Final Report: Meeting on collaborative activities for cetacean bycatch, IOTC-IWC

Date: 26-27th July 2021

Platform: Microsoft Teams

Chair: Sylvain Bonhommeau

Time: 12:00-16:00 CET (GMT+2)

1. Opening of the meeting

The Chair opened the meeting and explained the origins of the meeting, noting that over two years ago, the International Whaling Commission (IWC) Secretariat contacted the Indian Ocean Tuna Commission (IOTC) Secretariat to discuss the issue of cetacean bycatch in the region and possible strategies for bycatch mitigation in Indian Ocean fisheries. The IWC's Bycatch Mitigation Initiative (BMI) held a workshop in 2019 dedicated to cetacean bycatch within the Indian Ocean region which brought together stakeholders from across the Indian Ocean region as well as experts on bycatch. Representatives from the IOTC Working Party on Ecosystems and Bycatch as well as IOTC member countries participated in the 2019 workshop.

The IOTC and IWC went on to hold an initial group meeting in September 2020 as a continuation of these discussions to identify collaborative work areas between the two organisations, their member countries and experts working within the region. The report from that meeting was presented to the IOTC Working Party on Ecosystems and Bycatch (WPEB) but no recommendations were adopted by the WPEB. The WPEB did suggest, however, that discussions between the IOTC and IWC should continue intersessionally. As a result of that suggestion, this meeting was organised with the hope that possible recommendations to take to the next meeting of the WPEB in September 2021 could be formed and a plan could be developed for the priority collaborative activities of IOTC and IWC.

The agenda was adopted without comment. The list of participants is in Annex 1 – List of Participants.

2. Introductory remarks by IOTC and IWC representatives

The Chair introduced the overall objective of this meeting which was to start planning the top priority collaborative activities of IOTC, IWC and other interested parties relating to understanding and addressing cetacean bycatch in Indian Ocean tuna fisheries as well as preparing possible recommendations to take to the IOTC's WPEB. An in-depth overview of the context of the meeting was not given as this was provided at the group's meeting in September 2020 as well as at the IWC's 2019 workshop.

The IOTC Secretariat opened by saying that cetacean bycatch has not been seen as a high priority in the past, particularly as there has been a historic lack of information on the scale of the issue with the majority of very limited data held by the Secretariat coming from the observer programme. The IOTC Secretariat went on to say that they hope that the IOTC scientific community can collaborate with IWC to address this lack of data and to make cetacean bycatch a higher priority for IOTC.

The IWC Secretariat opened by saying that the IWC Scientific and Conservation Committees have been discussing the issue of cetacean bycatch in the Indian Ocean for many years and are concerned by the scientific evidence of high bycatch across the region, particularly in gillnet gears, and the tuna driftnet fishery. The IWC's BMI has identified the Indian Ocean as a key region to focus collaborative efforts to improve the understanding of cetacean bycatch and the available solutions for addressing it. The IWC does not manage fisheries so collaboration with RFMOs (in this case the IOTC) and individual governments is key in order to raise awareness of the issue and the available solutions to understand and address bycatch.

The IWC Secretariat, on behalf of the BMI, expressed their pleasure to be continuing the discussions regarding collaborative activities with the IOTC and with the broader fisheries and cetacean science communities in the Indian Ocean region.

The group noted that in this meeting discussions would cover the proposed project on cetacean bycatch under the Common Oceans ABNJ Tuna Phase II project, which, if successful, will provide an opportunity to carry out some of the planned priority activities identified including gap analyses, data collation and analysis, ecological risk assessments (ERAs) and building capacity and sharing of best practices for bycatch monitoring and mitigation. The IWC stated that they were seeking input from the group on this work and on other opportunities for collaboration.

3. Update on relevant activities and projects

3.1 Technical Guidelines

Technical guidelines to prevent and reduce marine mammal bycatch (Haraldur Eirnasson)

The FAO presented the recently published FAO Guidelines to prevent and reduce marine mammal bycatch in capture fisheries. The Guidelines were commissioned by FAO's Committee on Fisheries and have recently been translated into Spanish and French which will be made available on the FAO website. The Guidelines were developed via a series of expert workshops and provide an overview of solutions to reduce bycatch in multiple gears as well as a flow-diagram to guide managers through identifying the issue and the best potential solutions available. Whilst the Guidelines do not provide all the solutions to all possible bycatch situations, they do provide a 'road map' to assist fisheries managers and other decision makers in identifying and addressing the issue. The Guidelines focus on mitigation measures including spatial closures, the use of acoustic deterrents and alerting devices, modifications to fishing gear and operations. The Guidelines also outline the advantages and disadvantages of each method.

Updates to the Guidelines are not planned as yet but the document is to be viewed as dynamic and so could be subject to updates and revisions in the future.

3.2 New research on bycatch mitigation and bycatch risk

Bycatch mitigation of cetaceans in drift gillnet fisheries (Jeremy Kiszka)

Next the group noted a presentation on the ongoing collaboration between WWF-Pakistan and Florida International University, in which the effects of sub-surface setting of gillnets on cetacean bycatch rates are being investigated. A scientific paper on this work is currently in press. The group noted that the study which is based on five years of experimental trials and crew-based reporting have provided a good estimate of the scale of the bycatch issue in the waters of Pakistan.

The group noted that in the study, sub-surface setting of gillnets (where the gillnet is deployed at 2 m below the surface) has significantly reduced the level of cetacean bycatch.

The group discussed whether a potential decline in the populations of small cetacean species within the region could be an additional factor in the reduced cetacean bycatch rates found in this project. The project team noted that there is insufficient data on species abundance across the region, and therefore no scientific evidence to indicate this. The project team reiterated that the results strongly indicate that sub-surface setting of gear is the principal factor behind the reduced bycatch rates.

However, this measure has also led to a small decline in catches of tuna and tuna-like species per unit of effort. There is a need to complement this work with socio-economic studies and further assess the acceptability and financial viability of this mitigation method for the fishing community. However, the slight reduction of targeted species catches was not perceived by captains. The group also noted that any reduction in target catch could be due to the population declines of these species.

The group noted that further work - including trialling sub-surface setting in other countries - is required to ensure that the results from the study can be replicated. Follow-up work could also improve on the experimental design, so that experimental and control sets can be deployed at the same time, offering a direct comparison (temporally and spatially), and controlling for other variables. The FAO's Common Oceans ABNJ Tuna II team is currently working with WWF-Pakistan on the proposed capsule's experimental design, scale and scope, for potential inclusion in the project

The group discussed that there has been a gradual shift over time in Pakistan of existing vessels changing their fishing practices to using sub-surface nets. New fishing vessels are now exclusively adopting this method.

The group highlighted the fact that currently there is no mechanism for reporting the depth of setting of gillnets when submitting data to the IOTC Secretariat. The group therefore requested that the WPEB consider taking this issue to the Working Party on Data Collection and Statistics to discuss the inclusion of these data in data collection forms.

