INTER-AMERICAN TROPICAL TUNA COMMISSION

WORKING GROUP ON ECOSYSTEM & BYCATCH

1ST MEETING

La Jolla, California (USA)
11-12 May 2023

CO-CHAIRS' REPORT REV[1]

AGENDA

	Documents
1. Opening of the meeting – 9am PST 2. Adoption of the agenda 3. Review of recommendations from the 11th meeting of the Bycatch Working Group a. Brief update regarding outcome of 2022 circle hook workshop, with goal to resolve C-19-04 (Co-Chairs) 4. Member country updates on Ecosystem and Bycatch Activities 5. Presentations *Ecosystem* 1. Deep Sea Mining: update on developments and relevance to the IATTC (Ocean Foundation) *Elasmobranchs* 1. Shark post release survival rates and management implications in longline fisheries (Hutchinson, IATTC Staff) 2. Improving conservation and management of sharks in the EPO and ensuring compatibility with other regional fisheries management organizations in the Pacific (Shaw, Canada) 3. Assessing reported shark and ray catch in industrial fisheries: A global review to inform assessment and conservation *(*Cronin, Univ. of California Santa Cruz) 4. Progress in addressing key research to inform Mobulid ray conservation in the Pacific Ocean (Moreno, ISSF) 5. Exploring helicopter vessel communication for Mobulid bycatch avoidance (Waldo, UC Santa Cruz) *Sea Turtles* 1. Drifting fish aggregating devices (dFAD) & sea turtle interactions in the open ocean (Escalle, ISSF/SPC). *Seabirds* *1.* A proposal to develop an IATTC seabird work plan *(*Gianuca, Birdlife International). *Best Practices* 1. Overview of knowledge and data gaps of best practices for vulnerable species in IATTC fisheries: recommendations for future research (Hutchinson, IATTC Staff)	

[1] The purpose of this revised version of the report that was submitted last year to the Commission is to include a more detailed description of the discussions that took place. Other sections and the recommendations were not modified.

2. Role of EM in improving the collection of bycatch data and verifying best practices for safe handling and release (Heberer & Fletcher, TNC) 3. Testing bycatch release devices for vulnerable elasmobranchs in tropical tuna purse seiners of the Eastern Pacific Ocean, (Murua, AZTI/ISSF/IATTC) 4. Sea Turtle handling and best practices in Central America (Andraka/Parga, SUBMON, ECOPacific +)	
6. Relevant information papers (No presentation) ---Purse-seine indicators for silky sharks in the EPO (IATTC staff) ---Ecosystem considerations (IATTC staff) ---Vulnerability status for silky and hammerheads in the EPO: EASI-fish assessment (IATTC staff) ---Adjusting time-of-day and depth of fishing provides an economically viable solution to seabird bycatch in an albacore tuna longline fishery (Gilman et al 2023)	SAC-14-11 SAC-14-12
7. Recommendations to the Scientific Advisory Committee	
8. Other business	
9. Adjournment	

1. OPENING OF THE MEETING

The Co-Chairs of the working group, Dr. Yonat Swimmer (USA) and MsC. Manuel Correia (Venezuela), welcomed participants to the 1st Ecosystem and Bycatch Working Group (EBWG).

2. ADOPTION OF THE AGENDA

The agenda was adopted without comments.

3. REVIEW OF RECOMMENDATIONS FROM THE 11TH MEETING OF THE BYCATCH WORKING GROUP

3a. Brief update regarding outcome of 2022 circle hook workshop, with goal to resolve C-19-04

Co-chair Yonat summarized the outcomes of the 1st circle hook workshop. In summary, no conclusion on minimum size and implementation schedule was achieved, but there was a shared belief that the measure should seek to strike a balance between the objective of protecting animals and economic needs of the fishing industry. C-19-04 still remains incomplete with respect to size and implementation schedule. Costa Rica recommends removing the word "large", whereas the EU indicated that there is a need to better understand what we are referring to with these large circle hooks. Yonat reminded the group that the intent of C-19-04 is to mitigate sea turtle bycatch and that the 1st circle hook workshop identified that a 16/0 size would meet the objectives to reduce mortality, yet there are also target species catch rates to balance with this. Suggestion for members to consult to and balance industry and conservation goals intended by C-19-04. The EBWG recalled that we are three years late in completing this task. Costa Rica reminded the EBWG of numerous fisheries, not just mahi/dorado, to consider regarding potential exemption from a mitigation measure.

