
REVIEW OF CURRENT CONSERVATION AND MANAGEMENT MEASURES RELATING TO ECOSYSTEMS AND BYCATCH

PREPARED BY: IOTC SECRETARIAT¹, 17 AUGUST 2018

PURPOSE

To encourage participants at the Working Party on Ecosystems and Bycatch (WPEB14) to review the existing Conservation and Management Measures (CMM) relating to ecosystems and bycatch, noting the CMMs contained in document IOTC–2018–WPEB14–04 adopted by the Commission in 2018; and as necessary to 1) provide recommendations to the Scientific Committee on whether modifications may be required; and 2) recommend whether other CMMs may be required.

BACKGROUND

In addition to the CMMs outlined in document IOTC–2018–WPEB14–04, ecosystems and bycatch in the Indian Ocean are currently subject to a range of other CMMs adopted by the Commission:

Sharks:

Resolution 18/02: *On management measures for the conservation of blue shark caught in association with IOTC fisheries.* This Resolution requires that CPCs firstly implement data collection programmes that ensure improved reporting of accurate blue shark catch, effort, size and discard data to IOTC in full accordance with the Resolution 15/02. In addition, CPCs are encouraged to undertake scientific research on blue shark that would provide information on key biological/ecological/behavioural characteristics, life-history, migrations, post-release survival and guidelines for safe release and identification of nursery grounds, as well as improving fishing practices. Lastly the Commission shall consider, at its 2021 meeting, the adoption of conservation and management measures, to be decided taking into account the most recent reported catch information or bycatch mitigation (Appendix A).

Resolution 13/06: *On a scientific and management framework on the Conservation of sharks species caught in association with IOTC managed fisheries.* This Resolution prohibits, as an interim pilot measure, the retention onboard, transshipment, landing or storing any part or whole carcass of oceanic whitetip sharks (*Carcharhinus longimanus*) by all vessels on the IOTC record of authorized vessels or authorised to fish for tuna or tuna-like species, with the exception of observers who are permitted to collect biological samples (vertebrae, tissues, reproductive tracts, stomachs) from oceanic whitetip sharks that are dead at haulback and artisanal fisheries for the purpose of local consumption, and will conduct a review and an evaluation of the interim measure in 2016. (Appendix B).

Resolution 12/09: *On the conservation of thresher sharks (family Alopiidae) caught in association with fisheries in the IOTC area of competence.* This Resolution prohibits the retention onboard, transshipment, landing, storing, selling or offering for sale any part or whole carcass of the three species of Thresher sharks (family Alopiidae) by all vessels on the IOTC record of authorised vessels. Observers are permitted to collect biological samples (vertebrae, tissues, reproductive tracts, stomachs) from thresher sharks that are dead at haulback (Appendix C).

Resolution 05/05: *Concerning the conservation of sharks caught in association with fisheries managed by IOTC.* This resolution includes minimum reporting requirements for sharks, calls for full utilisation of sharks and includes a ratio of fin-to-body weight for shark fins retained onboard a vessel (Appendix D).

Marine turtles:

Resolution 12/04: *On the conservation of marine turtles.* This Resolution introduced amendments to Resolution 09/06 On Marine Turtles, by removing the term ‘hard-shelled’ to provide equal protection for all marine turtles in the IOTC area of competence and clarify the data reporting requirements for interactions with marine turtles (Appendix E).

Seabirds:

Resolution 12/06: *On reducing the incidental bycatch of seabirds in longline fisheries.* This Resolution harmonises the measure with that adopted by ICCAT in 2011 which lists only three mitigation measures (i.e. night setting with minimum deck lighting, bird scaring lines and line weighting) considered to be effective. The limit of the area in which longline vessels have to implement mitigation measures is south of 25°S to encompass the area of overlap between the distribution

¹ secretariat@iotc.org

area of endangered species of seabirds and the longline fishing grounds (Appendix F).