Current knowledge on FAD entanglement risk for large whales (Michael Meyer)

The group noted a presentation by the IWC's Global Whale Entanglement Response Network on the entanglement risk in fishing gear, including FADs, for large whales. Large whale entanglements are thought to occur most in areas where whales overlap with the use of passive gears, such as gillnets and pots/traps etc. In relation to FADs, the extent of entanglement risk is still unknown, however a number of reported entanglements in FAD gear have been recorded, including recently in the Indian Ocean. The group noted that entanglements in fishing gear, including FADs are thought to impact animal welfare (injury, starvation, chronic infection etc.) and lead to mortality.

The group noted that the IWC's Entanglement Response Network has developed principles and guidelines for large whale entanglement response, and trained more than 1,200 people in large whale entanglement response techniques. Future training in the Indian Ocean region is currently being planned. Further information on training is available via the IWC coordinator, David Mattila (David.Mattila@iwc.int).

The group noted the need for improved management of FADs including a ban on their abandonment as well as the use of biodegradable materials and non-entangling designs. The International Seafood Sustainability Foundation (ISSF) have produced guidelines on the best designs and materials to build FADs which are non-entangling and biodegradable and that these are available on their website. The ISSF is also developing a new biodegradable 'JellyFad'. The group also noted that while there are requirements in place at IOTC for collection and reporting of data on FAD use (number deployed, active and inactive, locations, materials etc), there may be issues with compliance and so there is potential for this to be improved in order to begin to understand the entanglement risk they may pose to large whales.

The group noted that currently entanglements are not reported but this does not mean that they do not occur. The group noted that IOTC Resolution 19/02 requires a number of measures to be taken by CPCs in relation to the use of FADs including: the requirement for non-entangling FAD designs to be used; a limit on the number of FADs an individual vessel may have deployed at any one time; a requirement to report on the number of FADs deployed each month by area; the requirement to submit FAD management plans to the IOTC Secretariat and the requirement to submit daily information on all active FADs to the IOTC Secretariat to be received 2 months after deployment.

The group noted that data on FAD use and distribution would be a valuable input into the planned Ecological Risk Assessment, so that spatial overlap with cetacean populations can be analysed. The group noted that the IOTC has an ad-hoc Working Group on FADs planned for October 2021 which will discuss various aspects of FAD management and data collection.

Multi-disciplinary fisheries classification and spatial overlap project in Oman (Andy Wilson)

The group noted a presentation on a project being conducted in Oman using multi-disciplinary fisheries classification techniques to assess spatial overlap of fisheries and endangered species. The project is focused on the artisanal fleet (vessels >15m) which comprise the majority of vessels operating in fisheries

off the coast of Oman. The project is also using photo identification work to assess abundance of various species groups including cetaceans and turtles.

The project is using a series of methods to define where endangered species are becoming entangled in fishing gears including: formal interviews with fishers and manual identification of fishing grounds; the use of logbooks, simple flashcards, GPS and cameras onboard vessels; remote electronic monitoring and most recently satellite imagery to determine vessel movements in relation to areas which are known for the presence of endangered, threatened and protected species.

The group noted that some of these methods may not be workable in other countries, and indeed some of the methods have been more successful than others in Oman. In Oman, and likely elsewhere, challenges to participation and data collection included: cultural issues such as language barriers between scientists and the vessel crews - who are often from diverse, multi-cultural backgrounds - the literacy levels of the crew, communication about the project between vessel owners, captains and crew and very quick turnaround of vessels in ports which led to scientists missing vessels. The group discussed the strategies used for incentivising fisher (and vessel owner) participation and noted that it would be useful to synthesise and share the lessons learnt from this project and others.

The group noted the sensitivity of the data (especially geolocated information) which can preclude the publication of the results. The amount of data produced by videos is also a big challenge and Artificial Intelligence could be a helpful tool to analyse this large amount of data. The group noted that the project team are looking for further partners to help to process the vast amount of data being collected as well as to join a planned project deploying DTAGs (Digital Acoustic Recording Tags) on whales which would provide fine-scale information on movements of whales around gillnet fishing vessels while they are deploying nets in the evening.

Methodology of project using satellite imagery to classify fishing vessels in Pakistan (Brianna Elliot)

The group noted a project which is commencing which will develop transparent and transferable mixed method approaches to assessing bycatch, including through the use of satellite imagery to classify and quantify the semi-commercial (>15 m) tuna gillnet vessels in the ports of Karachi and Gwadar, Pakistan. The project will include a ground-truthing component and interviews with fishers to determine fishing practices and patterns. The project will then combine these data with the crew-based data collected by WWF-Pakistan to develop, extrapolate and refine coarse cetacean bycatch estimates across Pakistan. The group discussed whether smaller scale vessels could be included, and whether existing information such as a list of small-medium-scale vessels may be held nationally for cross-referencing purposes.

The group noted that satellite images at sea could also be used in the future development of similar projects. The group further noted that the database of the list of vessels has not been updated since 2010 and so these data may be difficult to use but the collaboration with WWF-Pakistan will help to define the vessel list during harbour surveys.

Bycatch risk for toothed whales in small-scale fisheries (Andrew Temple)

The group noted a presentation on bycatch risk for toothed whales in small-scale fisheries, which has been recently published (Temple et al. 2021). It is thought that small-scale fisheries co-occur with many high-risk species, but the contribution of these fisheries to bycatch has been largely overlooked to date as a result of the lack of available data. The large distribution and volume of small-scale fisheries is such that while per-vessel bycatch rates are thought to be low per vessel, the number of vessels means that the overall number of interactions between fishing gear and cetaceans could be relatively high.

The group noted that the concept for this project was to formalise a relative risk-based methodology for assessing the likely spatial distribution of bycatch risk posed to toothed whales on a global scale. This work used IUCN data for habitat range determination and the group suggested that this analysis could be refined by using more local data but highlighted that there may be some difficulties in standardising all data. The group discussed the issues of scale, and that there were limits to what the global analysis could indicate at the regional, ocean-basin scale. The group also discussed some of the variables used in the work, including the 'human-development index', noting that this could be an interesting approach for future socio-economic research on small scale fisheries in the IOTC convention area.

The group noted that the next steps with this project are to attempt to understand the association between fisheries power (i.e., the area of gear coverage and efficiency) and the risk of bycatch, particularly on a smaller spatial scale which would be useful for informing practical management actions. The group noted that estimates of the overall level of bycatch (numbers and metric tonnes) are important for generating public interest as well as political will to push for stronger management.

The group noted that this type of methodology and the resulting outputs could be useful for the planned Ecological Risk Assessment (ERA).

3.3 Abundance estimates, data sources and addressing data gaps

The group moved on to discussing the gaps in data for cetacean abundance estimations in the region, the associated challenges for bycatch work and some new tools and initiatives to address these.