4. UPDATES ON ECOSYSTEM AND BYCATCH ACTIVITIES

5. PRESENTATIONS

5a. Ecosystem

5a1. Deep Sea Mining: update on developments and relevance to the IATTC (Van Der Grient, Ocean Foundation)

Dr. Jesse Van Der Grient defines deep-sea mining as a nascent industry that seeks to mine deposits that contain commercially valuable minerals such as manganese, copper, cobalt, nickel, zinc, and rare earth minerals from the deep seafloor. Proponents of this new industry state that these metals are critical for the green transition. However, Dr. Grient asserts that this industry could also pose extensive environmental risks to the ocean ecosystem. Specifically, the potential for contamination via metals leaks that get into the sediment plume in the process of mining can impact tuna larval. Additional concerns are from noise pollution and other impacts to the ecosystem that could reach tunas and billfishes that eat mesopelagics, resulting in potential seafood contamination. She also mentioned concern for climate change and potential impacts on tunas. Currently there is no commercial mining, but collector tests have been conducted and likely this will present in the near future. Fisheries representatives are not currently well-represented at the International Seabed Authority (ISA) yet this is important. As such, it is recommended that the IATTC staff apply for observer status and encourage the ISA to do ecosystem-based management.

5b. Elasmobranchs

5b1. Shark post release survival rates and management implications in longline fisheries (Hutchinson, IATTC Staff)

Dr. Melanie Hutchinson refers to recent WCPFC conservation measures (CMM) to protect sharks, specifically wire leader material prohibition as well as safe handling, and discussed shark catch data as well as current research findings. 98% of sharks discarded in US Pacific Ocean were released with different amounts of trailing gear. Fishers would cut the line as soon as they noticed it was a shark. Blue sharks are released with the most trailing gear, while bigeye thresher and makos are released with shorter trailing gear. The study involved tagging five different species (blue, oceanic white tip, bigeye thresher, silky, shortfin mako). There were two tag types: short-term survival pop-up archival tags and satellite tags with a 360-day deployment. The study compared catch rates and survival between wire leaders with monofilament using a proportional hazard model (Bayesian framework). Blue shark: lowest post-release survival rates. Use of wire leader and bringing a shark on board reduced survival. Animals that escaped on their own had the highest survival. No difference in catch rates if bite-offs were included. Shark survival increases with wire leader ban and handling requirements to reduce as much trailing gear as possible, as new CMM in WCPFC. Recommend more observer data that includes catch and release condition, hooking location, handling method, and trailing gear. Also recommends a ban on wire leaders, similar to the WCPFC ban. Remove as much trailing gear as possible while sharks are still in the water. Retention bans should be accompanied by best handling and release guidelines.

5b2. Improving conservation and management of sharks in the EPO and ensuring compatibility with other regional fisheries management organizations in the Pacific (Shaw, Canada)