Regional observer scheme:

Resolution 16/04: *On the implementation of a pilot project in view of promoting the regional observer scheme of IOTC.* This resolution creates a pilot project aiming to enhance the implementation of the Resolution 11/04 *on a Regional Observer Scheme* and to raise the level of compliance to the implementation of Resolutions 15/01 and 15/02, respectively *on the recording of catch and effort data by fishing vessels in the IOTC area of competence and on mandatory statistical reporting requirements for IOTC Contracting Parties and Cooperating non-Contracting parties (CPCs)* (Appendix G)

Resolution 11/04: *On a regional observer scheme.* This resolution puts in place a programme comprising national observer schemes to collect verified catch data and other scientific data related to the fisheries for tuna and tuna-like species in the IOTC area. The programme initially covers 5% of the operations of the vessels over 24 m and will include, progressively up to 5% of their operations in 2013, vessel under 24 m that fish outside their EEZs. Artisanal fishing landings shall also be progressively monitored at port by observers. Australia noted that a significant number of vessels less than 24 m long fish on the high seas in the IOTC Area, and the exclusion of these vessels at the start of the programme will result in a considerable loss of valuable information (Appendix H).

Other:

Resolution 15/06: *On a ban on discards of bigeye tuna, skipjack tuna, yellowfin tuna and a recommendation for non-targeted species caught by purse seine vessels in the IOTC area of competence.* The Resolution bans the discard of three tropical tuna species, with the exception of fish unfit for human consumption or if no space available to accommodate all fish. This Resolution supersedes Resolution 13/11 (Appendix I).

Resolution 13/04: *On the conservation of cetaceans.* The Resolution aims to mitigate the interactions between cetaceans and purse seine fishing gear; gather additional information from CPCs on the interaction rates with other fishing gears, in particular gillnets and longlines; and requests that the IOTC SC develop best practice mitigation and handling guidelines for consideration by the Commission at its 18th Session in 2014, to mitigate the impacts of fishing on cetaceans in the IOTC area of competence (Appendix J).

Resolution 13/05: *On the conservation of whale sharks (*Rhincodon typus*).* This Resolution aims to mitigate the interactions between whale sharks and purse seine fishing gear; gather additional information from CPCs on the interaction rates with other fishing gears, in particular gillnets and longlines; and requests that the IOTC SC develop best practice mitigation and handling guidelines for consideration by the Commission at its 18th Session in 2014, to mitigate the impacts of fishing on whale sharks in the IOTC area of competence (Appendix K).

Resolution 12/12: *To prohibit the use of large-scale driftnets on the high seas in the IOTC area.* This Resolution banned the use of large-scale driftnets (more than 2.5 km long) on the high seas within the IOTC area of competence. Paragraph 6 of this Resolution states that “The IOTC shall periodically assess whether additional measures should be adopted and implemented to ensure that large-scale driftnets are not used on the high seas in the Convention Area. The first such assessment shall take place in 2012.” (Appendix L).

Resolution 18/04: *On bioFAD experimental project.* This Resolution acknowledges and supports the Biodegradable FAD (BIOFAD) project with the objective of reducing the impact and the amount of synthetic marine debris of the use of non-biodegradable FAD in the ecosystem. The Project Consortium will make available to the IOTC Scientific Committee the results of the project at the latest two months in advance of its 2020 meeting. The Scientific Committee will analyse the outcomes of the project and provide scientific advice on possible additional FAD management options for consideration by the Commission in 2021. (Appendix M).

Resolution 18/09: *On a scoping study of socio-economic indicators of IOTC fisheries.* This Resolution specifies the terms of reference for a scoping study of socio-economic aspects of IOTC fisheries. Pursuant to Article XII.5 of the Agreement, the Commission shall review the results of the scoping study and determine if a permanent Working Party on the Socio-Economic Aspects of the Fisheries the IOTC Area of the Competence is needed, at its 23rd Session in 2019. (Appendix N).

DISCUSSION

As part of best practice, the WPEB is obliged to review existing CMMs and consider whether their science-based components need to be revised. If this is the case, then the WPEB should provide clear, science-based recommendations for the Scientific Committee’s consideration.

