Agenda

Virtual Meeting of the Topic Group on Synthesis Science-Informed Management of Vulnerable Bycatch in Pelagic Fisheries (Pelagics Topic Group)

of the ICES-FAO Working Group on Fishing Technology and Fish Behavior

Conference website: https://ftfb-fast.imr.no/en/projects/ices-ftfb/fast-2020/ices-ftfb/fast-2020/topic-groups

Tuesday 20 April 2021, 15:00 to 19:00 pm CEST

Item	Minutes	Title	Lead
1	5	Review agenda & Topic Group ToR version 3 (Appendix 1)	E. Gilman
2	20	Benefits of fisheries synthesis science based on meta-analytic approaches (presented during the plenary, the topic group session will provide time for questions and discussion)	M. Chaloupka
3	10	Effect of pelagic longline bait type on species selectivity: A global synthesis of evidence	E. Gilman
4	15	Collaborative research prioritisation process – prioritizing future meta-synthesis research on vulnerable bycatch mitigation	H. Fennell
5	15	Closing facilitated discussion	A. Sala & H. Fennell

The Topic Group meeting is co-chaired and will be facilitated by Anto Sala and Hannah Fennell.

Topic Group Convenors
- Milani Chaloupka, Ecological Modelling Services Pty Ltd & Marine Spatial Ecology Lab, University of Queensland, M.Chaloupka@uq.edu.au
- Hannah Fennell, Heriot-Watt University, HF4@hw.ac.uk
- Eric Gilman, Pelagic Ecosystems Research Group, The Safina Center, EGilman@utas.edu.au
- Martin Hall, Inter-American Tropical Tuna Commission, MHall@iattc.org
- Antonello Sala, Italian National Research Council, Antonello.Sala@cnr.it
- Liming Song, Shanghai Ocean University, LMSong@shou.edu.cn

Appendix 1

Terms of Reference version 3 (April 2021) of the

Topic Group on Synthesis Science-Informed Management of Vulnerable Bycatch in Pelagic Fisheries (Pelagics Topic Group)

ICES-FAO Working Group on Fishing Technology and Fish Behavior

A Pelagics Topic Group of the ICES-FAO Working Group on Fishing Technology and Fish Behavior was formed in 2019. The topic group convenors are:

- Milani Chaloupka, Ecological Modelling Services Pty Ltd & Marine Spatial Ecology Lab, University of Queensland, M.Chaloupka@uq.edu.au
- Hannah Fennell, Heriot-Watt University, HF4@hw.ac.uk
- Eric Gilman, Pelagic Ecosystems Research Group, The Safina Center, EGilman@utas.edu.au
- Martin Hall, Inter-American Tropical Tuna Commission, MHall@iattc.org
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PURPOSE

The purpose of the topic group is to assemble open-source databases to support fisheries synthesis science, including meta-analyses, of bycatch mitigation of vulnerable species in pelagic fisheries.

Overexploitation, including from fishing mortality, is the primary cause of recent marine species extinctions and can cause protracted or irreparable harm and permanent loss of populations, with consequences across manifestations of biodiversity and ecosystem services, including fishery yields. Fisheries that target relatively fecund species, such as tunas, can have profound impacts on incidentally caught or bycatch species that, due to their lower reproduction rates, slow growth, late maturity and other life history traits, are relatively vulnerable to anthropogenic mortalities. Their populations can decline quickly and have limited recovery potential once depleted.

The relative certainty of species-specific catch and survival rate responses to bycatch mitigation method can be categorized into tiers of on an evidence hierarchy. Ideally, decisions should be based on evidence from syntheses of accumulated research, which estimate an overall or pooled effect, and if effects vary across studies, can identify reasons for between-study heterogeneity. Synthesis research also identifies knowledge gaps, and conversely identifies areas where additional studies are not needed, to guide priorities for future research. This requires that researchers have compiled and synthesized (combined) the results from the multiple studies that have already been completed. Quantitative meta-analytic modelling provides the strongest and most generalizable evidence, followed by qualitative systematic literature reviews, then qualitative unstructured literature reviews, and finally by individual studies.

But there is a risk that the results from that single study is context-specific. Results may be affected by the specific conditions, such as the study area, study period, species involved and environmental conditions that prevent the results from that single study from being applicable under different conditions, which is why it is common to have conflicting findings from different individual studies. This is why the validity of a hypothesis cannot be determined from a single study. Furthermore, a single study may have low power and fail to find a meaningful result due to too small a sample size. Meta-syntheses, such as meta-analyses analyze pooled estimates from multiple studies addressing the same question. Due to the larger

sample size plus the number of independent studies, correctly designed meta-analytic assessments can provide estimates with increased accuracy over estimates from single studies, with increased statistical power to detect a real effect. By synthesizing estimates from a mixture of independent, small and context-specific studies, the overall estimated effect from meta-analyses is generalizable and relevant over diverse setting.

TERMS OF REFERENCE

1. Assemble a database and conduct a global meta-analysis of existing estimates of the relative risk of capture on different bait types in pelagic longline fisheries. Different species and sizes of pelagic marine predators have different prey, and hence bait, preferences. Managing bait type offers one tool to control species selectivity, including to mitigate vulnerable bycatch. The database will be open source, making it efficient to conduct updated meta-analyses as new records accumulate.

2. Identify priority research questions that could be addressed through meta-synthesis approaches of relevance to the ICES-FAO WGFTFB. Through a collaborative research prioritisation process, conduct a survey of WGFTFB members and other relevant stakeholders to identify a tentative list of hypotheses suitable for testing by meta-synthesis approaches related to mitigating vulnerable bycatch and mortality risk in pelagic fisheries of relevance to the ICES-FAO WGFTFB.

MILESTONES AND SCHEDULE

By the WGFTFB April 2020 annual meeting, the Pelagics Topic Group will have:
   a. Assembled a database and completed a meta-analysis on the relative risk of capture on different bait types in pelagic longline fisheries.
   b. Prepared a draft workplan to establish a metadata catalogue to support fisheries synthesis science, including mitigating vulnerable bycatch.
   c. Explored alternative approaches to identify priorities for meta-synthesis research on mitigating vulnerable bycatch and mortality risk in pelagic fisheries.

By the WGFTFB April 2021 annual meeting, the Pelagics Topic Group will have:
   a. Published a longline bait database assembled for a meta-analysis.
   b. Selected an approach to identify priorities for meta-synthesis research on mitigating vulnerable bycatch and mortality risk in pelagic fisheries.