Report of the Scientific Committee

Virtual Meetings, 11-24 May 2020

This is an abridged excerpt from the IWC 68B meeting in May 2020, prepared for the IOTC Working Party on Ecosystems and Bycatch Meeting, September 2020. This excerpt includes an update on IWC engagement with Inter-governmental organisations, including the FAO and the IOTC and the cetacean bycatch discussions of the IWC Scientific Committee (Sub-Committee on Non-deliberate Human-Induced Mortality of cetaceans). The full report of this meeting is available at https://archive.iwc.int/?r=17766

International Whaling Commission
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the IWC to be engaged either through the Secretariat or through national efforts. The IWC Chair and Secretariat participated in a number of events related to the post-2020 process. The Commission was represented by the SC vice-Chair Zerbini at a marine-themed meeting in November 2019 at CBD headquarters in Montreal, Canada. Engagement through the Secretariat, IWC and SC leadership, as well as through member governments, helps ensure that elements for the future framework take into account the relevant science and stewardship mandate of the Commission.

4.5 Convention on the Conservation of Antarctic Marine Living Resources (CCAMLR)

A University of Cambridge graduate student prepared a thesis focused on scientific collaboration between the IWC and CCAMLR. The recommendations from this research have been used to develop a joint work plan with input from scientists at the British Antarctic Survey. The work plan includes: improved communication, possibly through the development of a Memorandum of Understanding (MoU); formalising the process for designating observers for other intergovernmental organisations (IGOs); and arranging side events at the respective scientific meetings. A paper addressing this work plan will be submitted to the IWC meeting in 2021.

4.6 Convention on the Conservation of Migratory Species (CMS)

The Secretariat has continued ongoing co-operation with the CMS and its daughter agreements, ASCOBANS (Agreement on the Conservation of Small Cetaceans of the Baltic, North East Atlantic, Irish and North Seas) and ACCOBAMS (Agreement on the Conservation of Cetaceans of the Black Sea, Mediterranean Sea and Contiguous Atlantic Area) on a wide range of common challenges, including bycatch, strandings, CMPs, ship strikes, ecosystem functioning and whale watching. The CMS was engaged in the preparations for the pre-SC68B workshop on Ecosystem Functioning (now postponed until after SC68B). The Executive Secretary participated in the CMS COP13 in Gandhinagar, India, 17-22 February 2020. The CMS COP13 addressed a number of issues relevant to the IWC's Scientific and Conservation Committee work, including bycatch, whale watching, important marine mammal areas, marine noise, and aquatic wild meat. Outcomes and decisions at this CMS COP13 can be found on the CMS website[2].

In June 2019 the IWC Strandings Coordinator attended the joint ACCOBAMS and ASCOBANS workshop on harmonisation of the best practices for necropsy of cetaceans and for the development of diagnostic frameworks. The IWC Bycatch Coordinator is a member of the joint ASCOBANS/ACCOBAMS working group on bycatch. The joint working group is planning to hold its first face to face meeting in October 2020, although this may be delayed.

The Scientific Committee of ACCOBAMS met 26-28 February 2020 in Cap d'Ail France. Their papers and reports can be found on the ACCOBAMS website[3]. There are considerable synergies with the work of the IWC Scientific Committee and this excellent collaboration with ACCOBAMS was welcomed and encouraged, in particular on the issue of abundance estimation, ship strikes, bycatch, whale watching and the handbook developed in conjunction with CMS, the harmonisation of best practices for cetacean necropsy and tissue sampling and marine debris. The IWC is also collaborating with ACCOBAMS on a joint CMP for Mediterranean fin whales.

4.7 Convention on International Trade in Endangered Species of Wild Flora and Fauna (CITES)

The Secretariat continues to engage with CITES on several issues including the development of a procedure for transboundary transport of diagnostic specimens for cetacean disease investigations in emergency situations. Two related Resolutions exist on: (1) a simplified procedure (SP) for shipping of samples in cases of emergency; and (2) scientific exchange exemptions (SEE). Both the SP and the SEE are available for national CITES management authorities but are so far underutilised procedures. The CITES secretariat is currently drafting guidance which will be presented to the Standing Committee of CITES in October.

4.8 Food and Agriculture Organisation of the United Nations (FAO)

The IWC continues to strengthen collaboration with the regional and global bodies that address fishery management and in particular, the challenge of cetacean bycatch. The IWC's Bycatch Coordinator participated in an expert workshop to develop draft FAO Technical Guidelines for reducing bycatch of marine mammals in fisheries (September 2019). Opportunities for further collaboration with the FAO are currently being explored on outreach, capacity building and technical input associated with the Technical Guidelines. IWC representation is planned for the next meetings of the FAO and the Regional Secretariat's Network (dates to be confirmed). The Secretariat plans to intervene in support of the work planned under the new Responsible Fishing Operations Umbrella Programme and on the Technical Guidelines and their implementation, and to promote IWC/FAO collaboration. The draft guidelines can be found on the FAO website[4] and the final version (release date to be confirmed) will serve as an important reference for national and regional fishery management organisations. The

[2] *https://www.cms.int/sites/default/files/document/cms_cop13_doc.6.2_rev.1_annotated-agenda_e_0.pdf.*

[3] *https://accobams.org/meetings/thirteenth-meeting-of-the-scientific-committee.*

[4] *http://www.fao.org/3/ca7620en/ca7620en.pdf.*

IWC has also engaged with staff in the FAO and Regional Fisheries Management Organisations (RFMO) Secretariats involved in the Common Oceans ABNJ Project, in relation to possible IWC involvement in a Phase 2 project relating to improving sustainability of global tuna fisheries.