Dr. Jennifer Shaw addressed C-05-03 regarding current practices of shark finning: fin-to-body weight ratio of 5%. She noted that the Working Group on Stock Assessment identified several problems with the use of a fins-to-body weight ratio due to differences in wet vs. dry weight of fins and variation in ratios between different species. Tasked the IATTC EBWG to review this given significant differences in fin-to-carcass-mass ratios between fin sets or cutting procedures, difficulty in establishing a standardized wet to dry fin mass, and asserts that sharks landed with fins attached makes it easier for trained observers. Notes the reference to the "1st Joint Tuna RFMO Bycatch Working Group", which aims to determine the magnitude of the problem globally. Calls for cooperation between WCPFC and IATTC on harmonization of CMMs (note: WCPFC adopted a measure requiring fins be landed naturally attached, full utilization and safe handling practices, and additional gear restrictions, and NPFC also did fins naturally attached). Recommends that the Commission take note of the recommendations from the 1st Joint Tuna RFMO Bycatch Working Group as well as measures recently adopted by the WCPFC and NPFC relating to shark conservation and management, in particular those addressing the practice of shark finning, full utilization and safe handling practices. Recommends that

the Commission consider adopting similar measures with a view to ensuring shark conservation is compatible throughout the Pacific Ocean to the extent practical. El Salvador, Venezuela, and Costa Rica support this.

5b3. Assessing reported shark and ray catch in industrial fisheries: A global review to inform assessment and conservation *(*Cronin, Univ. of California Santa Cruz)

Dr. Melissa Cronin described research on oceanic elasmobranch populations that have declined by 70%, which the authors attributed to a seven-fold increase in fishing effort. Proportion of reported bycatch is 97% elasmobranchs, subset of 22 species - extracted available country-reported catch data for LL and PS data, 2.4 million individuals, majority from longline gear. Large majority comes from blue shark. 20% of stocks have been assessed, noting that most non-commercial stocks are not assessed. Suggests that data collection and reporting standardization could help inform catch estimates. Dr. Cronin states that there is a need to clarify target vs. bycatch data, supports an increase in LL observer coverage, and recommends harmonizing data collection across tRFMOs. She further states that new assessment methods (e.g., EASI-Fish) can help fill gaps. (Note: IATTC staff comments on attempts to clarify target vs bycatch, but that this is difficult as it is often labeled "opportunistic" and impossible to identify target vs. bycatch. A dataset of elasmobranch catch sources with an attribute of target or bycatch could be more useful. Also, that the purse seine data was worse than the longline data, which was not intuitive because PS has higher observer rates. Harmonization across RFMOs on country-reported or observer-reported data would be useful).

5b4. Progress in addressing key research to inform Mobulid ray conservation in the Pacific Ocean (Moreno, ISSF)

Presenter Dr. Gala Moreno stresses the importance of better understanding the interactions between Mobulas and purse seine fleets in order to improve management. She and her ISSF team are working with fishers to design and test sorting grids for incidentally caught Mobulas. Their research aims to 1) characterize purse seine - Mobula spp interactions and population structure; 2) design and test sorting grids for Mobulas and evaluate post-release mortality; 3) train fishers and observers to identify and sample Mobulid rays and educate crew on best safe-handling and release practices for Mobulas: and 4) provide outreach to fishers, scientists and managers. Scientists are placed onboard vessels to obtain biological/ genetic samples and to train observers in species identification. Only some vessels have a hopper, indicating personalized grid designs for vessels. Every US PS boat in the study currently has a sorting grid. Studies so far have released eight Mobulas, and are currently using pop-up satellite tags to study post-release survival. Early data indicate post-release survival, more work in the future, but high importance towards education and training in safe handling practices.

5b5. Exploring helicopter vessel communication for Mobulid bycatch avoidance (Waldo, UC Santa Cruz, DOC EB-01-INF-C)

Presenter Ms. Jennifer Waldo noted that ~3,000 mobulids are incidentally caught annually by purse-seine vessels in the EPO, largely due to high overlap with target fish. Most research efforts have focused on reducing post-capture mortality, however bycatch avoidance is particularly important because they are vulnerable to post-capture stress and mortality. Given that larger vessels have helicopter crew to spot tuna, this presents a unique opportunity to do visual surveys from above and help fishers minimize capture of mobulids by avoiding areas with observed abundance. Ms. Waldo reported that helicopter crews were able to ID mobulids to species, even better than vessel crews. She also noted that 100% of sightings from the helicopter are communicated to the crew. This led to a discussion regarding the potential value of drones to spot mobulids, encouraging both avoidance and safe handling, and raising awareness around free-setting style of fishing. A solution needs to be found for fishing on FADs, as this is where most mobulids are caught.