The participants of WPEB14 are asked to **NOTE** the following from the report of the 22nd Session of the Commission:

Consideration of management measures related to Ecosystems and Bycatch

The Commission **NOTED** that IOTC–2018–S22–PropL On the conservation of mobula and manta rays caught in association with fisheries in the IOTC Area of competence was deferred. The Commission also **NOTED** that there is no specific research that indicates an association of mobula and manta rays with surface fisheries. One CPC highlighted the need for data be collected in order for the SC to provide potential management advice on the conservation of this species

RECOMMENDATION

That the WPEB **NOTE** paper IOTC–2018–WPEB14–05 which aimed to encourage the WPEB to review the existing Conservation and Management Measures (CMMs) relating to the WPEB, and as necessary to 1) provide recommendations to the Scientific Committee on whether modifications may be required; and 2) recommend whether other CMMs may be required.

APPENDICES

- Appendix A:** Resolution 18/02: *On management measures for the conservation of blue shark caught in association with IOTC fisheries*
- Appendix B:** Resolution 13/06 *On a scientific and management framework on the Conservation of sharks species caught in association with IOTC managed fisheries*
- Appendix C:** Resolution 12/09 *On the conservation of thresher sharks (family Alopiidae) caught in association with fisheries in the IOTC area of competence*
- Appendix D:** Resolution 05/05 *Concerning the conservation of sharks caught in association with fisheries managed by IOTC*
- Appendix E:** Resolution 12/04 *On the conservation of marine turtles*
- Appendix F:** Resolution 12/06 *On reducing the incidental bycatch of seabirds in longline fisheries*
- Appendix G:** Resolution 16/04 *On the implementation of a pilot project in view of promoting the regional observer scheme of IOTC*
- Appendix H:** Resolution 11/04 *On a regional observer scheme*
- Appendix I:** Resolution 15/06: *On a ban on discards of bigeye tuna, skipjack tuna, yellowfin tuna and a recommendation for non-targeted species caught by purse seine vessels in the IOTC area of competence*
- Appendix J:** Resolution 13/04 *On the conservation of cetaceans.*
- Appendix K:** Resolution 13/05 *On the conservation of whale sharks (*Rhincodon typus*).*
- Appendix L:** Resolution 12/12 *To prohibit the use of large-scale driftnets on the high seas in the IOTC area.*
- Appendix M:** Resolution 18/04: *On bioFAD experimental project*
- Appendix N:** Resolution 18/09: *On a scoping study of socio-economic indicators of IOTC fisheries*
- Appendix O:** Proposal C *On the conservation of Mobula and Manta rays caught in association with fisheries in the IOTC area of competence*

APPENDIX A
RESOLUTION 18/02
**ON MANAGEMENT MEASURES FOR THE CONSERVATION OF BLUE SHARK
CAUGHT IN ASSOCIATION WITH IOTC FISHERIES**

Keywords: Blue shark, Catch limits, scientific research, reference points, data collection, catch reporting

The Indian Ocean Tuna Commission (IOTC),

RECALLING the Resolution 17/05 on the conservation of sharks caught in association with fisheries managed by IOTC aims the sustainability of shark fisheries and the protection of sharks;

RECALLING the Resolution 12/01 on the implementation of the precautionary approach calls on IOTC Contracting Parties and Cooperating Non-Contracting Parties (CPCs) to apply the precautionary approach in accordance with Articles 5 and 6 of the United Nations Fish Stocks Agreement;

RECALLING the Resolution 15/01 on the recording of catch and effort data by fishing vessels in the IOTC area of competence fixes the IOTC data record system;

RECALLING the Resolution 15/02 on the Mandatory statistical reporting requirements for IOTC Contracting Parties and Cooperating Non-Contracting Parties (CPCs) defines the catch and catch related information to be provided by CPCs to the IOTC secretariat;

RECALLING that United Nations General Assembly Resolution on Sustainable Fisheries, adopted annually by consensus, since 2007 (62/177, 63/112, 64/72, 65/38, 66/68, 67/79, 68/71, 69/109, 70/75 and 71/123) calls upon States to take immediate and concerted action to improve the implementation of and compliance with existing regional fisheries management organisation or arrangement measures that regulate shark fisheries and incidental catch of sharks, in particular those measures which prohibit or restrict fisheries conducted solely for the purpose of harvesting shark fins, and, where necessary, to consider taking other measures, as appropriate, such as requiring that all sharks be landed with fins naturally attached;