4.9 Regional fisheries management organisations (RFMOs)

The Secretariat commissioned a review by a US NOAA Knauss Sea Grant Fellow on the activities and management actions of different RFMOs to assist the Bycatch Mitigation Initiative in prioritising which organisations to engage with. This paper (SC/68B/HIM/05) will be presented at the HIM sub-committee meeting at SC68B for consideration and provides important background information and relevant recommendations for the IWC in raising awareness of cetacean bycatch in RFMOs.

The Executive Secretary joined the Bycatch Coordinator at the 1st Joint tuna RFMO Bycatch working group meeting, in December 2019. While the event was focused on bycatch of elasmobranchs in tuna fisheries, the Secretariat organised an IWC side event, in collaboration with other partners, as an opportunity for an overview of the Bycatch Mitigation Initiative and noted IWC's interest in collaborative work to ensure sustainable fisheries.

Indian Ocean Tuna Commission (IOTC) - The Bycatch Coordinator participated remotely in the IOTC Working Party on Ecosystems and Bycatch (WPEB) to present the Report of the IWC Workshop on Bycatch Mitigation Opportunities in the Western Indian Ocean and Arabian Sea. The IOTC WPEB noted that bycatch associated with set and drifting gillnet fishing gear comprises one of the greatest threats to cetaceans in the Western Indian Ocean. It also noted that the IWC workshop represented the beginning of a process to work collaboratively to better understand and address bycatch of cetaceans in the Western Indian Ocean. The WPEB encouraged active collaboration and data sharing between the IWC, IOTC and other stakeholders to achieve this goal.

International Commission for the Conservation of Atlantic Tunas (ICCAT) - The Bycatch Coordinator has been engaging with ICCAT's Bycatch Coordinator to discuss possible synergies and collaboration.

4.10 Protocol on Specially Protected Areas and Wildlife (SPAW) of the Cartagena Convention for the Wider Caribbean

The Secretariat is working with counterparts in SPAW to explore a possible MoU to facilitate collaboration in areas of common interest in cetacean science and stewardship, particularly in small-scale coastal fisheries. A draft MoU will be shared with the IWC Bureau at the 25 May 2020 meeting to obtain guidance on whether this MoU, or a modification thereof, should be presented to the Commission at IWC/68.

Committee members' update on engagement with other organisations

The Secretariat prepared a document (SC/68B/O07Rev1) which provides the reports of observers representing the Committee at various meetings of other IGOs. Committee observers are named in brackets following each IGO name.

4.11 International Union for the Conservation of Nature (IUCN) (Cooke)

There is a long-standing collaboration between IUCN and the IWC on matters of mutual interest. In recent years these have focussed on the Western Gray Whale Advisory Committee (WGWAP) and the newly formed IUCN Marine Mammal Protected Areas Task Force (MMPATF). The WGWAP progress report to the Scientific Committee is given as SC/68B/CMP/06. The most recent meeting was that of the Noise Task Force, held as a virtual meeting from 7-9 April 2020, focussing on key agenda items related to advice regarding seismic surveys and other noise-related issues off Sakhalin Island, Russian Federation. The report will be available on the WGWAP website[5] in June 2020.

The main objective of the MMPATF is to facilitate mechanisms by which the marine mammal protected areas 'community of practice' can collaborate, share information and experience, access and disseminate knowledge and tools for establishing, monitoring, and managing MMPAs to promote effective spatial solutions and best practices for marine mammal conservation. The IWC has provided input to this process and is working with the Task Force to find new ways to identify Important Marine Mammal Areas (IMMAs) on the high seas, through the use of historical, remote and proxy data. The WWF, with input from IWC and the MMPATF, have expanded the analyses of shipping and IMMAs to all currently identified IMMAs and are presenting preliminary results at SC68B (SC/68B/HIM/03).

The IUCN Marine Mammal Protected Areas Task Force held its 4th regional workshop in Salalah, Oman, in March 2019 to select candidate Important Marine Mammal Areas (IMMAs) for the Western Indian Ocean and Arabian Seas. The 55 candidate IMMAs proposed by the workshop are currently undergoing independent review. More details are given under Item 20.2.1.

[5] *https://www.iucn.org/western-gray-whale-advisory-panel.*

12. BYCATCH AND ENTANGLEMENTS (HIM)

12.1 IWC's Bycatch Mitigation Initiative

SC/68B/HIM/12 provided an update on the progress of the IWC's Bycatch Mitigation Initiative (BMI). The BMI efforts have focused on identifying priority countries for pilot project development and engaging with priority Regional Fisheries Management Organisations (RFMOs) and the Food and Agriculture organisation of the United Nations (FAO). Pilot projects are intended to allow the BMI to apply multi-disciplinary, experimental approaches to bycatch mitigation, monitoring and management. Seven countries (India, Kenya, Pakistan, Republic of Congo, Thailand, Peru, and Indonesian/Malaysian Borneo) were identified for pilot project development, and a longer list of countries has been identified for possible future project development. The BMI will continue to engage with national governments and local experts to discuss collaboration on pilot projects, develop the scope of projects and project concepts for fundraising efforts. The BMI has continued to engage with the FAO on the development of Technical Guidelines to reduce bycatch of marine mammals in capture fisheries and with priority RFMOs including the Indian Ocean Tuna Commission (IOTC) regarding bycatch in the Indian Ocean and the joint tuna-RFMO bycatch working group.

