deck must be returned to the water as soon as possible, either utilizing a ramp from the deck connecting to an opening on the side of the vessel, or through escape hatches. If ramps or escape hatches are not	*'If ramps or escape hatches are not available, the sharks must be lowered with a sling or cargo net, using a crane or similar equipment'* The above requirement in the Resolution text is not practical and realistic operationally. A

available, the sharks must be lowered with a sling or cargo net, using a crane or similar equipment, or as indicated in Annex 3 or any future revisions, as identified pursuant to paragraph 12.	available, the sharks must be released as indicated in Annex 3 or any future revisions, as identified pursuant to paragraph 12.	potential amendment to this text is provided in column 2 and removes the requirement to 'lower sharks with a sling or cargo net using a crane'
c. prohibit the use of gaffs, hooks, or similar instruments for the handling of sharks.	**c.** prohibit the use of gaffs, hooks, or similar instruments for the handling of sharks.	
d. prohibit the lifting of sharks by the head, tail, gill slits, or spiracles, or by using bind wire against or inserted through the body. Prohibit the punching of holes through the bodies of sharks (e.g., to pass a cable through for lifting the shark).	**d.** prohibit the lifting of sharks by the head, tail, gill slits, or spiracles, or by using bind wire against or inserted through the body. Prohibit the punching of holes through the bodies of sharks (e.g., to pass a cable through for lifting the shark).	
e. Prohibit the lifting of whale sharks (*Rhincodon typus)* onboard the vessel and prohibit the towing of whale sharks out of a purse-seine net, e.g., using towing ropes.	**e.** Prohibit the lifting of whale sharks (*Rhincodon typus)* onboard the vessel and prohibit the towing of whale sharks out of a purse-seine net, e.g., using towing ropes.	
<u>For longline vessels:</u>		
f. leave the shark in the water, where possible.	**f.** leave the shark in the water for gear removal, where possible. Do not use drag or lazy lines.	Several CPCs have suggested adding a ban to drag and lazy lines. As noted above this is a practice whereby branchlines with sharks on them are attached to a line at the side or stern of the vessel-and left on the line until the hook rips out, the animal dies and or is easier to handle or the vessel slows and allocates time to removing the shark from the gear. Studies show that this practice negatively impacts PRS rates. We suggest the following addition here, 'Do not use drag or lazy lines'.
g. use a line cutter to cut the branchline as close to the hook as possible, and so that less than 1 meter remains on the animal, to the extent practicable.	**g.** use a line cutter to cut the branchline as close to the hook as possible, and so that less than 1 meter remains on the animal, to the extent practicable.	

	h. if attempting to remove hooks, do not damage the jaw.	Some fleet segments use a practice where they rip the whole jaw out or cut into the jaw when removing hooks. Thus, the inclusion of a statement deterring these injurious practices is warranted. Example text is provided in column 2 for consideration.

Table A.2. Comparisons of the shark BHRP recommendations adopted in C-24-05 Annex 3 (column 1), to the updated staff's recommendations (column 2) and the rationale behind the suggested changes (column 3).

Resolution C-24-05 Annex 3 Shark BHRP Text	**Recommended Shark BHRP Text**	**IATTC Staff Rational**
<u>All Fisheries</u>		
SHOULD:	***Do:***	
Release the shark in the water, if possible	Release sharks from fishing gear while they are still in the water, if possible	If the intention is to suggest that sharks should be left in the water for gear removal, slight changes to the text are suggested in column 2.
Encourage the immediate release of sharks	Encourage the immediate release of sharks	
SHOULD NOT:	***Do Not:***	
Attach sharks to vessel and drag while vessel operations are underway		This situation doesn't apply in purse seine fisheries, and should be moved to the hook and line fisheries (longline, pole and line) section.
Hit or kick the shark	Hit or kick the shark	
Leave sharks laying on the deck, exposed to sun or air, except to the extent necessary to carry out these practices	Leave sharks laying on the deck, exposed to sun or air, except to the extent necessary to carry out these practices	
Insert hands into gill slits.	Insert hands into gill slits.	
	Use gaffs or hooks or similar instruments to manipulate or maneuver sharks	A statement banning the use of harmful tools like gaffs or similar instruments to maneuver sharks is recommended for comprehensiveness in the Annex. Potential text is provided in Column 2. If redundancy (similar text in the Resolution and the Annex)