Marine Mammal Bycatch Impacts Exploration Tool (Andre Punt)

The group noted the presentation on the newly developed Marine Mammal Bycatch Impacts Exploration Tool which has been developed into an interactive 'shiny app' that can be accessed here: https://msiple.shinyapps.io/mammaltool/ and noted that the R code is also available to allow more flexibility in analyses.

The group noted that the app came about from the need for tools to provide information to NOAA in order to be able to import seafood into the US under recent new regulations. The tool has been developed to complement other work products that include a summary of methods for estimating levels of abundance and bycatch of various mammal species. These summaries are targeted at scientists and

managers, particularly in countries where there is a lack of capacity to conduct these types of assessments. The tool is based on a population dynamics model and has been set up in such a way that it can be used for a wide variety of data availability situations from very poor data availability situations to data rich situations.

The group discussed whether this could be used as a tool for Ecological Risk Assessments (ERAs) which are part of the work that IWC intends to do under the Common Oceans ABNJ project and highlighted that it would be a very useful tool if regional data for the Indian Ocean could be identified and collated. The group noted that the app will not be able to generate extremely precise estimates of abundance or bycatch levels but that it can account for uncertainty.

The group noted that this tool could be used for other taxa with an age-structured population but would require further development in order to be used for taxa with stage-structured populations such as sea turtles where there are different levels of vulnerability at different life stages. However, the group further noted that the tool would not be suitable for populations which show considerable variation in recruitment.

Proposed Indian Ocean cetacean survey initiative (Marguerite Tarzia)

The IWC Secretariat introduced a recently proposed concept for an Indian Ocean cetacean survey initiative. The concept was recently discussed by the IWC Scientific Committee (Working Group on Abundance Estimates, Population Status and International Surveys). The proposed initiative would aim to improve the information available on cetacean populations across the Indian Ocean in order to inform conservation and fisheries management efforts. This project is not included under the Common Oceans ABNJ Tuna project, although its outputs could be extremely useful for it, and the initiative is still being scoped with regional scientists and will need external fundraising efforts.

Most of the Areas Beyond National Jurisdiction (ABNJ), and many EEZs in the Indian Ocean have been poorly surveyed for cetaceans and where surveys have occurred there has been a lack of repeated surveys meaning a long-term dataset is not available for temporal comparison, or to understand population trends over time. Whilst there are a number of well-established groups and consortia working within specific regions (e.g., Arabian Sea Whale Network; IndoCet etc.) there is currently no ocean-basin-wide initiative to join up and analyse all the available information from previous surveys, catalyse coordinated surveys or identify platforms of opportunity.

The group noted an upcoming repeat cetacean survey which is planned for April 2022 in the northern atolls of the Maldives. Information from this survey will be used to estimate relative abundance of cetacean species. The group further noted that this will also include an onboard training opportunity for regional scientists and encouraged IWC to include the details of this training survey on their website to encourage further participation.

The IWC is proposing that a collaborative initiative be established to collate existing historical datasets (visual, acoustic, tagging, genetics etc), coordinate systematic surveys (in the ABNJ and in EEZs led by

national efforts), and identify platforms of opportunity which could include cetacean data collection. The IWC is also looking for external inputs from the scientific community to help to structure the project in such a way that it will be regionally relevant and inclusive and scientifically rigorous. This would include finding ways to calibrate and compare data from previous surveys, and from different data sources and develop region-wide units so the survey results are comparable. The group was encouraged to contact the IWC Bycatch Coordinator, Marguerite Tarzia, (marguerite.tarzia@iwc.int) if they were interested in helping to develop this project further.

4. IOTC Conservation Measures

The group noted that the IOTC currently only has one Conservation and Management Measure (CMM) which directly relates to cetaceans (Resolution 13/04) but there are a number of CMMs relating to data collection which are also relevant including Resolutions 15/01, 11/04 and 17/07.

The group noted that during the last meeting organised between IWC and IOTC, there were discussions relating to the need to strengthen several existing CMMs due to ambiguities which can lead to a lack of reporting of useful data on cetaceans and a number of other protected species. It was suggested that the current meeting could focus on suggestions for strengthening these CMMs which could be passed on to the WPEB.

The group noted that IOTC CMMs are often focused on large-scale commercial fleets but as over 50% of catches in the Indian Ocean region come from smaller scale artisanal fleets, these should also be more comprehensively addressed. The group agreed that a key issue to overcome is the lack of data for this sector and that options such as alternative data collection systems should be encouraged.

The group noted that current IOTC Resolution 16/07 prohibits the use of artificial lights on fishing gears and discussed the possibility of requesting that this Resolution be amended so that lights can be used for experimental purposes to further investigate their potential as a bycatch mitigation measure (e.g. see Bielli et al. 2020, and FAO Guidelines). The group noted that more scientific evidence to support this request is likely to be required before WPEB takes any action on this issue.

The group noted that currently the SC has little mandate to review cetacean information and that this had been raised at the previous WPEB meeting. The group suggested that the IOTC Scientific Committee (SC) should have a mandate to review these data on cetacean species and noted that during the Commission meeting in 2021, several CPCs had also suggested this. The group further noted that in the absence of data for population abundance estimates, additional management options such as mitigation measures or safe release guidelines should be reviewed and proposed by the WPEB as well as the IWC. The group further noted that helping with this review would be a useful activity for collaboration between the IWC and IOTC to avoid additional burdens on the IOTC.

Scientists representing Korea provided a brief summary of the proposal they presented to the 25th Session of the IOTC Commission (S25) in 2021. The proposal was not adopted during the meeting as there was little time for discussion and no consensus was reached on the proposed revisions to the existing

Resolution including the addition of other gear types such as longline and gillnets. The group suggested that the proposal should be expanded to cover gear types other than Purse Seine, in particular gillnets which are thought to incur higher levels of bycatch and that it should also not just cover the high seas. The group recognised that this is a complicated issue and that the S25 called on scientific justification for the proposed revisions. The Korean scientists welcomed any comments on the proposal and invited participants to submit these suggestions to them in writing.

The group noted that in the past a suggestion had been made to split the WPEB into a Sharks group and an Ecosystems and Bycatch group, as has been done in several other tuna RFMOs. This would allow more time for discussion on Ecosystems and Bycatch issues which are currently not possible at the WPEB which is largely dominated by discussions on shark assessments. The group recommended that the WPEB once again consider this approach.

5. Common Oceans ABNJ activities

Introduction to the Common Oceans ABNJ Project (Jerry Scott)

The group noted a brief introduction to the Common Oceans ABNJ project and noted that the expected timeline is that the project will restart around mid- to late-2022.