Discussion of general collaboration with FAO and RFMOs is given under Item 12.5 and with IOTC under Item 12.2.

The BMI is developing a new four-year work plan for 2021-24, to be considered by the Conservation Committee at its next meeting. During this period, the BMI will continue to focus on bycatch in gillnets and other fixed fishing gears and prioritise information gathering in currently identified and future priority pilot project locations.

The Committee welcomed the report given in SC/68B/HIM/12 and thanked Tarzia and the Expert Panel for their work.

Attention: C, CG, CC, SC, S

The Committee strongly **endorses** the work of the IWC's Bycatch Mitigation Initiative (BMI) as reported in SC/68B/HIM/12, **recommends** continuation of this work and **encourages** the creation of a separate BMI budget line to support priority bycatch research, including for pilot project implementation.

To further support the work of the BMI, the Committee **agrees** to:

(1) request new bycatch information in advance of annual Committee meetings from priority locations for the BMI (and for focal species within pilot project countries/region);

(2) review new information with a view to providing recommendations for fisheries or locations which should be prioritised for BMI work (e.g. pilot projects or capacity building);

(3) assist the BMI to identify bycatch hotspots and review existing data available on cetacean distribution, bycatch and fishing effort; and

(4) continue to review mitigation and monitoring strategies and provide appropriate technical advice including assisting the BMI intersessionally on reviews of mitigation measures.

The Committee also **encourages** the ongoing collaboration among the BMI, RMFOs, independent researchers and NGOs. It **requests** that relevant NGOs and researchers contact the BMI regarding their specific geographical interests and expertise.

Campos provided a statement on behalf of the Government of Peru requesting to be considered as a location for a BMI pilot project to monitor and mitigate the incidental capture of dolphins. She noted that a constant concern for Peru's artisanal fisherman and Government entities has been the interactions between cetaceans and the artisanal fishery, given that cetaceans are protected species. This conflict is a complex and multi-faceted issue. The interaction is reciprocal, in that cetaceans have an effect on the fishery (e.g. damage to gear, loss of catches) and the fishery has an effect on cetaceans (e.g. bycatch mortality, directed catch and decrease in food availability). The IWC Bycatch Mitigation Initiative's pilot projects will be focusing on monitoring and mitigating the incidental capture of cetaceans in artisanal fisheries.

12.2 Review new methods and estimates of entanglement rates, risks and mortality

Anderson *et al.* (2020) used the limited data available to make rough estimates of cetacean bycatch in Indian Ocean tuna gillnet fisheries. Cumulative total bycatch, 1950-2018, was estimated to be about 4.1 million small cetaceans (±50%) with annual bycatch peaking at about 100,000 individuals per year (±40%) during 2004-06. These levels of removal appear to be unsustainable, with some populations currently estimated to be at 10-20% of pre-fishery levels. Iran, Indonesia, India, Sri Lanka and Pakistan have the largest gillnet fleets in this area and the highest estimated cetacean bycatch.

The convention area of the Indian Ocean Tuna Commission (IOTC) has the highest gillnet fishing effort of tuna-RFMOs, and the type of regional level analysis of bycatch conducted by Anderson *et al.* (2020) has generally not previously been carried out for other regions. The analysis did not include any information on deliberate, directed catch of dolphins by tuna fisheries (some directed catch for consumption has occurred in Sri Lanka and parts of the Indian coastline). Recent anecdotal evidence suggests that many Indian Ocean tuna gillnet fleets are moving towards sub-surface setting of nets, which has been found to lead to bycatch reductions of some cetaceans and other taxa. For future analyses, it was suggested that authors should consider the effects of sub-surface setting (particularly post 2016 and the impacts of climate change in relation to changes in tuna distribution, abundance and fishery yields over time.

The IWC held a workshop entitled 'Bycatch Mitigation Opportunities in the Western Indian Ocean and Arabian Sea' in Nairobi in May 2019. The report of the workshop will be presented to the Conservation Committee later in the year for consideration at IWC68 in 2021 (see copy available at *https://archive.iwc.int/pages/view.php?ref=9612&k=*). The Workshop identified known and potential cetacean bycatch hotspots across the region and recognised that bycatch is one of the most significant conservation threats to species and populations.

Discussions highlighted the limited data available for assessing bycatch throughout the Indian Ocean, the opportunities for the BMI to contribute towards mitigation trials and the potential for further collaboration with IOTC.

Attention: CG, CC, SC, S

The Committee **endorses** the recommendations in the Report of the workshop on Bycatch Mitigation Opportunities in the western Indian Ocean and Arabian Sea (**agrees** on the need for integration of social and economic information and factors into bycatch reduction efforts and **welcomes** a multi-disciplinary approach to bycatch reduction efforts. It particularly highlights recommendations that:

(1) national governments should strengthen bycatch assessment, monitoring and reduction programmes as a matter of urgency;

(2) that the BMI explore means of more consistent and sustainable approaches for funding bycatch mitigation efforts;

(3) multi-disciplinary efforts are needed; and

(4) the IWC and IOTC should collaborate more closely to address cetacean bycatch (see Item 12.5).