Resolution C-24-05 Annex 3 Shark BHRP Text	Recommended Shark BHRP Text	IATTC Staff Rational
		confuses the mandatory nature of some guidelines please disregard this and the following recommendations.
	Lift sharks by the head, tail, gill slits, or spiracles, or by using binding materials against or inserted through the body	This is in the body of the Resolution (in the purse seine section – but applies across fisheries), recommend to add it here for comprehensiveness
<u>Purse Seine Fisheries</u>		
SHOULD NOT:		Ideally there is consistency to which comes first, 'Do' / 'Should' or 'Do not' / 'Should not'. Above the 'Should' section is first and here 'Should not' is first.
Roll sharks through the power block		In the Recommended text (column 2) this statement is included below in the 'Do not' section.
<u>For sharks entangled in the net:</u>		
SHOULD:	***Do:***	
	Drop the net so the entangled shark is lowered to the deck to allow the crew to safely cut the net away from the animal.	Dropping the net ensures that net operators are conscientious of their role in the safety of the crew when removing entangled sharks. Crew members may be injured while removing sharks from the net directly, particularly when the animal and the entanglement location is above the head of the crew member. Some suggested text to this point is provided in column 2.
Release the shark from the net, always preventing it from ascending to the power block		May not be necessary if the above text is adopted and the ban on rolling sharks through the power block also remains in tact.
Maneuver the animal into a stretcher/cradle or ramp and release it on the opposite side of the vessel.	Maneuver the animal into a stretcher/cradle or ramp immediately and take them to the opposite side of the vessel from the net for release.	Recommended edits that improve clarity and accuracy.

Resolution C-24-05 Annex 3 Shark BHRP Text	Recommended Shark BHRP Text	IATTC Staff Rational
	Do not:	This section is moved to here and below the 'Do' section for consistency with format in other sections.
	Roll sharks through the power block.	Taken from the 'should not' section above and moved here.
	Hang sharks by the tail.	
	Drag sharks across the deck by the tail.	
	<u>When brailing sharks on board:</u>	
SHOULD:	***Do:***	
	Prioritize the release of sharks that are visible on top of the sack.	Sharks that are on the top of the sack have higher survival rates than those that are deeper in the sack. Prioritizing their release during brailing operations will help improve post release survival. Some suggested text is recommended for addition in this section in column 2.
According to the vessel's conditions, to the extent possible, use bycatch reduction devices (BRDs; e.g., hoppers or ramps) to ensure sharks are sorted on the main deck and do not go down the loading hatch.	Ensure sharks are sorted on the main/work deck and do not go down the loading hatch (According to the vessel's conditions, to the extent possible, use bycatch reduction devices, e.g., hoppers with doors and ramps)	Studies show that survival is further compromised if they are released from the well/wet decks versus the main/working deck. The suggested edited text in column 2 reflects the desire to disallow sharks from going down the chutes, if that was the intention. Additionally, ramps are easier to implement if there is also a hopper with a door. Therefore, when referencing a ramp the text should read, 'hoppers and ramps'.
Release the shark as soon as possible. The recommended practice is to remove the shark from the brailer, hopper or ramps by grabbing it, without suspending it, by the caudal peduncle to place it on deck. This	Release the shark as soon as possible.	This statement requires amending as it is inaccurate in its present form. If the intended practice is to release sharks as soon as possible, fishers should not remove the sharks from the ramp nor should they be placed on deck. The recommended handling practice below is more accurate, so the staff