5c. Sea Turtles

5c1. Drifting fish aggregating devices (dFAD) & sea turtle interactions in the open ocean (Escalle, ISSF/SPC, DOC EB-01-INF-A)

Dr. Lauriane Escalle presented research on observed and simulated movement trajectories of FADs deployed in the ETP. The work notes the results on potential connectivity, which is high for the entire equatorial zone. The work identifies extensive overlap of dFADs with oceanic and coastal sea turtle habitats. Based on the findings, the authors recommend: 1) no netting should be used in the construction of FADs in order to eliminate potential entanglement, and 2) need for increased knowledge of at-sea interactions between active or abandoned dFADs and at-risk sea turtle populations. Dr. Escalle also recommends the continued analysis of observed and simulated dFAD trajectories to quantify the likely changes in connectivity and distribution of dFADs within the equatorial fishing grounds and higher latitude sea turtle habitats under proposed fully non-entangling, without netting, and biodegradable dFAD management measures.

5d. Seabirds

5d1. A proposal to develop an IATTC seabird work plan *(*Gianuca, Birdlife International)

Dr. Dimas Gianuca notes that the IATTC has recognized that its fisheries have a measurable impact on seabird species, and thus the need to reduce seabird bycatch. The IATTC has adopted measures to achieve the aim of reducing seabird bycatch, Resolution C-11-02. Resolution C-19-08 determines that data on incidental catch of seabirds by species should be recorded through on-board observers and reported annually. CPC scientists and others have presented a large volume of work dealing with seabird bycatch, its mitigation, assessment and monitoring. Birdlife International proposes that a multi-year seabird strategy and action plan be developed to help guide and evaluate efforts to reduce seabird bycatch in IATTC fisheries. This would: 1. Serve as a tool to underpin an adaptive approach to the management of seabird bycatch; 2. Ensure that the various actions and initiatives relating to seabird bycatch mitigation are clearly articulated, prioritized, routinely monitored and, where necessary, modified; and 3. Facilitate a collaborative, coordinated and informed approach to seabird bycatch management by the IATTC and others. The plan would be informed by the relevant IATTC resolutions and would serve to provide links to other IATTC work, and to "external", wider-scale seabird bycatch related initiatives. Various objectives were mentioned, including: to facilitate a link between the outputs of ongoing and new research and the review of seabird conservation measures, as well as the assessment of seabird bycatch in IATTC fisheries, support and monitor the implementation of National Plans of Action by CPCs, as outlined in Resolution C-11-02, and to reflect on the CCSBT multi-year seabird strategy (adopted at their 2019 Commission meeting). Pulling together the various initiatives into a coherent plan would help facilitate an efficient and effective approach to managing seabird bycatch in IATTC fisheries and identify priority areas and actions, as well as roles and responsibilities.

5e. Best Practices

5e1. Overview of knowledge and data gaps of best practices for vulnerable species in IATTC fisheries: recommendations for future research (Hutchinson, IATTC Staff, Doc EB-01-01)

Dr. Melanie Hutchinson reviewed concerns for vulnerable species such as sea turtles, marine mammals, seabirds and elasmobranchs. Discussion around best handling and release practices (BHRP), post-release survival (PRS) and the importance of species specificity regarding fishery interaction and handling and discard practices. Recommends revising Resolution C-11-02 consistent with the current state of knowledge regarding seabird interactions and mitigation techniques (see Annex 1, EB-0101, SAC-14-14). For shark resolutions (C-04-05 Rev2, C-05-04, C-16-04, C-16-05, C-11-10 [OCS], C-21-06 [FAL]), guidelines for purse seine and longline are vague and need updates with new data. Sea turtle resolutions (C-04-05 Rev2, C-04-07, C-19-04) currently have good guidelines that require updating. Mobulid rays (C-15-04) need updating. In general, Dr. Hutchinson recommends a thorough review of current conservation resolutions to identify where updates are needed to ensure vulnerable species are handled and released using the most up to date BHRPs. Best handling is to pull the animals as close to the boat as possible while leaving them in the water.