SC/68B/HIM/01 described estimates of entanglements of humpback and common minke whales in the Scottish creel fishery based on face-to-face interviews with fishers and examination of strandings data and disentanglement efforts. Two independent data sources were used for a capture-recapture approach to estimate the number of entanglements. Estimates were also made by extrapolating results from the interviews to the entire active fleet. The results suggest that the Scottish creel fishery may be responsible for considerably more whale entanglements than previously thought, with estimates of around five humpback whales and 30 common minke whales becoming entangled each year. The two independent datasets (strandings and interviews) and analysis methods (capture-recapture and extrapolation) were subject to many potential biases. However, the similarity of the estimates provided some confidence in the results. Given that over 80% of the common minke whales and 60% of the humpback whales were reported entangled in the ground lines, fishers suggested using sinking line, and some have been participating in informal trials of rope-less technologies. It was noted that the scale of the problem may surprise fishers since most individuals only occasionally encounter entangled whales. Fishers' engagement on this issue may have been facilitated by the fact that aside from the issue of bycatch, creel fishing is perceived as less environmentally damaging than some other fishing gears. During the IWC disentanglement training, some of the fishers commented that fleet-wide changes in fishing operations would only occur if regulations were implemented. However, there was willingness to trial mitigation measures if there was financial support. The Committee **commends** the Scottish Entanglement Alliance (SEA) for its successful engagement with the Scottish creel fishing community, who have shown a strong willingness to try to address the entanglement problem.

Attention: CG

The Committee **recommends** continuation of the SEA project, including ongoing outreach with fishermen and creel entanglement mitigation trials.

SC/68B/HIM/08 described a study initially funded by the IWC Small Cetacean Voluntary Fund which conducted fisher interviews in Kuching Bay, Sarawak (Malaysian Borneo) between 2011-14 and 2016-19. In total, 36% of respondents reported having experienced an entanglement of a cetacean in their own gear sometime in the past year. In the second interview period, of the 62 respondents who had experienced cetacean bycatch in their nets,

58% reported finding animals alive and releasing them. Irrawaddy dolphins were the species most frequently reported species entangled.

The BMI has identified Malaysian (and Indonesian) Borneo as a priority location for pilot project development and the Committee **welcomes** this new information on bycatch in artisanal fisheries in Sarawak and **encourages** further collaboration between the authors and the BMI to determine whether the data can be used to extrapolate mortality rates for local cetacean populations, and to test bycatch mitigation methods in these fisheries. The newly developed 'Guidelines for the safe and humane handling and release of bycaught small cetaceans from fishing gear' (Hamer and Minton, 2020) should prove useful in these situations, and in some locations there might be a way to combine training for large whale disentanglement with safe handling and release of small cetaceans. There might also be opportunities for joint efforts with CMS who have recently developed a Concerted Action Plan for Irrawaddy dolphin which considers bycatch.

SC/68B/HIM/07 provided new information on the Baltic Sea harbour porpoise, which is listed by IUCN and HELCOM as critically endangered. Its current geographical range is significantly smaller than its historic one and there are only a few hundred animals left. The most recent abundance estimate (Amundin *et al.*, 2016) is 497 (95% CI 80-1,091). While pollution and disturbance through underwater noise may be contributing to the population failing to recover, bycatch is the most acute threat causing direct mortalities. Given the small size of the population, the sex ratio, age distribution, and the proportion of females that are potentially infertile due to high contaminant load, there may be fewer than 100 fertile females remaining in the Baltic Proper. The authors note that losing even one female could have a serious effect on the ability of the population to recover or even remain stable but initiatives from EU Member States to minimise bycatch are limited with no area closures to gillnets to protect the porpoise. While Sweden designated the main part of the porpoise breeding area in the central Baltic Proper as a Natura 2000 site in December 2017, the lack of progress to protect the porpoises due to the extended process for EU Member States to agree on joint measures is threatening the survival of the population.

The Committee discussed a number of recommendations made by the authors of SC/68B/HIM/07 and also noted its previous recommendations calling for urgent conservation action for the Baltic porpoise. Last year (IWC, 2020a, p.46) the Committee reiterated its concern and agreed that listing the harbour porpoise population of the Baltic Proper in Appendix I of CMS would greatly assist in conservation efforts. However, this did not happen at the CMS Conference of the Parties (CoP) in February 2020, although an NGO-sponsored 'Concerted Action' was approved by the Parties.

Attention: CG, CC, SC, S

The Committee has repeatedly stated its serious concern for the critically endangered harbour porpoise population of the Baltic Proper, e.g. see (IWC, 2020a, p.46). The Committee again **recommends**, as a matter of urgency, that all countries adjoining the Baltic Proper immediately act to eliminate bycatch of the Baltic porpoise.

In addition, the Committee:

(1) **encourages** further research into stranded and/or bycaught porpoises to investigate all factors negatively impacting on the population, including pollution and prey depletion;

(2) **notes** that ICES, at the request of the European Commission, is in the process of providing advice on fishery emergency measures for the Baltic porpoise and looks forward to seeing its advice;

(3) **notes** the recent statement from the European Commission and urges it to act on the latest advice and information and ensure that appropriate measures are implemented and are in place for the longer term until population recovery is achieved;

(4) again **encourages** the Baltic range states to propose the Baltic porpoise for listing on CMS Appendix 1 at the earliest opportunity and calls on CMS Parties to support this process; and

(5) **requests** the IWC Executive Secretary to write to all the range states informing them of the Committee's concerns.