CONSIDERING that pending the results of the new stock assessment, it is advisable to avoid an increase in levels of catches of blue shark while simultaneously adopt measures to improve data collection and monitoring of catches;

CONSIDERING that the average estimated catches of blue shark are much higher than the reported catches;

ADOPTS, in accordance with paragraph 1 of Article IX of the IOTC Agreement, that:

1. To ensure the conservation of the blue shark (*Prionace glauca*) stock in the Indian Ocean, Contracting Parties and Cooperating non-Contracting Parties,(CPCs) whose vessels catch blue shark in the IOTC Convention Area shall ensure that effective management measures are in place to support the sustainable exploitation of this stock in line with IOTC's Convention objective by undertaking the following management measures:

Recording, Reporting, and Use of the Catch Information

2. In order to curb the level of unreported catches, each CPC shall ensure that its vessels catching blue shark in association with IOTC fisheries in the Agreement area record their catch in accordance with the requirements set out in the Resolution 15/01 on the recording of catch and effort data by fishing vessels in the IOTC area of competence or any Resolution superseding it.
3. CPCs shall implement data collection programmes that ensure improved reporting of accurate blue shark catch, effort, size and discard data to IOTC in full accordance with the Resolution 15/02 on the Mandatory statistical reporting requirements for IOTC Contracting Parties and Cooperating Non-Contracting Parties (CPCs), or any Resolution superseding it.
4. CPCs shall include in their national Annual Reports to the Scientific Committee information on the actions they have taken domestically to monitor catches.

Scientific Research

5. CPCs are encouraged to undertake scientific research on blue shark that would provide information on key biological/ecological/behavioural characteristics, life-history, migrations, post-release survival and guidelines for safe release and identification of nursery grounds, as well as improving fishing practices. Such information shall be made available to the Working Party on Ecosystem and Bycatch and Scientific Committee through working documents and the national Annual Reports.
6. In light of the results of the next stock assessment of blue shark in 2021, the Scientific Committee shall provide advice, if possible, on options for candidate limit, threshold and target reference points for the conservation and management of this species in the IOTC Convention area.
7. The Scientific Committee shall also provide advice, at the latest by 2021, on potential management options for ensuring long-term sustainability of the stock, such as mitigation measures to reduce the mortality of blue shark, improving selectivity of fishing gears, spatial/temporal closures or minimum conservation sizes.

Final Provisions

Based on the review and the results of the next stock assessment, updated reported catch information by each CPC and taking into account the Scientific Committee's advice, the Commission shall consider, at its 2021 meeting, the adoption of conservation and management measures, which could include the catch limit for each CPC to be decided taking into account the most recent reported catch information or bycatch mitigation such as a ban on wire trace/shark line for blue shark as appropriate.

APPENDIX B**RESOLUTION 13/06****ON A SCIENTIFIC AND MANAGEMENT FRAMEWORK ON THE CONSERVATION OF SHARK SPECIES
CAUGHT IN ASSOCIATION WITH IOTC MANAGED FISHERIES****(Objection [India]: Not binding on India)****The Indian Ocean Tuna Commission (IOTC),**

RECALLING IOTC [Resolution 05/05](#) concerning the conservation of sharks caught in association with fisheries managed by IOTC;

NOTING that the IOTC Working Party on Ecosystems and Bycatch (WPEB) recognised that full stock assessments on sharks may not be possible because of data limitations and that it is essential that some stock assessment evaluation should be carried out;

NOTING that the IOTC Scientific Committee advises that maintaining or increasing fishing efforts for certain shark species will probably result in further declines in biomass, productivity and CPUE;

NOTING that the ecological risk assessment (ERA) by fishing gears made by the IOTC Scientific Committee recognises the oceanic whitetip sharks (*Carcharhinus longimanus*) as vulnerable species in IOTC fisheries;