Resolution C-24-05 Annex 3 Shark BHRP Text	Recommended Shark BHRP Text	IATTC Staff Rational
should be done manually whenever possible.		recommends deleting the last two sentences as reflected in column 2, or the whole point altogether and edit the text in the next point to help elucidate the preferred points of contact with sharks.
Maneuver sharks into a stretcher/cradle or ramp immediately when possible and release it on the opposite side of the vessel from the net.	Maneuver sharks into a stretcher/cradle or ramp immediately, by grabbing it, without suspending it, by the caudal peduncle and pectoral fins, and release it on the opposite side of the vessel from the net.	Here we have provided some additional text to reflect the preferred points of contact on a shark as noted above, providing accurate guidance on preferred handling practices.
Consider the use of a bycatch/waste ramp on the lower decks to facilitate fast and safe release of sharks that were not sighted on the main/working deck.	In cases when the passage of sharks through the loading hatch can not be avoided, sharks should be released as quickly as possible (e.g. via a bycatch waste chute, or using stretchers).	If the intention is to ensure sharks are released as quickly as possible from the lower decks, the edits in column 2 more accurately reflect this for vessels that can accommodate a bycatch/waste chute.
	Do not:	
	Allow sharks to pass through the loading hatch	Studies show very low survival rates for sharks that go down the chutes and are released from the lower/well decks. Ensuring that this practice is discouraged is important to maximize PRS of sharks and thus, the staff added some suggested text here for consideration.
	Do not hang sharks by the tail using a rope	Because of their cartilogenous skeleton, sharks are sensitive to tail pulls, and may die as a consequence of these practices. This is a fairly common practice and should be avoided.
	Do not drag sharks across the deck by the tail	This is a fairly common practice and should be avoided. It increases bite risks for crew members and is injurious to sharks.
<u>Whale sharks captured in purse seine fisheries</u>		
SHOULD:	***Do:***	
Leave whale sharks in the water for release.	Leave whale sharks in the water for release.	

Resolution C-24-05 Annex 3 Shark BHRP Text	Recommended Shark BHRP Text	IATTC Staff Rational
Release of [sic] whale sharks prior to brailing.	Release whale sharks prior to brailing.	
If the whale shark is at the side of the vessel and its head is pointed towards the stern of the vessel, the shark should be released (by opening or cutting the net in front of the sharks mouth)	If the whale shark is at the side of the vessel and its head is pointed towards the stern of the vessel, the shark should be released by opening the net or cutting the net in front of the sharks mouth.	Improved edits to the grammar in column 2 for consideration.
If the head of the whale shark is pointed towards the bow of the boat, the crew in charge of the net hauling operation can maneuver the winch and the capstan to bring the whale shark close to the hull, then stand the animal on the net and roll it outside the bunt.	If the head of the whale shark is pointed towards the bow of the boat, the crew in charge of the net hauling operation can maneuver the winch and the capstan to bring the whale shark close to the hull, then stand the animal on the net and roll it outside the bunt.	
	For small whale sharks (< 3 m) the brailer may be used to push the animal up and over the purse seine net.	Per some SMEs this simple practice is used for very small whale sharks in other RFMOs, and shown to be practical and efficient.
SHOULD NOT:	***Do not:***	
Land a whale shark on deck regardless of size.	Land a whale shark on deck regardless of size.	
Start a brailing process if it endangers the survival of the whale shark.	Start a brailing process if it endangers the survival of the whale shark.	
Pull or drag whale sharks out of the net by the tail or caudal peduncle	Pull or drag whale sharks out of the net by the tail or caudal peduncle.	
<u>Longline Fisheries (also applicable to other hook and line fisheries)</u>		
For sharks caught by high freeboard vessels (> 2 m):		The updated BHRP guidelines in this section apply to all vessel sizes. So it is no longer necessary to sort the guidance by freeboard height. If the preference is to retain different guidance by freeboard height,