12.3 Review mitigation measures for preventing bycatch and entanglement

Omeyer *et al.* (2020) described a study to assess the effects of a Banana Pinger (Fishtek Marine Limited) on harbour porpoises near Cornwall, UK between August 2012 and March 2013. Two passive acoustic loggers recorded cetacean activity during cycles of active and inactive pinger periods. Harbour porpoises were 37% less likely to be detected near the pinger when the pinger was active, while they were only 9% less likely to be detected 100m further away. The results suggested that harbour porpoises did not habituate to the pinger over an 8-month period, that the pinger effect was localised, and that pinger use did not lead to harbour porpoise displacement.

Clay *et al.* (2019) examined the effect of pingers on the behaviour of Burmeister's porpoise in the vicinity of the Peruvian small-scale driftnet fleet was investigated over a four-year period. The use of pingers led to an 86% reduction in porpoise activity around nets. The results suggested that pingers are likely to be effective at deterring Burmeister's porpoises from fishing nets. Given the large capacity of this and other fleets in the region, pingers may substantially reduce mortality.

Bielli *et al.* (2019) examined the use of light emitting diodes (LEDs) deployed on the floatlines of paired (control vs illuminated net) gillnets, to provide a visual cue, during 864 fishing sets on small-scale vessels departing from three Peruvian ports between 2015 and 2018. For the illuminated nets, bycatch probability per set was reduced by up to 74.4 % for sea turtles and 70.8 % for small cetaceans. Target species CPUE was not negatively affected by the presence of LEDs.

It was noted that Bielli *et al.* (2019) demonstrated the efficacy of net illumination to reduce bycatch for Peruvian small-scale gillnet fisheries and that there could be wider applications given the ubiquity of small-scale net fisheries, the relatively low cost of LEDs and the current lack of solutions to bycatch. However, the effectiveness of LEDs as a mitigation measure may depend on the area, habitat characteristics, fishery, time of day (the Peruvian trials were overnight), target species and bycaught species. Further trials are needed to assess the effects of LEDs, particularly during the day and in different natural light conditions.

SC/68B/HIM/02 described a comprehensive design guide to enable the construction of gillnets that are efficient for target catch but acoustically visible to specified frequencies of echo-location signals. Species-specific resonators that substantially increase the acoustic visibility of gillnets were systematically identified through simulation and experimental testing. For example, 8mm acrylic glass spheres appear as large as table tennis balls at 130 kHz, the frequency used by harbour porpoises. The authors suggested experiments to examine the behaviour of odontocetes in the vicinity of modified gillnets, and commercial fishing trials to investigate whether bycatch is reduced with modified nets. If successful there would then be a need to develop an automated process to build gillnets with acrylic spheres attached.

In discussion, Kratzer noted that an initial small commercial trial resulted in fewer bycaught porpoises in the modified nets, but the results were not yet conclusive. The prototype nets as well as the nets for the commercial trials were built by hand, but automated production would be needed for longer nets. Although the spheres are cheap, the engineering challenge during manufacture is to either attach the spheres automatically to a standard net or to integrate them into the filament as it is made. Trials conducted with a different type of reflector had not been able to detect changes in harbour porpoise behaviour around nets.

SC/68B/HIM/11 reported the results of trial of a low-cost bycatch reduction method in a small-scale drift gillnet fishery in Peru ('glass bottle alarms' a glass drink bottle with a bolt inside thought to produce a sound similar to that of a commercial 'pinger'). This should allow dolphins to more effectively detect a gillnet and avoid capture but the authors found that it did not significantly reduce bycatch of dolphins or turtles in gillnets (or target fish catch captures aside from a reduction in shark catch). Another potential low-cost technology, plastic bottle acoustic reflectors, will be tested in the coming months in the same fishery.

The Committee noted that the mean sound pressure level (SPL) of the 'glass bottle alarm' (120dB re 1µPa/√Hz at 1m) is much lower than a commercial 10kHz pinger (132dB), and that commercial pingers have been found to reduce bycatch in the same fishery as the glass bottle alarm tests. Berggren noted that it was probably easier to have closer spacing of the bottles rather than trying to increase the SPL with different materials. In the trials, the spacing had ended up being greater than intended because the easiest place to attach the bottles was between the net panels. Some sensory ecology or fine scale behavioural studies around the bottle alarms may be useful and could be compared with pingers. Another approach would be to repeat the experiment with a closer spacing. Tarzia noted that there may be possibilities within a BMI pilot project to help test these low-cost mitigation options further. The Committee **welcomes** the presentation of results of trials of technical mitigation measures which attempt to reduce cetacean bycatch in gillnets.

Attention: CG, CC, SC

The Committee **draws attention** to previous discussions that in many situations there may be no technical option that can be implemented effectively and the only solution is to stop using high risk fishing gears; this can include situations involving critically endangered cetacean populations or difficult socio-economic circumstances.

The Committee **recommends** the further development and testing of simple technology and low-cost devices that might reduce cetacean bycatch. This includes lights (LEDs), 'glass bottle alarms' and simple reflectors discussed this year. In all cases, trials need to determine the effectiveness for reducing bycatch for the species of most concern, while also assessing consequences for other species and taxa, as well as on catches of the

target species. Such tests should be conducted in conditions as close as possible to those in the fishery where they are intended to be implemented. For example, LEDs should be tested in a variety of different natural light and turbidity conditions across a range of fisheries.

