



TECHNICAL AND COMPLIANCE COMMITTEE
Thirteenth Regular Session
27 September – 3 October 2017
Pohnpei, Federated States of Micronesia

Discussion Paper on Improving Sea Turtle Mitigation in the WCPO

WCPFC-TCC13-2017-DP-08
30 September 2017
1500

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Mitigation in longline fisheries

The current sea turtle measure, CMM 2008-03, entered into effect in 2009. The measure requires, in paragraph 7, that CCMs with longline vessels that fish for swordfish in a shallow-set manner: i) use large circle hooks with offsets of no more than 10 degrees; ii) use whole finfish for bait; iii) apply an alternative measure reviewed by the WCPFC's Scientific Committee (SC) and Technical and Compliance Committee and approved by the Commission; or iv) be granted an exemption on the basis of minimal interactions as determined by the SC.

In 2016, CCM compliance with obligations under CMM 2008-03 was assessed under the WCPFC Compliance Monitoring Scheme. There were extensive discussions on the specific requirements of paragraph 7, particularly the meanings of the terms “fish for” and “shallow-set manner”, and it was noted that consideration should be given as to whether the measure should be updated (2016 Final CMR Executive Summary, paragraph 17).

Additionally in 2016, the WCPFC convened two workshops that were funded by the ABNJ (Common Oceans) Tuna project to analyze the effectiveness of sea turtle mitigation in Pacific longline fisheries with respect to rates of interaction and mortality. The workshops were attended by representatives from 16 countries, as well as representatives from IGOs and NGOs. Utilizing confidentially held fishery observer data from the Secretariat of the Pacific Community (SPC) member countries, as well as data accessed under special confidentiality arrangements with Chinese Taipei, Japan and Reunion, SPC compiled a dataset representing over 2,300 turtles caught by 34 fleets across the Pacific between 1989-2015. The workshops focused on analyzing operational and environmental factors associated with longline fisheries interactions with leatherback, loggerhead, green and olive ridley sea turtles. The workshops relied on baseline data and modeling efforts to estimate the relative effectiveness of various mitigation measures in reducing sea turtle interactions. The workshops estimated the effectiveness of large circle hooks, finfish bait, and the removal of the first and/or second hooks closest to the floats to mitigate sea turtle interactions and mortalities in Pacific longline fisheries. The following conclusions were reached based on predictive modeling efforts (see report presented to SC13 at <https://www.wcpfc.int/system/files/EB-WP-10%20Sea%20Turtle%20Mitigation.pdf>):

1. For all four sea turtle species there would be limited reductions in interactions, and even more limited reductions in at-vessel mortalities, resulting from strengthening mitigation for only the fisheries already regulated by CMM 2008-03 (i.e. self-identified shallow-set effort targeting swordfish).
2. For all four sea turtle species, shallow-set mitigation measures would deliver substantially weaker reductions in at-vessel mortalities compared to deep-set mitigation

measures, due to lower at-vessel mortalities in shallow set fisheries, and because some CCMs have already implemented mitigation based on CMM 2008-03 for their shallow-set swordfish fisheries.

3. For all four sea turtle species, deep-set mitigation measures would deliver stronger reductions in at-vessel mortalities compared to interactions. This is a result of the fact that sea turtles caught in deep sets have a higher probability of at-vessel mortality due to asphyxiation, as documented in previous studies.
4. For all four sea turtle species combined, deep-set mitigation measures would result in a greater reduction in overall interactions than shallow-set mitigation measures. Although interactions are more likely in shallow sets, the greater amount of effort in deep-set fisheries (4 times greater effort in deep-set than shallow-set fisheries) contributes to this result. However, for one species (loggerhead sea turtle), the maximum reduction that would be obtained with deep-set mitigation is less than the maximum reduction that would be obtained with shallow-set mitigation.
5. For all four species the effect of large (size 16/0 or larger) circle hooks in reducing interactions is greater than the effect of fish bait, but the degree of difference varies across species and across sectors (i.e. shallow versus deep).
6. In terms of reducing both interactions and at-vessel mortalities in deep-set fisheries, mitigation involving removal of the hook position closest to the float would be similar in effectiveness to changing to finfish bait. Removal of the two hook positions closest to the float would be similar in effectiveness to changing to large circle hooks.
7. The effect of removing the two hook positions closest to the float would be greater than removing only the first hook positions closest to the float. However, the difference varies by species, with the weakest mitigation effect for leatherback sea turtles, which tend to interact with longline gear at greater depth than the other species.

Given these conclusions of the workshops, as well as other recent studies that add weight to the effectiveness of large circle hooks and finfish bait in reducing sea turtle bycatch in shallow-set fisheries,¹ we believe that consideration should be given to establishing specific mitigation requirements for deep-set longline fisheries in addition to those currently in place for shallow-set longline fisheries. The United States would like to get CCM views on the potential for strengthening the measure by requiring that vessels in all longline fisheries—regardless of set target depth—use at least one mitigation method, such as follows:

Require all longline vessels to use at least one of the following methods to mitigate sea turtle interactions: (a) use only circle hooks no smaller than 16/0 (have a minimum width

¹ Swimmer Y., Gutierrez A., Bigelow K., Barcelò C., Schroeder B., Keene K., Shattenkirk K., and Foster D.G. 2017. Sea Turtle Bycatch Mitigation in U.S. Longline Fisheries. *Frontiers in Marine Science*. Vol. 4, Article 260, August 2017.

of 4.5 cm) with an offset not to exceed 10 degrees; (b) use only whole finfish for bait; or (c) removal of the first two hook positions closest to the float.