Resolution C-24-05 Annex 3 Shark BHRP Text	Recommended Shark BHRP Text	IATTC Staff Rational
		the staff recommends changing the height from 2 meters to 1 meter. 1 meter is used in the BHRP guidelines for other taxa and also reflects a height where a fisher will be able to reach the waterline from the deck without any tools to bring vulnerable bycatch species on board for gear removal.
SHOULD:	***Do:***	
Slow the vessel to bring the sharks alongside for identification and removal of gear.	Slow the vessel and line hauling rate (if applicable) to bring the sharks alongside for identification and removal of gear.	On vessels with winch operated longlines, slowing the line hauling rate reduces the risk of injury to the crew (from fly-backs) and the animals. Some recommended text addressing this is provided for consideration in column 2.
Avoid removing hooks from sharks. If attempting to remove hooks use long-handled de-hookers for vessels with high freeboards.		Directing fishers not to remove hooks is contraindicated, it is suggested this recommendation be removed. Gear removal is recommended, but ensuring/prioritizing the shark remains in the water. The second component of this recommendation is retained in column 2, in the next row and the recommendations for tools required for hook removal are updated.
	Leave sharks in the water for gear removal, if possible. o If attempting to remove hooks, use pliers or dehookers, or long-handled de-hookers for vessels with high freeboards (i.e. > 1 meter) o When hooks are not removed, use line cutters to cut the line as close to the hook or mouth as possible, leaving no more than 1 meter of gear attached to the animal and ensuring that weights are removed.	Taken from below and moved here to follow the natural progression of the operation, with updates to the text for consideration. The intention here is to give guidance for gear removal when sharks remain in the water for vessels of all sizes.

Resolution C-24-05 Annex 3 Shark BHRP Text	Recommended Shark BHRP Text	IATTC Staff Rational
To the extent practicable, ensure that weights are removed, when cutting the line		If the intention here is to ensure that as much trailing gear is removed as possible, we provided some updated text that complies with the text in the main body of the resolution and more comprehensively addressed this as a sub-bullet, in the second point above.
Avoid bringing sharks on board for gear removal if possible. If sharks are brought on board for gear removal: o Use a net or lasso to help lift them onboard o Use a stretcher or cradle for handling and restraint for the safety of the crew and to reduce injury to the animal. o Maneuver shark using manual restraint of the pectoral fins and the caudal peduncle (this may require two crew members depending on the size of the animals)	If sharks are brought on board for gear removal: o Use a net or lasso to help lift them onboard o Use a stretcher or cradle for handling and restraint for the safety of the crew and to reduce injury to the animal. o Maneuver shark using manual restraint of the pectoral fins and the caudal peduncle (this may require two crew members depending on the size of the animals). o Return the animals to the sea as quickly as possible.	The edits provided for consideration here, are intended to clarify the guidance for situations when sharks are brought onboard and broadly apply to all vessel sizes, with an additional point to return sharks to the sea as quickly as possible.
Should not:	***Do not:***	
Drag sharks behind the vessel until the hook rips free of the jaw.	Use drag lines or lazy lines or drag sharks behind the vessel until the hook rips free of the jaw or until the animal is easier to handle.	Some updates to the text are provided here for accuracy and comprehensiveness. This point was moved from the 'All Fisheries' section and is more appropriate to list here, as these are never employed in purse seine fisheries.
	Electrocute or stun sharks prior to handling and release.	Some fleets use metal prods to electrocute and stun sharks into submission prior to handling – there is no evidence that suggests these animals survive post release so it is recommended that this practice be banned for sharks that are not retained.