CONSIDERING that, sharks are caught as either main target or bycatch in the IOTC area of competence and valuable fishery resources for local communities in IOTC area;

CONSIDERING that the number of fishing vessels such as longliners and purse seiners and their fishing effort are gradually getting to reduce in the IOTC area of competence recently;

RECOGNISING the need for further improvement of the level of sharks data/information submitted by Contracting Parties and Cooperating Non-Contracting Parties (hereafter referred to as CPCs) to IOTC;

RECOGNISING the significant impact of IOTC Conservation and Management Measures regarding sharks on fishing operations and sharks data/information collected and reported by CPCs;

FURTHER RECOGNISING the need to establish a scientific framework for the conservation and management of shark species in IOTC;

BEARING IN MIND that oceanic whitetip sharks can be easily distinguished from other shark species and can therefore be released before they are taken on board of the vessel;

ADOPTS, in accordance with the provisions of Article IX, paragraph 1 of the IOTC Agreement, the following:

1. The Commission shall determine the shark species that are subjected to IOTC Conservation and Management Measures, including prohibition to retain on board, tranship, land or store any part or whole carcass according to the IOTC Scientific Committee's (SC) recommendation or advice.
2. The SC recommendation or advice shall be conducted taking account of:
 - a) full stock assessments on sharks, stock assessment and Ecological Risk Assessments (ERAs) by fishing gears, using available best scientific data/information;
 - b) trend of fishing effort by fishing gear on each shark species;
 - c) effective IOTC Conservation and Management Measures for certain fishing gears with high risk by shark species;
 - d) priority in shark species with high risk;
 - e) review of practical implementation of prohibition to retain on board of shark species;
 - f) feasibility of implementation of prohibition to retain on board including identification of shark species;
 - g) impact and bias of IOTC Conservation and Management Measures of sharks on fishing operations and sharks data/information collected and reported by CPCs;

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- h) further improvement of level for sharks data/information submitted by CPCs, particularly developing CPCs.
3. Notwithstanding paragraphs 1 and 2, CPCs shall prohibit, as an interim pilot measure, all fishing vessels flying their flag and on the IOTC Record of Authorised Vessels, or authorised to fish for tuna or tuna-like species managed by the IOTC on the high seas to retain onboard, tranship, land or store any part or whole carcass of oceanic whitetip sharks with the exception of paragraph 7. The provisions of this measure do not apply to artisanal fisheries operating exclusively in their respective Exclusive Economic Zone (EEZ) for the purpose of local consumption.
 4. CPCs shall require fishing vessels flying their flag and on the IOTC Record of Authorised Vessels or authorised to fish for tuna and tuna-like species managed by the IOTC on the high seas to promptly release unharmed, to the extent practicable, of oceanic whitetip sharks when brought alongside for taking onboard the vessel. However, CPCs should encourage their fishers to release this species if recognised on the line before bringing them onboard the vessels.
 5. CPCs shall encourage their fishers to record incidental catches as well as live releases of oceanic whitetip sharks. These data shall be kept at the IOTC Secretariat.
 6. CPCs shall, where possible, implement research on oceanic whitetip sharks taken in the IOTC area of competence, in order to identify potential nursery areas. Based on this research, CPCs shall consider other measures, as appropriate.
 7. Scientific observers shall be allowed to collect biological samples (vertebrae, tissues, reproductive tracts, stomachs, skin samples, spiral valves, jaws, whole and skeletonised specimens for taxonomic works and museum collections) from oceanic whitetip sharks taken in the IOTC area of competence that are dead at haulback, provided that the samples are a part of a research project approved by the IOTC Scientific Committee (SC)/the IOTC Working Party on Ecosystems and Bycatch (WPEB). In order to obtain the approval, a detailed document outlining the purpose of the work, number of samples intended to be collected and the spatio-temporal distribution of the sampling effect must be included in the proposal. Annual progress of the work and a final report on completion shall be presented to the SC/WPEB.
 8. The CPCs, especially those targeting sharks, shall submit data for sharks, as required by IOTC data reporting procedures.
 9. The provisional measures stipulated in this Resolution shall be evaluated in 2016 by the IOTC Scientific Committee to deliver more appropriate advice on the conservation and management of the stocks for the consideration of the Commission.