Discussion of activities proposed to be included under ABNJ component on cetacean bycatch

The group noted that IWC has submitted a proposal to the ABNJ Common Oceans Tuna Phase II project focused on cetacean bycatch in the Indian and Pacific Oceans. The project is to be supported by the IOTC and will aim to collaboratively improve the understanding and management of cetacean bycatch in tuna fisheries in ABNJ and EEZs. The activities put forward under this proposal include:

- Data collation and analysis for which a consultant will be contracted
- Spatial bycatch risk assessment on an Indian Ocean wide scale
- Outreach, training, and knowledge transfer activities

IWC welcomed inputs from the group on these activities and further suggestions for developing the project.

The group noted that other planned work by the IWC included examining market-driven approaches to addressing cetacean bycatch, including understanding the supply chain for small-medium scale tuna fleets and whether there could be market-based opportunities to incentivise bycatch monitoring and mitigation. The group noted that scientists working on the project in Oman are in early discussions with the International Pole and Line Foundation (IPNLF) about a one-year pilot project which would take this approach in order to create a system which encourages fishers to transfer from gillnets to hand and line fishing. The project will incorporate assessing and reducing cetacean bycatch into the process as well as gear transfer. There will also be some discussions around modifications of existing gears by introducing the use of LEDs and any other measures which are thought to be effective for mitigation. The issue of using LEDs as an experimental bycatch mitigation method in relation to existing IOTC CMMs is discussed

in Section 4 above. The objective of this project is to improve the sustainability of the fisheries, improve the quality of catches and value to the fishers from the markets.

6. Ecological Risk Assessment (ERA)

The group discussed different methods for conducting Ecological Risk Assessments (ERA) as a means to further the collective understanding of cetacean bycatch in the Indian Ocean tuna fisheries. The IWC's proposal to the ABNJ Common Oceans Tuna II project includes this as a key activity and it is also included in the Work Plan for WPEB with the aim to complete this before 2023.

ERAs in the IOTC context

The group noted that there is a need to better understand the overlap of fisheries and cetacean distribution and that ERAs have been conducted for the IOTC WPEB for various taxa including sharks, marine mammals (in a specific sub-region) and turtles in the past (Kiszka 2012, Nel et al. 2013, Murua et al. 2018) and further noted that the drawback of these methods is that due to their mostly qualitative nature, it can be difficult to draw specific management advice from their results.

Possible application of ByRA toolkit for a regional spatial bycatch risk assessment (Ellen Hines)

The group noted a presentation on the Bycatch Risk Assessment (ByRA) toolkit which has been used to spatially assess marine mammal bycatch using a GIS based model (Hines et al. 2020). The toolkit is informed by a range of data collected over several phases including: formal animal surveys on boats; GPS tracking devices on animals; Automatic Information Systems (AIS) fitted onboard vessels and bycatch data from onboard observers, bycatch monitoring programmes, logbooks and other relevant sources. The toolkit is able to measure the probability of a cetacean bycatch event taking place and suggest local level preventative measures that can be taken to reduce the risk. However, there is a need to further develop data-poor options for assessing bycatch risk.

The group noted that socio-economic factors such as livelihoods of fishers are an important consideration for this project and that the project team are attempting to build into the framework a number of ways to improve the value of catches from fisheries affected by management measures to help incentivise fishers to adopt such measures.

The group noted that the ByRA process can be done rapidly (~ 6 months), or over more time (~ 2 years) depending on the scale, and scope of the project and the methods deployed. It is generally done best on a relatively local scale (e.g., with fisher interviews and consultation) to generate the most accurate results. However, the project team is considering how it may be possible to use 'big data' methods (e.g., incorporating remote electronic monitoring data etc) to accurately cover more fishing communities and allow for scaling-up of data over larger areas (i.e., across the Indian Ocean scale). The group noted that further discussion is needed on questions of scale for this type of work.

Previously conducted IOTC ERAs (Hilario Murua)

The group noted a short explanation on the process taken to conduct ERAs for the IOTC in the past. The project teams conducting these ERAs called for CPCs to collaborate and participate using a call through the IOTC SC. Interested scientists were contacted and helped to compile available observer data. Fishing effort distribution maps and habitat distributions were assembled along with key species characteristics for assessing productivity of the species of study and these were analysed together. The group noted that the relationship between scientists in various CPCs which facilitated the sharing of data was key to the success of these projects and suggested that a similar approach be taken when conducting this new ERA.

Discussion

The group suggested that the IOTC could put a call through the SC for CPCs to collaborate and participate in the ERA process and noted that this process could start with IWC developing maps in collaboration with CPCs to indicate where cetaceans have been encountered or where there have been interactions with fishing gears.

The group noted that the spatial scale of the analysis will need to be defined early on before the project begins or before terms of reference are developed for a consultant as this will help to determine the most suitable methodologies. The group noted that the project should be conducted across the whole of the Indian Ocean region to be fully relevant to IOTC, but that focus may be required in particular sub-regions where detailed data collection/collation could take place.

The group also highlighted the need to start identifying and implementing the most appropriate mitigation measures at the same time as the ERA is being run as the process can take a long time. The IWC clarified that it is the intention of the proposed Common Oceans ABNJ cetacean project to do this work in parallel, and it will be the role of the BMI to work with authorities, and fishing communities to raise awareness of the solutions available.

The group suggested working with other RFMOs to investigate appropriate and effective mitigation measures as some RFMOs have advanced further than others with this issue. The group suggested that this topic should be brought to the next joint tuna RFMO bycatch group.

The group discussed the need to consider the economic impacts for CPCs, fishing communities and stakeholders of any mitigation measures.

7. Data collation and gap analysis

Introduction to data collation activity planned under ABNJ and current work by IWC to compile existing data

The IWC Secretariat introduced its recent work to begin compiling existing data on cetaceans from around the Indian Ocean region. A more comprehensive version of this activity has also been proposed under the ABNJ Common Oceans Tuna II project. The IWC highlighted that despite the many gaps and relatively poor

survey coverage across the ocean basin, there is still an extensive amount of published papers and grey literature on previous cetacean surveys. IWC urged participants to look at the list of data sources provided as an information document for the meeting (Annex 2) and alert the IWC Bycatch Coordinator to any data sources they know of that are missing from this list.

The group suggested a number of additional data sources not included on the list including sightings recorded by naval force patrols and by merchant mariner networks, acoustic data sets from the UN Comprehensive Nuclear-Test-Ban Treaty, and cetacean data recorded during national geophysical, meteorological, oceanographic research (e.g., Research institutes, Universities, and others), fisheries surveys, and fisher observer programmes (e.g., purse seine observers).

In relation to IOTC fisheries observer programmes collecting data on cetacean sightings (currently not required by IOTC) it was highlighted that species identification can be difficult so a basic level of training, along with species ID guides, could be incorporated into training programmes for both observers and fishers.

The group proposed that the Arabian Sea whale network, IndoCet and the IUCN IMMA task force could all be invited to contribute to this work as their networks are very broad and they are all very cetacean focused. The group also suggested reaching out to some of the 'big data' organisations such as Global Fishing Watch, Ocean Mind and Project Global. The group noted that there are existing apps which enable the reporting of sightings data such as Whale Alert, however the lack of network coverage at sea would be a problem with using this method.