Resolution C-24-05 Annex 3 Shark BHRP Text	Recommended Shark BHRP Text	IATTC Staff Rational
Lift sharks onboard without the use of a dipnet and or second point of attachment to support the weight of the animal, noting it is not recommended to lift sharks onboard the vessel.	Lift sharks onboard without the use of a net and or second point of attachment to support the weight of the animal, noting it is not recommended to lift sharks onboard the vessel.	It is suggested to remove the word 'dip' prior to 'net', as many vessels don't carry dipnets but do have netting that can meet this need.
Attempt to remove a hook from a live shark if the hook is not visible.	Attempt to remove a hook from a live shark if the hook is not visible.	
Insert gaffs, hooks, or similar instruments into the bodies of live sharks	Insert gaffs, hooks, or similar instruments into the bodies of live sharks	
Cut into the jaw for removal of the hook	Cut into or damage the jaw to remove hooks.	In some longline fisheries the whole jaw is ripped out to remove the hooks. Here we added some text for consideration to address this harmful practice.
Lift sharks onto the deck if possible	Lift sharks onto the deck if possible	May not be necessary if the above points are retained.
	Lift or maneuver sharks by the gill slits, or spiracles.	Manipulation by the respiratory apparatus is injurious and is a common practice that should be avoided.
	Lift and drop sharks from the vessel height on vessels with high freeboards (> 1m) to rip the hook from the shark's jaw.	This practice is used in some industrial fleets. This additional text is provided here for consideration of inclusion and to address this harmful practice.
Gillnet Fisheries		
	Do:	There is no specified guidance for gillnet fisheries in C-24-05. Below we added some text for consideration. There is no need for a 'Do not' section as all the relevant practices are covered in the all fisheries section.
	Prioritize the release of live non-retained sharks.	
	Leave sharks in the water for gear removal, where possible.	

Resolution C-24-05 Annex 3 Shark BHRP Text	Recommended Shark BHRP Text	IATTC Staff Rational
	Carefully cut the net away from the animal, allowing it to swim away from the gear.	
	Ensure the weight of the net below the entangled animal is supported during gear removal.	

Table A.3 Recommended tools for shark best handling and release practices across IATTC fisheries.

Resolution C-24-05 Annex 3.1	Updated Recommendations	IATTC staff rationale
Purse Seine Fisheries		
Bycatch separation/release devices for main/working deck (e.g., hopper with a door, ramp).	Bycatch sorting/releasing devices for working/main deck (e.g., hopper with a door and a ramp)	SMEs and CPCs favor the language of "sorting" over "separation" as they are more technical and widely used. Additionally, the ramp alone is different from the hopper, as the former helps transport sharks to the water with minimal contact but does not prevent them from going to the lower deck (that can only be done with a hopper with a door).
Stretcher/cradle	Stretcher/cradle	
Longline Fisheries (also applicable to surface fleet fisheries)		
Dipnet	Net (equal or greater in length than the vessel's freeboard)	Several SMEs and CPCs have suggested using the word 'net' as opposed to 'dipnet'.
Short de-hooker (for sharks brought on board)	Short handled de-hooker (for sharks brought on board)	
Line cutter	Line cutter – capable of cutting through all lines used in the gear	Most fishers use knives to cut the lines, if wire leaders are used it is important that cutters are readily available to cut through these, therefore, some clarifying content has been added for consideration.
Short handlied de-hooker (vessels with low [<2m] freeboard)		Redundant – suggest deleting
Long-handled line cutter (equal or in greater in length than the vessel's freeboard)	Long-handled line cutter (equal or greater in length than the vessel's freeboard), capable of cutting through all lines used in the gear	

Long-handled de-hooker (equal or in greater in length than the vessel's freeboard)	Long-handled de-hooker (equal or greater in length than the vessel's freeboard) Stretcher/cradle (for sharks brought on board) Wire/bolt cutter capable of cutting all hooks used on the vessel
Gillnet Fisheries	
	Line cutter (equal or greater in length to the vessel's freeboard) capable of cutting through all materials used in the gillnet

7.1.2. Redlined version of the recommended updates/amendments to Annex 3 of Resolution C-24-05

During the first round of reviews on previous versions of this document, some CPCs requested a redlined version of the existing BHRP in ANNEX 3 of Resolution C-24-05. These are provided below, as requested, and reflect the text in column 2 of the tables above.