12.4 Reporting of bycatch (including small cetaceans) and large whale entanglements

12.4.1 Review progress on the global entanglement database

Last year, the Committee had agreed to request that members of the Global Whale Entanglement Response Network (GWERN) collect data using the consensus data form – see Annex D of IWC (2013b) in order to assess the feasibility of creating a global entanglement database based on reports from GWERN. Mattila provided an update on the use of the data form. Eleven countries or regions responded to a survey on the use of the form, representing more than 150 entanglement response incidents. Most found the data form was helpful and many of the networks had already incorporated most of the data fields in their national or regional databases. However, most of the responding countries/regions already have a national or regional database and did not feel that there was a need for the IWC to develop a global database. In view of this, the Committee **welcomes** the ongoing efforts on data collection but **agrees** to defer a decision on developing a global database.

12.4.2 National progress reports

There was some discussion of National Progress reports in the context of the BMI work item to identify the main barriers to reporting, gaps in IWC bycatch data, and opportunities to collaborate with other inter-governmental organisations collecting bycatch information. The Committee noted previous discussions regarding National Progress reports and the challenges faced by many countries due to lack of resources. The Progress reports only include reported bycatch and thus not estimates of the total. The new US import restrictions under the MMPA may incentivise some countries to improve their estimates. The Committee **agrees** to continue to encourage improved reporting and estimation of bycatch and notes that estimates of all anthropogenic removals are required for assessments. Double noted that for Australia, the national reporting process results in the only annual national synthesis of cetacean bycatch and entanglement.

A summary of the entries into the Progress Reports database for the past year is available as Annex G.

12.5 Collaboration on bycatch mitigation with IGOs (including FAO, Regional Fisheries Management Organisations and others)

The Bycatch Coordinator, Tarzia, briefly outlined the ongoing engagement between the IWC Secretariat, FAO and efforts to develop a collaborative work programme on cetacean bycatch (see SC/68B/HIM/12). This has included participation in FAO expert workshops and coordination of comments from the BMI on FAO's draft technical guidelines to reduce marine mammal bycatch in fisheries. Tarzia has also engaged with FAO on the Common Oceans Areas Beyond National Jurisdiction (ABNJ) project (Phase 2 development) and she also remotely participated in the 2019 IOTC Working Party on Ecosystems and Bycatch meeting, presenting the IWC Indian Ocean bycatch workshop report (to be presented to the IWC Conservation Committee at its next meeting[17]). Tarzia and Lent also attended the 2019 joint-tuna RFMO bycatch working group meeting and held a side event on cetacean bycatch. The Committee welcomed this participation in the meeting of the FAO, IOTC and ICCAT Secretariats.

Einarrson presented an outline of the development of the FAO's Technical Guidelines to reduce bycatch of marine mammals in capture fisheries, including two expert workshops (2018 and 2019) and the incorporation of feedback from national governments and IGOs and experts. FAO appreciated the input from both the Committee and the BMI and looks forward to further cooperation. FAO had planned to publish the final version of the Technical Guidelines in advance of its Committee on Fisheries meeting (July 2020), however due to the meeting being postponed it is currently uncertain if the guidelines will be published in the timeframe planned or with a slight delay (February 2021). The Committee noted the importance of the Guidelines and welcomed their publication in the coming months.

The Secretariat commissioned an analysis of RFMO efforts and policies related to cetacean bycatch to help inform the IWC and the BMI on which of the RFMOs should be prioritised for collaboration on bycatch reduction. The report (SC/68B/HIM/05) focuses on the following RFMO components: legally-binding conservation and management measures, observer programmes, data analyses and other voluntary progress (e.g., workshops and special collaborative projects). This information was analysed to generate a semi-quantitative 'bycatch mitigation effort' score, coupled with a 'potential for bycatch risk', to calculate an overall 'average bycatch performance' score for tuna RFMOs. The analysis was limited in scope to efforts on paper rather than in practice. Based on the assessment, the author recommended that IWC prioritise engagement with ICCAT, IOTC, the South Pacific

[17] *https://archive.iwc.int/pages/view.php?ref=9612&k=.*

Regional Fisheries Management Organisation (SPRFMO), and the Southern Indian Ocean Fisheries Agreement (SIOFA).

The Committee welcomed SC/68B/HIM/05 and thanked Elliot for this work which will be valuable to the BMI for long-term monitoring of RFMO progress in cetacean bycatch management. There is not currently an activity within the BMI's work plan to refine or expand on the methodology, but members of the Committee are encouraged to collaborate directly with Elliot on this.

Although some RFMOs may have conservation management measures relevant to cetaceans, compliance with these measures is often low and this is an important factor to consider in any future work. It was also noted that to bring about change within RFMOs, recommendations generally need to be made at the RFMO Commission level, either through a 'science channel' or a 'political channel'. The Committee noted that the Kobe[18] Bycatch Working Group might be the ideal forum to discuss the review and that this could initiate further collaborations with tuna RFMOs. It was noted that the draft review had been discussed at the ICCAT Ecosystems meeting, but that there had not been time to formulate a recommendation. The Committee looks forward to further discussion at SC68C.

Although in many regions the RFMOs are less relevant to the small-scale fisheries that are the priority of the BMI, a component of the BMI work plan does include engagement with RFMOs. In discussion, it was suggested that tuna RFMOs were already struggling with their primary tasks of fisheries management, with little attention to cetacean bycatch, and that engaging directly with member states might be more effective. However, others pointed to collaborations with RFMOs which had led to productive advances to address bycatch of other taxa (e.g. sea turtles and IATTC, seabirds and a number of RFMOs). Management measures within RFMOs for cetacean bycatch had been limited by a lack of expertise within the RFMOs, but the situation is improving. There was agreement on the need for long-term engagement with RFMOs. In particular, following the Indian Ocean bycatch workshop in 2019[19], Tarzia has been trying to progress a research-based work plan with IOTC.