APPENDIX C

RESOLUTION 12/09

ON THE CONSERVATION OF THRESHER SHARKS (FAMILY ALOPIIDAE) CAUGHT IN ASSOCIATION WITH FISHERIES IN THE IOTC AREA OF COMPETENCE

The Indian Ocean Tuna Commission (IOTC),

RECALLING that the IOTC [Resolution 05/05](#) concerning the conservation of sharks caught in association with fisheries managed by IOTC;

CONSIDERING that thresher sharks of the family Alopiidae are caught as bycatch in the IOTC area of competence;

NOTING that at its 2009 meeting, the IOTC Working Party on Ecosystems and Bycatch recognised that full stock assessments on sharks may not be possible because of data limitations and that it is essential that some stock assessment evaluation should be carried out;

NOTING that the international scientific community points out that the bigeye thresher shark (*Alopias superciliosus*) is particularly endangered and vulnerable;

CONSIDERING that it is difficult to differentiate between the various species of thresher sharks without taking them onboard and that such action might jeopardise the survival of the captured individuals;

ADOPTS, in accordance with the provisions of Article IX, paragraph 1 of the IOTC Agreement, the following:

1. This measure shall apply to all fishing vessels on the IOTC Record of Authorised Vessels.
2. Fishing Vessels flying the flag of an IOTC Member or Cooperating Non-Contracting Party (CPCs) are prohibited from retaining on board, transshipping, landing, storing, selling or offering for sale any part or whole carcass of thresher sharks of all the species of the family Alopiidae, with the exception of paragraph 7.
3. CPCs shall require vessels flying their flag to promptly release unharmed, to the extent practicable, thresher sharks when brought along side for taking on board the vessel.
4. CPCs shall encourage their fishers to record and report incidental catches as well as live releases. These data will be then kept at the IOTC Secretariat.
5. Recreational and sport fishing shall release alive all caught animals of thresher sharks of all the species of the family Alopiidae. In no circumstances specimen shall be retained on board, transhipped, landed, stored, sold or offered for sale. The CPCs shall ensure that both recreational and sport fishermen carrying out fishing with high risk of catching thresher sharks are equipped with instruments suitable to release alive the animals.
6. CPCs shall, where possible, implement research on sharks of the species *Alopias* spp, in the Convention area in order to identify potential nursery areas. Based on this research, CPCs shall consider additional management measures, as appropriate.
7. Scientific observers shall be allowed to collect biological samples (vertebrae, tissues, reproductive tracts, stomachs, skin samples, spiral valves, jaws, whole and skeletonised specimens for taxonomic works and museum collections) from thresher sharks that are dead at haulback, provided that the samples are part of the research project approved by the IOTC Scientific Committee (or IOTC Working Party on Ecosystems and Bycatch (WPEB)). In order to obtain the approval, a detailed document outlining the purpose of the work, number and type of samples intended to be collected and the spatio-temporal distribution of the sampling work must be included in the proposal. Annual progress of the work and a final report on completion of the project shall be presented to the IOTC WPEB and the IOTC Scientific Committee.
8. The Contracting Parties, Cooperating Non-Contracting Parties, especially those directing fishing activities for sharks, shall submit data for sharks, as required by IOTC data reporting procedures.
9. This Resolution supersedes Resolution 10/12 *On the Conservation of Thresher Sharks (Family Alopiidae) Caught in Association with Fisheries in the IOTC Area of Competence*.