Resolution C-24-05 Annex 3

Best ~~safe~~ handling and release practices (BHRPs) for sharks

Bearing in mind that the primary aim of release processes is to ensure the highest level of survival of sharks and that, whenever possible, prompt, and effective action will be taken to return the shark to the sea and prioritizing that the life and safety of the crew is not compromised and that crew members shall endeavor to avoid hazards in the safe handling and release operations for sharks.

To maximize the efficacy and utility of adopted BHRPs, CPCs should ensure crew are educated and trained by qualified staff on these practices regularly. Illustrated best handling and release practices should be available on the vessels.

All fisheries

~~SHOULD~~ Do:

• Release ~~the~~ sharks from fishing gear while they are still in the water, if possible.

• Encourage the immediate release of sharks.

Do~~SHOULD~~ NOT

~~• Attach sharks to vessel and drag while vessel operations are underway~~

• Hit or kick the shark

• Leave sharks laying on the deck, exposed to sun or air, except to the extent necessary to carry out these practices

• Insert hands into gill slits.

• Use gaffs or hooks or similar instruments to manipulate or maneuver sharks

• lift sharks by the head, tail, gill slits, or spiracles, or by using binding materials against or inserted through the body

Purse-seine fishery

~~**SHOULD NOT**~~

~~• Roll sharks through the power block~~

For sharks entangled in the net:

Do:

• Drop the net so the entangled shark is lowered to the deck to allow the crew to safely cut the net away from the animal.

~~**SHOULD** Release the shark from the net, always preventing it from ascending to the power block.~~

• Maneuver the animal into a stretcher/cradle or ramp and release it on the opposite side of the vessel from the net.

~~SHOULD~~**DO NOT**

• Roll sharks through the power block

•Hang sharks by the tail

•Drag sharks across the deck by the tail.

When brailing sharks on board:

~~SHOULD~~ **Do:**

• Prioritize the release of sharks that are visible on top of the sack.

• Ensure sharks are sorted on the main/work deck and do not go down the loading hatch (According to the vessel's conditions, to the extent possible, use bycatch reduction devices ~~(BRDs;~~ e.g., hoppers with doors ~~or~~ and ramps) ~~to ensure sharks are sorted on the main deck and do not go down the loading hatch~~.

• Release the shark as soon as possible. ~~The recommended practice is to remove the shark from the brailer, hopper or ramps by grabbing it, without suspending it, by the caudal peduncle to place it on deck. This should be done manually whenever possible.~~

• Maneuver sharks into a stretcher/cradle or ramp immediately by grabbing it, without suspending it, by the caudal peduncle and pectoral fins, when possible, and release it on the opposite side of the vessel from the net.

• In cases when passage of sharks through the loading hatch is not avoided, sharks should be released as quickly as possible (e.g. via a bycatch/waste chute, or using stretchers)~~Consider the use of a bycatch/waste ramp on the lower decks to facilitate fast and safe release of sharks that were not sighted on the main/working deck.~~

Do Not:

•Allow sharks to pass through the loading hatch

•Hang sharks by the tail using a rope

•Drag sharks by the tail using a rope

For whale sharks

~~SHOUL~~**Do:**

• Leave whale sharks in the water for release.

• Release ~~of~~ whale sharks prior to brailing.

• If the whale shark is at the side of the vessel and its head is pointed towards the stern of the vessel, the shark should be released ~~(~~ by opening the net or cutting the net in front of the sharks mouth.~~)~~

• If the head of the whale shark is pointed towards the bow of the boat, the crew in charge of the net hauling operation can maneuver the winch and the capstan to bring the whale shark close to the hull, then stand the animal on the net and roll it outside the bunt.

• For small whale sharks (< 3 m) the brailer may be used to push the animal up and over the purse seine net.