SC/68B/HIM/05 also proposed a workshop to improve knowledge of cetacean bycatch levels and population-level impacts within RFMOs. There is a need to gather data at a regional level which could be facilitated by regional workshops and/or making use of existing meetings. The Ocean Modelling Forum (Punt *et al.*, 2019) also has ongoing projects to address setting and applying bycatch standards including estimating abundance and assessing bycatch rates. Tarzia will continue to explore opportunities for the BMI to enhance data gathering and understanding of bycatch impacts in collaboration with these other initiatives. It was suggested that there might also be an opportunity for a meeting associated with the IOTC Working Party on Billfish (WPB) and Working Party on Ecosystems and Bycatch in September 2020 to scope out a future technical workshop on cetacean bycatch.

The Western and Central Pacific Fisheries Commission (WCPFC) hosts an online Bycatch Management Information System (BMIS) for fisheries managers, scientists, fishers, educators and the public (SC/68B/HIM/04). The database consolidates information on the mitigation and management of incidental catches of species of special interest in pelagic tuna and billfish fisheries. The BMIS information on mitigation techniques and RFMO regulations is updated frequently and regular peer review helps to ensure its consistency with international best practice. The BMIS team is seeking advice from the Committee and the BMI on periodic peer review of cetacean related BMIS content. The BMIS team are also interested in collaborative efforts to improve the availability of standardised regional bycatch data through the tuna-RFMOs Bycatch Data Exchange Protocol (BDEP).

There are several opportunities for coordinating international efforts to provide publicly accessible information on cetacean bycatch and mitigation and the Committee **agrees** that the IWC should continue to build collaborations with existing platforms, efforts and existing or potential linkages among initiatives. The FAO's 2019 workshop to develop Technical Guidelines (SC/68B/HIM/11) recommended that the FAO maintain updates on mitigation measures potentially through the BMIS platform.

BMI collaboration with the BMIS to review existing information and provide new information on mitigation could help to fill the large knowledge gap regarding large whale entanglement on the high seas. The Bycatch Coordinator is also engaging with many other global initiatives working on bycatch mitigation (including CMS, ACCOBAMS, SPREP, *https//:www.bycatch.org*) and many of these are included in the BMI draft work plan. The Committee will continue to review new mitigation studies and consider how best to provide advice on specific mitigation options. An intersessional correspondence group has been established (see Annex K) to assist Tarzia and the Expert Panel in addressing the requested review by BMIS including: (i) review of each mitigation technique description relevant to cetaceans; (ii) advice on prioritising cetacean mitigation techniques according to gear type;

[18] The 'Kobe process' is a collaboration between tuna RFMOs which started with the first meeting in Kobe, Japan in January 2007.
[19] *https://archive.iwc.int/pages/view.php?ref=9612&k=.*

and (iii) review of descriptions of cetacean interactions by fishing gear/method employed in pelagic tuna and billfish fisheries.

Attention: C, CG, CC, SC, S

The Committee notes the broad scope of work which would be needed to understand and address cetacean bycatch in all the regions covered by RFMOs. In relation to engagement at RFMO level, the Committee **recommends** that the BMI**:**

(1) prioritises collaboration with IOTC, ICCAT, SPRFMO, and SIOFA, with further scoping of work plan activities;

(2) works alongside other RFMOs, in collaboration with the FAO, to develop baseline cetacean bycatch-related requirements;

(3) further develops its collaboration with the BMIS to review existing information, provide new information on mitigation and provides the BMIS with access to safe handling and release guides/information/material and species identification guides.

The Committee also **recommends**:

(1) collaboration with the FAO and RFMOs to build awareness and capacity to implement the FAO Technical Guidelines to reduce bycatch of marine mammals in capture fisheries and;

(2) collaboration with the FAO and Western and Central Pacific Fisheries Commission (WCPFC) and the South Pacific Community (SPC) to contribute technical information for BMIS and BDEP, and;

(3) raising awareness within the IWC Community of these tools.

The Committee **endorses** the 'Guidelines for the safe and humane handling and release of bycaught small cetaceans from fishing gear' (Hamer and Minton, 2020).

SC/68B/HIM/14 described the Marine Stewardship Council (MSC) Fisheries Standard Review which is conducted every five years. The Fisheries Standard requirements for Endangered, Threatened, or Protected (ETP) species considers a fishery's impact, both direct and indirect, on species listed as ETP in certain national or international agreements. The current review includes the requirements fisheries must meet for 'ETP species' and 'preventing lost gear and ghost fishing'. MSC has determined that changes to the Fisheries Standard may include the scope of what is eligible for assessment, ETP scoring requirements and supporting guidance. The authors noted that there can be inconsistencies between the designation of ETP species among fisheries assessments and they were trying to ensure that ETP species are designated consistently.

To facilitate the review, MSC held a workshop in 2019 on incentivising consistent data collection and transparent reporting of marine mammal bycatch in fisheries (Gummery and Currey, 2020). The workshop had been a good example of collaboration and similar cross-disciplinary workshops at future marine mammal conferences were encouraged.