Under the ABNJ Project, the IWC proposes to contract a consultant to undertake this work and the group suggested that part of the job of this consultant should be to organise workshops (which would also be funded by the project) with CPC and IWC scientists to find out what kinds of data are being held nationally but are not sent to IOTC and to help with the data collation and analysis process. The group suggested taking time during the workshops with CPCs to encourage governments to report sightings of cetaceans as well as interaction incidents highlighting that these data are valuable for presence/absence type analyses.

8. Other potential collaborative activities between IWC/others and IOTC

The group discussed other potential activities that could be conducted collaboratively between IWC, IOTC and others. The group discussed the possibility of establishing a 'global cetacean tracking database' (similar to what exists for seabirds) to allow scientists to voluntarily share tagging data (following publication etc.) for regional analyses on spatial overlap with fisheries, migration routes, typical depth profiles, use of habitats, etc., of cetacean populations in the Indian Ocean.

The group noted that there are existing databases such as Movebank which can be used to archive data in an open-access format, and it may be useful to approach them about possible collaboration. The group noted that there can be issues with making data open access, in particular in relation to the publishing of

papers, which can make some scientists reluctant to do so and highlighted the need to encourage more scientists to make their data widely available.

9. Letter of Intent between IOTC and IWC

The group noted the need to formalise the agreement between IOTC and IWC to strengthen collaborations and provide a clear mandate for further workshops and activities. The IOTC Secretariat suggested that this should take the form of a Letter of Intent and the group noted a draft Letter (Annex 3) which was based on a letter which has already been signed between IOTC and the Agreement on the Conservation of Albatrosses and Petrels (ACAP). It was suggested that the IOTC-IWC letter keep similarly non-specific wording to make it more acceptable for both Commissions.

The group reviewed the letter and recommended that it be subsequently reviewed by the WPEB for endorsement so it could be brought to the SC and finally the IOTC Commission. The letter will be considered by the IWC Commission in 2022.

10. Next steps and recommendations for WPEB

The group then moved on to discussing the next steps including recommendations to take to the upcoming WPEB meeting in September. The group decided that as there was not going to be a lot of time dedicated to cetaceans during the WPEB meeting, it would be preferable to have a few strong recommendations to take to the WPEB along with specific requests on some issues.

The group decided on the following recommendations to be brought to the WPEB:

1. The group recommended that the Letter of Intent between the IOTC and IWC should be endorsed by the WPEB so it can be brought to the Commission for approval;
2. The group recommended that the WPEB consider splitting into two separate working parties - one for sharks and another for ecosystems and bycatch of other taxa;
3. The group recommended that IWC and IOTC should continue to collaborate and organise further meetings and activities to continue working on the issue of cetacean bycatch.

The group decided on the following requests to be brought to the WPEB:

1. The group requested that the WPEB note the FAO guidelines to prevent and reduce bycatch of marine mammals in capture fisheries;
2. The group requested that the WPEB discuss the possibility of adding information on depth setting to IOTC data reporting forms for gillnet fisheries to facilitate the reporting of sub-surface setting of nets. This request could be passed onto the WPDCS to determine the specification of this reporting and to get endorsement by WPDCS;
3. The group requested that the WPEB discuss the option of allowing the use of lights on fishing gear for scientific purposes to allow the investigation of lights as a potential bycatch mitigation strategy;

4. The group requested that the WPEB suggest more work to be done on FAD data collection systems to the WPDCS
5. The group requested that CPCs attending the WPEB provide feedback on the CMS Guidelines for the Safe and Humane Handling and Release of Bycaught Small Cetaceans from Fishing Gear so that these can be endorsed by the WPEB;

The Chair and IOTC and IWC Secretariats thanked the presenters and participants of the meeting for attending and for the productive discussions that were had. The IOTC Secretariat concluded the meeting by encouraging participants to attend IOTC's WPEB to show support for this collaboration and the need to bring more focus to the issue of cetacean bycatch as has happened in the past with bycatch of other taxa (sharks, seabirds etc).

11. References

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Annex 1: List of Participants

The following individuals participated in the meeting:

- Sylvain Bonhommeau - Ifremer, Chair of IOTC Working Party on Ecosystem and Bycatch
- Lauren Nelson - Fisheries Science Officer for IOTC Secretariat
- Marguerite Tarzia - Bycatch Coordinator for IWC Secretariat
- Paul DeBruyn - Science Manager for IOTC Secretariat
- Brianna Elliot – Ph.D. Student at Duke University
- Charles Anderson – Independent Biologist, Maldives
- Umair Shahid – Indian Ocean Tuna manager for WWF Mozambique; IWC Expert Panel on Bycatch member
- Gianna Minton – Coordinating Arabian Sea Whale Network
- Philippe Sabarros – Researcher at IRD
- Jerry Scott – IWC Expert Panel on Bycatch member; assisting/advising FAO on the next phase of ABNJ tuna
- Per Berggren – Professor at Newcastle University, UK; IWC Expert Panel on Bycatch Member
- Jeremy Kiszka – Florida International University, research on Indian Ocean cetaceans and bycatch since 2003, collaborating with WWF Pakistan; IWC Expert Panel on Bycatch member
- Moazzam Khan – Technical advisor to WWF Pakistan
- Andre Punt - Director of School of Aquatic and Fishery Sciences, University of Washington
- Andrew Wilson - Future Seas Global, Technical Advisor
- Tim Collins - IUCN Cetacean Specialist Group Africa Coordinator, Scientific Coordinator Wildlife Conservation Society, IWC Expert Panel on Bycatch member
- Haraldur Einarsson - FAO Fishing gear specialist and involved in development of FAO Guidelines to Reduce Marine Mammal Bycatch in Capture Fisheries
- Ellen Hines - Associate Director and Professor of Geography and Environment, San Francisco State University, IWC Expert Panel on Bycatch
- Gerhard Cilliers - Scientific Manager at DWA
- Hilario Murua - Senior Scientist at International Seafood Sustainability Foundation
- Sungtaek Bill Oh - Deputy Director, Ministry of Oceans and Fisheries Korea
- Tae-hoon Won - Korea Overseas Fisheries Cooperation
- Il-kang Na - Ministry of Oceans and Fisheries Korea
- Mdudzi Seakamela
- Michael Meyer - IWC Expert Advisory Panel on Entanglement
- Kerri Lynn Miller - Associate Manager, International Fisheries at PEW
- Heidrun Frisch-Nwakanma - CMS Aquatic Species Programme Management Officer, & IOSEA Marine Turtle MOU Coordinator
- Alexia Morgan - Science lead for tuna and large pelagic species at Sustainable Fisheries Partnership
- Isadora Moniz - FIP Project Coordinator, OPAGAC