APPENDIX D**RESOLUTION 05/05****CONCERNING THE CONSERVATION OF SHARKS CAUGHT IN ASSOCIATION WITH FISHERIES
MANAGED BY IOTC****The Indian Ocean Tuna Commission (IOTC),**

RECALLING that the United Nations Food and Agriculture Organisation (FAO) International Plan of Action of Sharks calls on States, within the framework of their respective competencies and consistent with international law, to cooperate through regional fisheries organisations with a view to ensuring the sustainability of shark stocks as well as to adopt a National Plan of Action for the conservation and management of sharks (defined as elasmobranchs);

CONSIDERING that many sharks are part of pelagic ecosystems in the IOTC area, and that tunas and tuna-like species are captured in fisheries targeting sharks;

RECOGNISING the need to collect data on catch, effort, discards and trade, as well as information on the biological parameters of many species, in order to conserve and manage sharks;

ADOPTS, in accordance with paragraph 1 of Article IX of the IOTC Agreement that:

1. Contracting Parties, Cooperating Non-Contracting Parties (CPCs) shall annually report data for catches of sharks, in accordance with IOTC data reporting procedures, including available historical data.
2. In 2006 the IOTC Scientific Committee (in collaboration with the IOTC Working Party on Ecosystems and Bycatch) provide preliminary advice on the stock status of key shark species and propose a research plan and timeline for a comprehensive assessment of these stocks.
3. CPCs shall take the necessary measures to require that their fishermen fully utilise their entire catches of sharks. Full utilisation is defined as retention by the fishing vessel of all parts of the shark excepting head, guts and skins, to the point of first landing.
4. CPCs shall require their vessels to not have onboard fins that total more than 5 % of the weight of sharks onboard, up to the first point of landing. CPCs that currently do not require fins and carcasses to be offloaded together at the point of first landing shall take the necessary measures to ensure compliance with the 5 % ratio through certification, monitoring by an observer, or other appropriate measures.
5. The ratio of fin-to-body weight of sharks described in paragraph 4 shall be reviewed by the IOTC Scientific Committee and reported back to the Commission in 2006 for revision, if necessary.
6. Fishing vessels are prohibited from retaining on board, transshipping or landing any fins harvested in contravention of this Resolution.
7. In fisheries that are not directed at sharks, CPCs shall encourage the release of live sharks, especially juveniles and pregnant sharks, to the extent possible, that are caught incidentally and are not used for food and/or subsistence.
8. CPCs shall, where possible, undertake research to identify ways to make fishing gears more selective (such as the implications of avoiding the use of wire traces).
9. CPCs shall, where possible, conduct research to identify shark nursery areas.
10. The Commission shall consider appropriate assistance to developing CPCs for the collection of data on their shark catches.
11. This Resolution applies only to sharks caught in association with fisheries managed by the IOTC.
12. This provision to apply without prejudice to many artisanal fisheries which traditionally do not discard carcasses.

APPENDIX E
RESOLUTION 12/04
ON THE CONSERVATION OF MARINE TURTLES

The Indian Ocean Tuna Commission (IOTC),

RECALLING Recommendation 05/08 *On Sea Turtles* and Resolution 09/06 [superseded by [Resolution 12/04](#)] *On Marine Turtles*;

FURTHER RECALLING that marine turtles, including all species in the family Cheloniidae and *Dermochelys coriacea* (leatherback turtles) are listed in Appendix I of the *Convention on International Trade in Endangered Species of Wild Fauna and Flora* (CITES) and that all species of marine turtles are listed on Appendix I or II of *Convention on the Conservation of Migratory Species of Wild Animals*;

AWARE that the populations of the six species of marine turtles under the *Memorandum of Understanding on the Conservation and Management of Marine Turtles and their Habitats of the Indian Ocean and South-East Asia* (IOSEA MoU) are listed as Vulnerable, Endangered or Critically endangered on the International Union for the Conservation of Nature (IUCN) Red List of Threatened Species;

RECOGNISING that the 26th FAO–COFI Session in March 2005 adopted the *Guidelines to Reduce Sea Turtle Mortality in Fishing Operations* (hereinafter referred to as “the FAO Guidelines”) and recommended their implementation by regional fisheries bodies and management organisations;

RECOGNISING that some fishing operations carried out in the Indian Ocean can adversely impact marine turtles and the need to implement measures to manage the adverse effects of fishing in the Indian Ocean on marine turtles;

ACKNOWLEDGING the activities undertaken to conserve marine turtles and the habitats on which they depend within the framework of the IOSEA MoU in particular its *Resolution to Promote the Use of Marine Turtle Bycatch Reduction Measures by IOSEA Signatory States* adopted by the Fifth Meeting of the Signatory States;