There was some discussion about the connection between MSC standards and requirements under the US Marine Mammal Protection Act (MMPA) with respect to cetacean bycatch for fish products imported into the US. Gummery noted that the intention was that any MSC certified fishery should comply with the MMPA regulations, but the details of how this would be achieved remain to be resolved. It was noted that the classification of fisheries by the US Government under the MMPA regulations may still be subject to legal challenges.

It was suggested that observer programmes, or electronic monitoring that had been established as effective for monitoring bycatch, should be required for any fishery with a risk of bycatch, to be certified by MSC. In addition, observer coverage should be high enough to achieve a coefficient of variation (CV) of 30% or better on the bycatch estimate. Gummery noted that the MSC currently has guidance but not requirements for bycatch related information and that MSC would welcome input on this aspect. It was also suggested that the IUCN Red List should be used where relevant to help ensure consistency in designation of ETP species.

12.6 Provide advice on observer schemes in South Africa

In 2019, the Committee received a request from South Africa for advice on development of a national programme to monitor and mitigate marine mammal bycatch in national fisheries and recommended the Bycatch Expert Panel provide advice on the development of the national programme. Discussions on the issue in South Africa are currently ongoing and this topic will receive more thorough discussion intersessionally and in 2021 (SC68C).

12.7 Progress on previous recommendations

Last year, the Committee noted limitations of cetacean bycatch estimates and mitigation programmes across the EU and recommended that improved monitoring programmes be established (IWC, 2020a, p.32). The Committee had also expressed concern that the bycatch of common dolphins in the Bay of Biscay may threaten the conservation status of the population. This year the Committee discussed the specific situation regarding the

Iberian (see Item 16.1.2) and Baltic (see Item 12.2) populations of harbour porpoise. Taking account these previous discussions and recommendations and the specific new information, the Committee elaborated on these with respect to more general recommendations to address bycatch in European waters.

Attention: C, CG, CC, SC

In addition to the new information discussed this year on cetacean bycatch within a number of EU countries and the specific recommendations related to small populations of harbour porpoises and large whale entanglement mitigation, the Committee **recalls** its previous recommendations related to bycatch of harbour porpoises and common dolphins in the North Atlantic and on the limitations of cetacean bycatch estimates and mitigation programmes across the EU. Improved monitoring programmes should be established.

The Committee also **notes** with appreciation the recent statement made by EU Commissioner Sinkivičius on 'EU action on bycatch of dolphins and other marine animals' and urges EU Member States and relevant IWC member states to act on the latest advice and information to ensure that appropriate bycatch measures are implemented effectively and are in place for the longer term throughout European waters.

The Committee **recommends** a focus on cross-border and cross-agency cooperation with fishers and among countries on bycatch monitoring and mitigation, building on the expert advice of ICES and other relevant regional organisations (e.g. FAO, GFCM, EU STEFC). To enable this and to allow a consistent approach across regions, bycatch risk assessments should be undertaken, within the appropriate regional management framework, for each European marine region, including the Mediterranean and Black Sea.

The Committee **emphasises** the need for increased and robust monitoring and attention to the reliable and consistent collection of fishing effort per fleet and bycatch per unit effort in all fleets. The European Commission, with the support of relevant advisory groups, should provide guidance to ensure improved collection of data for use in bycatch-estimation, including at-sea sampling, metrics of fishing effort and sampling design.

The Committee **recommends** the European Commission implement emergency measures for the North East Atlantic common dolphin and considers emergency measures for the Iberian porpoise as described in Item 16.1.2. See also discussion under Item 12.2 for the harbour porpoise in the Baltic Proper.

In 2019, the Committee recognised the potential for the Ecuadorian artisanal drift gillnet fishery to be a BMI pilot project and also encouraged the IWC's large whale entanglement initiative to provide entanglement response training in Ecuador. The IWC entanglement initiative and BMI have been in discussions with Ecuador and potential funders to explore opportunities for training and projects.

Last year, the Committee reiterated its continued grave concerns regarding Māui dolphins (IWC, 2020a, p.34). The Committee proposed an intersessional process for reviewing the spatial risk assessment model for Māui and Hector's dolphins presented in Roberts *et al.* (2019). However, New Zealand is currently in the process of revising its management measures to protect Māui dolphins, and therefore elected to defer the proposed intersessional review of the Māui dolphin modelling work until after the revision is completed.

12.8 Work plan

In addition to the work related to the BMI (see Item 12.1) the Committee **agrees** to maintain current agenda items:

(i) review new methods and estimates of entanglement rates, risks and mortality;
(ii) review mitigation measures for preventing bycatch and entanglement;
(iii) reporting of bycatch (including small cetaceans) and large whale entanglements; and
(iv) collaboration on bycatch mitigation.

The Committee **agrees** to include an agenda item on bycatch risk assessment and to encourage papers on rapid risk assessments and approaches to assess bycatch risk (e.g. Bycatch Rapid Risk Assessment Toolkit, ICES, work by Ocean Modelling Forum).

The Committee also noted a recent paper (Myers and Moore, in press) that examined changes to the economics of a fishery in response to measures to reduce large whale entanglements through effort reduction. Although there was not time to discuss this paper, the Committee **agrees** to include an agenda item to review studies examining the implications of effort reductions on cetacean bycatch, fisheries economics and yields.

13. SHIP STRIKES (HIM)

13.1 Review new methods and estimates of rates of ship strikes, risk of ship strikes and mortality (including review progress on ship strike database)

SC/68B/HIM/10Rev1 summarises the work carried out by the IWC ship strike data coordinators between May 2019 and April 2020. The focus over the last two years has been on data validation and assessing new reports.