- Emma Day - Senior Policy Advisor, Department for Environment, Food and Rural Affairs
- Mohamed Ahusan - Ministry of Fisheries, Marine Resources and Agriculture Maldives
- Iris Ziegler - Shark Project
- Stephanie Langerock - Senior International Relations Officer for Biodiversity, Belgium
- Mariana Tolotti - IRD, Vice-Chair of the IOTC WPEB
- Putu Liza Mustika, research scientist at James Cook University, Australia
- Sarah Le Couls - Compagnie Française du Thon Océanique
- Taras Bains, IWC Intern
- Tom Evans - Director, Key Traceability Ltd.
- Toshi Kitakado - Professor at Tokyo University of Marine Science and Technology, Chair of IOTC Scientific Committee
- Denham Parker - Researcher, Department of Forestry, Fisheries and the Environment South Africa
- Andrew Temple - Senior Consultant, MRAG
- Jonathon Lansley - Fishery Industry Officer, FAO
- Michel Goujon - Orthongel
- Hamed Moshiri - Plan for the Land Society, Iran
- Michael Mwangombe - Marine Mammal Coordinator and Researcher at Kenya Marine Mammal Research and Conservation
- Jefferson Murua - Researcher, AZTI
- Zintle Langa - Oceans and Coasts, Department of Forestry, Fisheries and the Environment South Africa
- Nazanin Mohsenian - Plan for the Land Society, Iran

Annex 2 - Summary of collated data sources (published and unpublished literature) of relevant cetacean surveys, sighting and catch data across the Indian Ocean sub-regions, and identification of current survey plans.

The following information was included as an annex in a paper drafted by the IWC Secretariat for its Scientific Committee meeting in 2021 (SC/68C/ASI/16). The original paper was a discussion document about the current gaps in information on cetacean populations across the Indian Ocean and the need for a collaborative ocean-basin wide survey initiative.

The information below is a non-exhaustive list of published and unpublished sources of information on previous relevant visual surveys in the Indian Ocean. Any known concurrent or future planned surveys of relevance were also included. The IWC Secretariat, with input from a small group of external experts carried out a rapid literature review of existing sources of information. Further consultation with researchers from the Indian Ocean is needed. Some important sources of information including earlier references, Antarctic sightings data not held by the IWC, acoustic data-sets, photo-ID catalogues etc are not included. Data held by the IWC on direct catches in the Indian Ocean region were extracted but not included in the regional tables with visual survey data.

This table may be a useful starting point for the proposed collaborative data collation and gap analysis exercise for the IOTC/IWC, in combination with information from existing initiatives that hold extensive meta-data or survey data at sub-regional scales (INDOCET, ASWN, individual researchers etc).

Further identification of relevant work by researchers across the region is needed as well as an evaluation of the type of information available within these sources – and whether the information can be used for any sort of abundance estimation or incorporation in spatial risk assessments for bycatch.

Western Indian Ocean (FAO Major Fishing Area 51)

Arabian Sea (FAO Areas 51.3; 51.4)

Historic survey – geographic coverage	**Time period**	**Source**	**Current survey plans – geographic coverage**	**Time period**
Oman	2001-2003 2004-2006	Minton et al. 2010 Ponnampalam 2009		
Maldives Northern Maldives	April 1998 Repeated in 2013	Ballance et al 2001 Unpublished – Anderson Unpublished – Anderson	Northern Maldives: a vessel has been chartered to repeat the 1998 and 2013 surveys in April 2022 – although still needs some funding.	2022
Maldives EEZ (atoll slope)	2003 and 2004 72 days at sea	Clark et al. 2012		
Maldives	August 1990 to June 2002. 68 trips, 535 days at sea	Anderson 2005	Additional unpublished data collected from whale-	

			watch cruises, 2002-2020. Needs analysis	
Central Arabian Sea pelagic western tropical Indian Ocean covering 9,784 linear km	March to July 1995,	Ballance and Pitman (1998),		
Pakistan shelf and shelf break	2005-2009 65 days at sea	Gore et al. 2012		
Suez Canal-Red Sea- Arabian Sea to Sri Lanka (stopped in Djibouti, Oman, India)	29 Nov 1981-14 Feb 1982	Alling 1986		
India Lakshadweep waters using platforms of opportunity Sindhudurg waters, under the Sindhudurg Cetacean Population Assessment project.	October 2015-April 2016 -2016	Panicker et al. 2019		

South-West Indian Ocean (FAO Areas 51.4 below equator; 51.5; 51.6; 51.7; 51.8, 58.4)

Historic survey – geographic coverage	**Time period**	**Source**	**Current survey plans – geographic coverage**	**Time period**
Somalia - offshore	1995 March/April/ May March – July 1995	Eyre and Frizell 2012 Ballance and Pitman 1998		
Tanzania & Zanzibar line transects out to 50km offshore South coast Zanzibar Zanzibar Aerial survey Zanzibar channel and coastal waters of Unguja Island, within 10 nautical miles of the coast	March- April 2015 January and March 1999–2002, 2015 March 2000	Braulik et al 2016 Stensland et al 2006 Berggren et al 2001 Sharpe and Berggren 2019		
Kenya Aerial surveys whole 500km coast. Kisite-Mpunguti MPA Kenya Shimoni Archipelago, Kenya. Seismic surveys in the offshore waters of Lamu in northern Kenya Kenya Marine Mammal Network, Citizen and designated surveys coast wide	18-25 Nov 1994 2006 near-daily surveys, during four, ten week periods 2006-2013 September and October 2014 2011-2019 Kenya Marine Mammal network data	Wamukoya et al 1996 Perez et al 2010 Meyler et al 2012 Perez PhD 2016 Barber et al 2016 Mwango'mbe et al 2020 Mwang'ombe et al 2021	Aerial surveys coast wide Central and south coast marine mammal surveys North coast marine mammal surveys Coastwide, marine mammal citizen science reports continuing from 2020	Planning in progress WMA & KWS Surveys (Nov' 2021) WMA & KWS surveys (Jan' 2022)
Mozambique (Mozambique and southern **Madagascar**) From Maputo Bay	-? 14 surveys between 2011 -2017	Peddemors et al. 1997 Allport 2017		
Madagascar Port Elizabeth (South Africa) to Bazaruto (Mozambique)	-? 21 March 1998 - 20 May 1998	Rosenbaum et al. 1997 Unpublished-Cockcroft and Young,1998	West and north coast Madagascar (Moz channel)	Greenpeace survey- (March 2021)