5e2. The Role of EM in improving the collection of bycatch data and verifying best practices for safe handling and release (Heberer & Fletcher, TNC)

Craig Heberer provided updates on work done by the Nature Conservancy regarding advancements in EM in over 18 countries. The Large-Scale Fisheries Program aims to build healthy target stocks, reduce bycatch of vulnerable species, eliminate illegal, unreported and unregulated (IUU) fishing and improve the socioeconomic resilience of resources.

5e3. Testing bycatch release devices for vulnerable elasmobranchs in tropical tuna purse seiners of the Eastern Pacific Ocean (Murua, AZTI/ISSF, DOC EB-01-INF-B)

Dr. Murua discussed various methods to safely release sharks incidentally caught in purse seine gear. He reminded the group that removing an animal from the net is highly difficult and potentially unsafe. Ramps work, but only for small and medium size animals. He discussed the use of shark Velcro to replace rope nooses that are incisive and abrasive, whereby the Velcro is wrapped around the shark's tail and can be released with a string from a distance. However, more information is needed to see how effective these are. A well-designed hopper with a ramp can be useful as the crew can see the shark and release it quickly. Bycatch release ramps incur less stress for the animal and increase crew safety. Another option is a double conveyor belt—1 belt for fish and 1 for bycatch—which is effective but also costly. Dr. Murua suggests future work and potential collaborative studies with the IATTC and CPCs.

5e4. Sea Turtle handling and best practices in Central America (Andraka/Parga, SUBMON, ECOPacific +)

Dr. Parga and Ms. Andraka stated the critical importance to have a good understanding of the fisheries, their characteristics and particularities in order to define "best practices" to ensure the survival of sea turtles in a fisheries context. Techniques and gear modifications have been developed to reduce turtle bycatch, but the dynamics and operations of different fisheries do not always allow these modifications to be applied due to local fishing conditions and their profitability. Costa Rica and Panama are interested in solving bycatch problems as part of their commitment to move towards sustainable fisheries, and both countries have regulations on training in best practices for sea turtles. Adequate training of fishermen by experienced researchers is essential to reduce post-release mortality of sea turtles, and there is no "one size fits all". Best practices must be reviewed and adapted periodically given that fisheries are highly dynamic.

6. RELEVANT INFORMATION PAPERS (NO PRESENTATION)

---Purse-seine indicators for silky sharks in the EPO (IATTC staff)

---Ecosystem considerations - SAC-14-11 (IATTC staff)

---Vulnerability status for silky and hammerheads in the EPO: EASI-fish assessment (IATTC staff)

--- Adjusting time-of-day and depth of fishing provides an economically viable solution to seabird bycatch in an albacore tuna longline fishery (Gilman et al 2023)

7. RECOMMENDATIONS TO THE SCIENTIFIC ADVISORY COMMITTEE

1. Deep Sea Mining. The Ecosystem and Bycatch Working Group (EBWG) recommends to the Commission:

• Be attentive to, and monitor the development of mining in the international seabed area in terms of its potential effects on the ocean ecosystem and populations of tuna and tuna-like species;

• Participate, as appropriate, in the process of discussions on the subject within the framework of the International Seabed Authority (ISA), as an observer and/or through appropriate collaborative mechanisms;

• Collaborate, in a manner consistent with its mandate, work program, and the financial, human, and material resources at its disposal, in research on the potential effects of mining in the international seabed area among others on the ocean ecosystem and populations of tuna and tuna-like species

2. Elasmobranchs

• The EBWG recommends the adoption of new measures for best handling and release practices for elasmobranchs that are caught by longline gear and not retained, i.e., cutting the line as close to the hook as possible and such that the gear left is less than 1 meter in length, taking as a reference measures in CMM 2022-04 adopted by the Western and Central Pacific Fisheries Commission (WCPFC).