An approach like this would likely improve mitigation success as concluded in the workshops, and it would remove the ambiguities in the existing measure with respect to the meanings of “fish for” and “shallow-set manner.”

Mitigation in purse seine fisheries

Although the ABNJ workshops did not consider sea turtle bycatch in purse seine fisheries, there have been recent developments regarding designs for fish aggregating devices (FADs) that can reduce entanglements with unwanted species such as sea turtles. Some of these developments are detailed in the publication by the International Seafood Sustainability Foundation (ISSF), *ISSF Guide for Non-Entangling FADs* (see <https://issf-foundation.org/knowledge-tools/guides-best-practices/non-entangling-fads/download-info/issf-guide-for-non-entangling-fads/>).

Additional specifications have been considered and adopted at other RFMOs, including most recently at the IATTC. Based on these developments, we suggest that it is time for the WCPFC to consider further development of FAD designs that can reduce entanglements with unwanted species such as sea turtles. We believe the FAD designs in the lower entanglement category of the ISSF Guide for Non-Entangling FADs, given below, are a good starting point for discussion.

- Only small mesh netting used (e.g. < 2.5 in (7 cm) stretched mesh)
- Rafts are tightly wrapped with small mesh netting, with no loose netting hanging from it
- The underwater structure is tightly tied into bundles (sausages)
- A single panel can be used instead of bundles, but the panel must be weighted to keep it taut
- The panel should consist of either netting with a stretched mesh of 2.5 inches (7 cm) or less, or a solid sheet (e.g., canvas or nylon)

Observer data

In addition to the consideration of amendments to CMM 2008-03, we suggest that several modifications to the WCPFC ROP Minimum Data Standards and Fields be made, based on the recommendations of the 2016 ABNJ workshops (attached as Attachment 1). The additions proposed in the workshops are the type and size hook on which a turtle is caught, the location of the hook in the turtle, and the amount of gear remaining on live turtles after they are released.

Summary

We invite the TCC to consider the recommended longline mitigation measures as outlined above, particularly with respect to their practicality and implications with respect to compliance. We also invite the TCC to consider the development of specifications for non-entangling FADs, based on the recommendations described above. Finally, we invite the TCC to consider the recommendation from the ABNJ workshops that several modifications to the ROP Minimum Data Standards and Fields be considered, recognizing that it is probably appropriate for the

Scientific Committee and Secretariat also to provide recommendations before the Commission takes action to change the data fields.

Attachment 1

ABNJ Workshop Recommended Modifications to the WCPFC Regional Observer Programme Minimum Data Standards and Fields:

SPECIES OF SPECIAL INTEREST Marine Reptiles, Marine Mammals, Sea Birds, Designated Shark Species	
GENERAL INFORMATION	
Type of interaction	Indicate what type of interaction, i.e. caught on line - tangled in net, swimming around outside of net, entangled in FAD etc.
Date and time of interaction	Record ships date and time of interaction
Latitude and longitude of interaction	Record position of the interaction.
Species code of marine reptile, marine mammal, or seabird.	Use FAO codes for Species.
LANDED ON DECK	
Length	Measure length in Centimetres.
Length measurement code	Measure using the measure method determined for that species.
Gender	Sex the animal if possible.
Estimated shark fin weight by species	Weigh each species shark fins separately if shark has been finned by crew, if no scales estimate the weight.
Estimated shark carcass weight by species	Weigh each carcass of a finned shark, if no scales available or body is discarded, or if it is too large to handle; estimate the weight.

Attachment 1

Condition when landed on Deck	What is the condition when caught use codes:
Condition when released	What is the condition when discarded use codes;
Tag recovery information	Record as much as information as possible on any Tags recovered
Tag release information	Record as much as information as possible on any Tags placed on the species before being released.
<u>Hook and material</u>	<u>Record the type of hook and hook size that the animal was caught on; the hook number as counted from the buoy; and the branch line material. Use the SPC "Terminal Gear Identification Guide" to identify the hook types and sizes.</u>
<u>Gear remaining when released</u>	<u>Describe all gear left (e.g. length of line, material and type of hook, and material and type of branchline).</u>
INTERACTION WITH VESSEL OR GEAR ONLY	
Vessel's activity during interaction	What was the vessel doing when the interaction took place i.e. setting, hauling, etc.
Condition observed at start of interaction	Condition of species at the start of the interaction
Condition observed at end of interaction	Condition of species at the end of the interaction
Description of interaction	Indicate interaction, with the vessel gear only - caught on line - tangled in net, etc
Number of animals sighted	How many animals sighted during interaction