Cetacean Diversity in Malagasy Waters		Cerchio et al in press (book)		
Comoros and NW coast of Madagascar 3 areas of Madagascar Seychelles EEZ La Reunion EEZ Mauritius EEZ	December 2009 to April 2010.	Laran et al 2017		
Comoros	2010 August and September 2002, and opportunistic sightings collected from 2000 to 2003	Kiszka et al 2010		Greenpeace survey- (March 2021)
Mayotte- the lagoon and surrounding waters, i.e., external barrier reef slope, insular slope (200-1,000m) and oceanic (>1,000m) waters	July 2004 to August 2005; July 2004 and June 2006	Kiszka et al 2007, 2010		Greenpeace survey- (March 2021)
Mauritius West coast of Mauritius, opportunistic sightings on cargo/cruise ship: Mauritius to La Reunion to Durban close by southern coast of Madagascar and return (Oct-Nov 1991), Mauritius to Rodrigues and return (June 1992) Mauritius to Agalega Coastal Mauritius	 July 1991-July 1992 July 2013 2008-2014	 Corbett 1994; unpublished -Webster and Cadinouche 2013 Webster et al 2020	Mauritius- Saya de Malha Bank Whales of Mauritius- Surveys around main islands of Mauritius	Greenpeace survey- (March 2021) MMCO- local NGO – COVID-19 disruption to plans.
La Reunion – (including surveys between La Reunion, Mauritius, Antarctic Territories) **La Reunion to Mauritius** and return **Mauritius to Reunion and south** (Mauritius; 20°09'S, 57°30'E) The cruise proceeded to 31°S, 45°E and further along the meridian 45°E to 56°S latitude. The return leg was along 57°E La Reunion and ABNJ to French Antarctic islands - FAO Areas 51.7, 58.4 **La Reunion** up to 11km offshore south and west coasts	 Six surveys 2008-2013 23 Jan -4 March 2004 1978-2005 5x per year 2004-2007	 Huijser et al 2020 Jayasankar et al 2007 Thiebot and Weimerskirch 2013 Dulau-Drouot et al 2008 Dulau-Drouot et al 2012 Estrade and Dulau, 2020		
Seychelles Seychelles Islands Sightings from Aldabra island based staff Surveys between Mahe and several inner islands, aerial surveys and consolidated sightings from outer islands, seismic vessel survey NW of Seychelles	April- June 1980 March-July 1995 1973-2007 2001-2015 1995 1993	Keller et al 1982 Ballance and Pitman A Hermans & P Pistorius 2008 Webster and Rowat 2016 Unpublished report Eyre and Frizell 2012 Eyre, 1995	Greenpeace survey- (March 2021) University of Seychelles (Kiszka)	(March 2021) Nov. 2020, surveys planned in 2021, 2022, 2023
South Africa Annual aerial surveys to study Southern Right Whales	1979- current			
IWC SOWER cruises (FAO AREA 51.8, 51.7) 316 cetacean sightings between 20'E-81'E and 22' S - 45'S	1979-2000	IWC SOWER		
SWIO (FAO areas 51.6, 51.7, 51.8)	24 Nov 1973-Feb 1974	Best et al 1998		

3 Transects out of Durban (1) 20" and 33"S, 30" and 57"E, (2) between 35" and 42"S, 30" and 49E, and (3) between 31" and 34"S, 30" and 67"E				

Bay of Bengal (FAO Area 57.1)

Historic survey – geographic coverage	**Time period**	**Source**	**Current survey plans – geographic coverage**	**Time period**
India EEZ and Sri Lanka 5-23°N and 66-95°E with a depth range of 20- 5,000m and included coastal, continental shelf and oceanic waters of the Indian EEZ and a part of the southern Sri Lankan Sea Lakshadweep waters	October 2003 to February 2007	Afsal et al 2008 Panicker,, Sutaria,, Kumar,Stafford, (2020)		
Northern Indian Ocean		Leatherwood et al., 1984		
Sri Lanka (offshore) North East coast Tincomalee harbour 100nm radius surveys (2 seasons) West coast >500m depth, Visual and acoustic Sri Lanka (Mirissa, south coast) - - - - -2014-2015 focused on blue whales -2017 focused on blue whales	4 Feb -17 Mar 1982 20 Jan-24 Apr 1983, 22 Feb-25 Apr 1984 March-June 2003 (part of Ocean Alliance Indian Ocean surveys) April 2007-2013 2008-2009 2012 2014-2015 2017	Alling 1986 De Vos et al. 2012 Anderson and Alagiyawadu 2019 Ilangakoon 2012 Thilakarathne et al. 2015 Priyadarshana et al. 2016 Russell et al. 2020		
Singapore to Sri Lanka through the Straits of Malacca, Andaman Sea and across the Bay of Bengal	November-December 2012	Ilangakoon and Alling 2016		
Bangladesh Vessel-based, line-transect survey in the nearshore waters of Bangladesh Swatch-of-No-Ground, Bangladesh 1,018km of systematic trackline n*earshore cetacean survey in the Bay of Bengal, Bangladesh*	16-27 February 2004 4 winter seasons (Dec-Feb) of 2005–2009 February 2004	Smith et al 2008 Mansur et al 2012 Smith et al 2008		
Myanmar vessel-based line-transect survey of the nearshore waters (to a depth of 40-60m) of the Mergui (Myeik) Archipelago of southern Myanmar Seismic surveys were conducted in the offshore waters of northwest Myanmar by oil and gas operators. Marine megafauna sightings and fishing activity data were collected.	23 February-6 March 2005 between 2015 and 2017	Smith and Tun 2008 Parnum 2018		

Bay of Bengal pelagic	39 days at sea	Mondreti et al. 2020		

Nine cruises in April–May 2012, February–March 2013, and January 2014, along two major shipping routes: Chennai to Port Blair (CPB) and Kolkata to Port Blair 23-d research cruise of R/V Marion Dufresne (120 m) Passenger vessels 4722.3 km covered Singapore to Sri Lanka, through the Straits of Malacca, Andaman Sea and across the Bay of Bengal	2012-2014 Nov-Dec 2012	Ilangakoon and Alling 2016		

North-East and Central Indian Ocean (FAO Area 57.2 ; 57.3; 57.5.)

Historic survey – geographic coverage	**Time period**	**Source**	**Current survey plans – geographic coverage**	**Time period**
Offshore and ABNJ area between Mauritius and South China Sea (1,105nm covered in the IO Sanctuary, FAO Area 51.7 across to 57.2)	March/April 1999 20 days at sea	De Boer (2000)		
Offshore and ABNJ area between South Western Australia to Red Sea FAO Area 57.5.2, 57.3, 51.7, 51.5, 51.3	March/April/ May 1995. 41 days in the IO Sanctuary	Eyre and Frizell (2012)		
Western Australia South-western Australia North-western Australia Kimberley coast – inshore dolphins Kimberley coast – humpback whales Offshore and Kimberley coast (Browse basin)	1963- current abundance surveys for humpback whales 1976 – southern right whale surveys 1999- current Blue whale surveys 2004-2020	 Bouchet et al. 2021 Jenner et al. 2001 & unpublished Jenner and Jenner (unpublished)		
Australian Indian Ocean territories			Biodiversity assessment of Australia's Indian Ocean Territories – benthic surveys O'Hara (Museums Victoria) https://iioe-2.incois.gov.in/IIOE-2/EP40.jsp	June-July 2021
Indonesia Savu Sea Solor and Alor Sea and Komodo Island Lamalera waters, Nusa Tenggara Timur	 1999 - ? 2004	Some summary information presented in Wiadnyana et al. 2004 TNC & Apex Environmental; Kahn et al. 2003	Indonesia – world bank project surveys led by Putu Liza Kusuma Mustika	
Malaysia Matang, Perak	2013-2016	Kuit et al. 2019		
Thailand		No information retrieved		