• The EBWG recommends that the IATTC scientific staff continues to develop improved data collection and reporting standards on elasmobranchs for Class 1-5 purse seine vessels (work already planned under project A.3.a), considering the work already done regarding longline vessels (document SAC-14-INF-Q) to obtain reliable catch, size composition, and other biological information for assessments of vulnerability and stock status.

• Noting shark conservation and management measures recently adopted by WCPFC and considering that scientific studies conclude that the percentage of the fin to body weight ratio varies, including differences in ratios among shark species, the types and the number of fins included in the calculations, the type of body weight used (whole or processed), the processing method used to separate the fins from the body (finning technique) and wet versus dry weight of fins; and at the same time, considering the need to improve the identification of shark species, knowing the need to improve the collection of data by species, and seeking the full utilization of the catches, the EBWG recommends the adoption of a conservation and management measure requiring sharks with fins naturally attached to the body at the point of the first landing.

• Consider adopting similar measures to ensure shark conservation is, to the extent practical, comparable throughout the Pacific Ocean.

3. Sea Turtles

• Based on the 1st Circle Hook Workshop outcomes, which identified variable results regarding circle hook sizes, and balancing interests in advancing sea turtle bycatch mitigation efforts with socioeconomic needs, the EBWG recommends that the IATTC staff co-host a follow-up workshop with the goal of exploring/expanding on topics of interest/data-knowledge gaps identified by the Bycatch Working Group to mitigate bycatch of sea turtles and to complete the outstanding requirements of Resolution C-19-04. The EBWG seeks to strike a balance between the objective of protecting vulnerable species such as sea turtles, seabirds, and sharks while maintaining the socioeconomic needs of fishing communities.

• Noting the potential connectivity between known areas of drifting FAD deployment and sea turtle habitat, the EBWG encourages additional research on at-sea interactions between active or abandoned drifting FADs and sea turtles and deems it appropriate to have these topics be considered by the FAD Working Group.

4. Seabirds

•The EBWG recommends the development of an action plan for seabird bycatch, including an update of Resolution C-11-02 within the next two years that reflect the best available science on seabird bycatch mitigation techniques with consideration of progress in other TRFMOs (particularly CCSBT and WCPFC).

5. Best Handling and Release Practices

•The EBWG recommends the SAC and Commission consider the recommendations of paper EB-01-01, recognizing the need to address best handling and release guidelines, test new bycatch release devices, and collect more post-release survival data for various non-target taxa impacted by fisheries under the purview of the IATTC.

6. Monitoring

•The EBWG recommends increasing monitoring of longline fishing and class 1-5 purse- seine activities, as this will facilitate understanding of and measures to address the impact of fishing activities on target species,

non-target species, and the ecosystem. This may be achieved through increased observer coverage recommended by IATTC staff, which could be achieved by the use of electronic monitoring.

7. Climate Change

• The EBWG recommends including the climate change topic as a permanent item on the agenda of this working group to ensure that the IATTC is prepared to address the possible effects of these changes on the target and non-target populations under its purview.

8. OTHER BUSINESS

None.

9. ADJOURNMENT

The meeting was adjourned at 2:00 p.m.

Appendix 1.

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NOTE: IF YOUR INFORMATION IS INCORRECT, PLEASE LET US KNOW. THANKS.

NOTA: SI SU INFORMACIÓN ES INCORRECTA, POR FAVOR DEJENOS SABER. GRACIAS.