~~SHOULD~~**o Not:**~~OT~~

• Land a whale shark on deck regardless of size

• Start a brailing process if it endangers the survival of the whale shark.

• Pull or drag whale sharks out of the net by the tail or caudal peduncle.

Longline fishery (also applicable to other hook and line fisheries ~~of other surface fleets other than purse seine~~)

~~**SHOUL**~~**Do:**

~~**For sharks captured by vessels with high freeboard (>2m):**~~

• Slow the vessel and line hauling rate (if applicable) to bring the sharks alongside for identification and removal of gear.

~~• Avoid removing hooks from sharks. If attempting to remove hooks use long-handled de-hookers for vessels with high freeboards.~~

~~• To the extent practicable and ensure that weights are removed, when cutting the line.~~

• Avoid bringing sharks on board for gear removal, if possible.

o If attempting to remove hooks, use pliers or dehookers or long-handled de-hookers for vessels with high freeboards (i.e. > 1 meter).

o When hooks are not removed, use line cutters to cut the line as close to the hook or mouth as possible leaving no more than 1 meter of gear attached to the animal and ensuring that weights are removed.

• If sharks are brought on board for gear removal:

o Use a dip net or lasso to help lift them onboard

o Use a stretcher or cradle for handling and restraint for the safety of the crew and to reduce injury to the animal.

o Maneuver shark using manual restraint of the pectoral fins and the caudal peduncle (this may require two crew members depending on the size of the animals

o Return the animals to the sea as quickly as possible.~~• Avoid removing hooks from sharks. If attempting to remove hooks use long-handled de-hookers for vessels with high freeboards.~~

~~• To the extent practicable and ensure that weights are removed, when cutting the line.~~

~~**For all longline vessels (also applicable to surface fleet fisheries):**~~

~~**SHOUL**~~**Do Not:~~OT~~**

• Use drag lines, lazy lines or ~~D~~drag sharks behind the vessel until the hook rips free of the jaw or until the animal is easier to handle.

• Electrocute or stun sharks prior to handling and release.

• Lift sharks onboard without the use of a ~~dip~~net and or second point of attachment to support the weight of the animal, noting it is not recommended to lift sharks onboard the vessel.

• Attempt to remove a hook from a live shark if the hook is not visible.

• Cut into or damage the jaw for removal of the hook.

•Insert gaffs, hooks, or similar instruments into the bodies of live sharks

~~• Cut into the jaw for removal of the hook.~~

• Lift sharks onto the deck if possible.

• Lift or maneuver sharks by the gill slits, or spiracles.

• Lift and drop sharks from the vessel height on vessels with high freeboards (>1 m) to rip the hook from the shark's jaw.

For gillnet fisheries

Do:

- Prioritize the release of live non-retained sharks.
- Leave sharks in the water for gear removal, where possible.
- Ensure the weight of the net below the entangled animal is supported during gear removal
- Carefully cut the net away from the animal, allowing it to swim away from the gear.

Annex 3.1

Recommended tools for best handling and release practices

FOR PURSE SEINE FISHERIES

• Bycatch sorting/releasing devices for working/main deck (e.g., hopper with a door, ramp)

• Stretcher/cradle

FOR LONGLINE FISHERIES

• N~~Dipn~~et (equal or greater in length to the vessel's freeboard)

• Short handled de-hooker (for sharks brought on board)

• Line cutter – capable of cutting through all lines used in the gear

~~• Short handled de-hooker (vessels with low [<2m] free-board)~~

• Long-handled line cutter (equal or ~~in~~ greater in length than the vessel's freeboard), capable of cutting through all lines used in the gear

• Long-handled de-hooker (equal or ~~in~~ greater in length than the vessel's freeboard)

• Stretcher/cradle (for sharks brought on board)

• Wire/bolt cutter capable of cutting all hooks used on the vessel

FOR GILLNET FISHERIES

• Line cutter (equal or greater in length than the vessel's freeboard), capable of cutting through all lines used in the gear