Timor-Leste	Dates to be confirmed – research since 2007- ongoing	Baleia no Gulfino/Blue Ventures; Karen Edyvane		
IWC SOWER Cruises **FAO Area 57.3; 57.4, 57.5, 57.6** 431 cetacean sightings between 80'E – 151'E and 29'S-56'S 461 cetacean sightings between 80'E – 130'E and 08'S - 30°S	1978 - 2010	IWC SOWER		
La Reunion to French Antarctic islands –80'E-110'E Amsterdam St Paul to Australia (constant track lines)	1978-2005 5x per year	Thiebot and Weimerskirch 2013		

Oceanic Indian Ocean (FAO Area 57.4)

Historic survey – geographic coverage	**Time period**	**Source**	**Current survey plans – geographic coverage**	**Time period**
IWC SOWER Cruises FAO Area 51.4, 431 cetacean sightings between 80'E – 151'E and 29'S-56'S	1978-2010	IWC SOWER		
La Reunion to French Antarctic islands	1978-2005 5x per year	Thiebot and Weimerskirch 2013		
National Antarctic programmes (e.g., Australian Antarctic Programmes) – information not compiled here. `				

Direct catch data in the Indian Ocean

The IWC holds records from 1908- 2019 of direct catches of large whales in the Indian Ocean region, and this data can also be useful, in addition to historical sighting and survey data for estimating past abundance of large whales (e.g., as in Branch et al. 2007).

Acoustic monitoring data

Not included in this paper, however many different long-term acoustic data sets are likely to exist, as well as ongoing and new projects (e.g., QWIO – led by WCS, COMBAVA project, and scientists affiliated with the ASWN, INDOCET and other groups;).

Photo-ID catalogues

Not included in this paper, but we note that there are many existing initiatives which may be interested in collaborating (e.g., researchers affiliated with INDOCET, the ASWN Flukebook, national initiatives and those held by research institutions and independent researchers).

Annex 3 - Draft Letter of Intent between IOTC and IWC

LETTER OF INTENT

BETWEEN

THE INDIAN OCEAN TUNA COMMISSION

and

THE INTERNATIONAL WHALING COMMISSION

The Indian Ocean Tuna Commission (hereafter IOTC) and the International Whaling Commission (hereafter IWC);

ACKNOWLEDGING that the International Whaling Commission is the global body charged with the conservation of whales and the management of whaling, established in 1946 under the International Convention for the Regulation of Whaling (signed 1946);

NOTING that the IWC currently has 88 members, manages Aboriginal Subsistence Whaling (commercial whaling is under a moratorium) and that the IWC's role has expanded to address a wide range of conservation issues including bycatch and entanglement, ocean noise, pollution and debris, collisions between whales and ships, and sustainable whale watching;

RECOGNIZING that bycatch and entanglement in fishing gear is a global issue and the single greatest cause of mortality for cetaceans;

NOTING FURTHER the recommendations from IWC68 in 2018 calling on the IWC Secretariat to identify priority Regional Fisheries Management Organisations and Regional Fisheries Bodies of relevance to the IWC Bycatch Mitigation Initiative, given that fishery management is outside of the IWC's remit, and in order to develop a plan for effective long-term engagement on cetacean bycatch;

NOTING that Article XV of the Agreement for the Establishment of the Indian Ocean Tuna Commission (hereafter IOTC Agreement) calls upon the IOTC to cooperate with other organisations active in fisheries, especially tuna fisheries;

ACKNOWLEDGING that the objective of the IOTC Agreement is to ensure, through effective management, the long-term conservation and sustainable use of the stocks of tuna and tuna-like species in the Indian Ocean;

ACKNOWLEDGING that the IOTC Strategic Science Plan for 2020-2024 specifies goals including: strengthening data collection; improving scientific advice provided to the Commission; and increasing participation in scientific processes by increasing the collaboration of the Scientific Committee with the broader scientific community;

CONSCIOUS that many Members of the IOTC are also Parties to IWC;

RECOGNISING that the achievement of the objectives of the IOTC and IWC will benefit from cooperation, with a view to strengthening the monitoring and assessment of cetacean bycatch and the implementation of conservation and management measures to reduce it, as noted in the FAO Code of Conduct For Responsible Fisheries, the International Guidelines on Bycatch Management and Reduction of Discards and the Technical Guidelines to Prevent and Reduce Bycatch of Marine Mammals in Capture Fisheries;

DESIRING to put into place arrangements and procedures to promote cooperation in order to enhance the conservation of cetaceans;

NOW THEREFORE the IOTC and the IWC record the following understandings:

1. OBJECTIVE OF THIS LETTER OF INTENT

The objective of this Letter of Intent (LoI) is to facilitate cooperation between the IOTC and the IWC (both sides) with a view to supporting efforts to minimise the incidental bycatch of marine mammals within the area of competence of the IOTC.

2. AREAS OF COOPERATION

Both sides may establish and maintain consultation, co-operation and collaboration in respect of matters of common interest to both sides for the:

a) development of systems for collecting and analysing data, and exchanging information concerning the incidental bycatch of cetaceans in the area of competence of the IOTC;

b) exchange of information regarding management approaches relevant to the conservation of cetaceans;

c) implementation of education and awareness programmes for fishers who operate in areas where cetaceans may be encountered;

d) design, testing and implementation of cetacean bycatch monitoring, mitigation and management measures relevant to fishing operations in the area of competence of the IOTC;

e) development of training programmes on conservation techniques and measures to understand and mitigate threats affecting cetaceans; and

f) exchange of expertise, techniques and knowledge relevant to the conservation of cetaceans in the area of competence of the IOTC; and

g) reciprocal participation with observer status at the relevant meetings of each organisation.

3. MODIFICATION

This LoI may be modified at any time by the mutual written consent of both sides.

4. LEGAL STATUS

Both sides acknowledge that this LoI is not legally binding between them.

5. COMING INTO EFFECT AND TERMINATION

This LoI will continue to operate for 5 years from the date of signing. At that date both sides will review the operation of the LoI and decide whether it will be renewed or modified.

a) Either side may terminate this LoI by giving six months prior written notice to the other side.

b) This LoI will come into effect on the day of signature.

SIGNATURE

Chairperson/Exec Secretary, IOTC	Chair/Executive Secretary, IWC
Date	Date