NOTING the IOTC Scientific Committee’s concern that the lack of data from Contracting Parties and Cooperating Non-Contracting Parties (CPCs) on the interactions and mortality of marine turtles from fisheries under the mandate of the IOTC undermines the ability to estimate levels of marine turtle bycatch and consequently IOTC’s capacity to respond and manage adverse effects of fishing on marine turtles;

FURTHER NOTING the IOTC Scientific Committee’s concern that the expansion of gillnet fishing from traditional fishing grounds into high seas might increase the interaction with marine turtles and lead to increased mortality;

CONVINCED of the need to strengthen Resolution 09/06 [superseded by [Resolution 12/04](#)] *On Marine Turtles* to ensure that the Resolution applies equally to all marine turtle species and that CPCs annually report all interactions and mortalities of marine turtles in fisheries under the mandate of the IOTC;

ADOPTS in accordance with paragraph 1 of Article IX of the IOTC Agreement, that:

1. This Resolution shall apply to all fishing vessels on the IOTC Record of Fishing Vessels.
2. Contracting Parties and Cooperating Non-Contracting Parties (hereinafter referred to as “CPCs”) will implement, as appropriate, the FAO Guidelines.
3. CPCs shall collect (including through logbooks and observer programs) and provide to the IOTC Secretariat no later than 30 June of the following year in accordance with [Resolution 10/02](#) (or any subsequent revision), all data on their vessels’ interactions with marine turtles. The data shall include the level of logbook or observer coverage and an estimation of total mortality of marine turtles incidentally caught in their fisheries.
4. CPCs shall report to the IOTC Scientific Committee information on successful mitigation measures and other impacts on marine turtles in the IOTC area, such as the deterioration of nesting sites and swallowing of marine debris.
5. CPCs shall report to the Commission in the annual implementation report, in accordance with Article X of the IOTC Agreement, their progress of implementation of the FAO Guidelines and this Resolution.

6. CPCs shall require fishermen on vessels targeting species covered by the IOTC Agreement to bring aboard, if practicable, any captured marine turtle that is comatose or inactive as soon as possible and foster its recovery, including aiding in its resuscitation, before safely returning it to the water. CPCs shall ensure that fishermen are aware of and use proper mitigation, identification, handling and de-hooking techniques and keep on board all necessary equipment for the release of marine turtles, in accordance with handling guidelines in the IOTC Marine Turtle Identification Cards.
7. CPCs with gillnet vessels that fish for species covered by the IOTC Agreement shall:
 - a) Require that operators of such vessels record all incidents involving marine turtles during fishing operations in their logbooks² and report such incidents to the appropriate authorities of the CPC.
8. CPCs with longline vessels that fish for species covered by the IOTC Agreement shall:
 - a) Ensure that the operators of all longline vessels carry line cutters and de-hookers in order to facilitate the appropriate handling and prompt release of marine turtles caught or entangled, and that they do so in accordance with IOTC Guidelines. CPCs shall also ensure that operators of such vessels follow the handling guidelines in the IOTC Marine Turtle Identification Cards;
 - b) Where appropriate, encourage the use of whole finfish bait;
 - c) Require that operators of such vessels record all incidents involving marine turtles during fishing operations in their logbooks³ and report such incidents to the appropriate authorities of the CPC.
9. CPCs with purse seine vessels that fish for species covered by the IOTC Agreement shall:
 - a) Ensure that operators of such vessels, while fishing in the IOTC area:
 - i. To the extent practicable, avoid encirclement of marine turtles, and if a marine turtle is encircled or entangled, take practicable measures to safely release the turtle in accordance with the handling guidelines in the IOTC Marine Turtle Identification Cards;
 - ii. To the extent practicable, release all marine turtles observed entangled in fish aggregating devices (FADs) or other fishing gear;
 - iii. If a marine turtle is entangled in the net, stop net roll as soon as the turtle comes out of the water; disentangle the turtle without injuring it before resuming the net roll; and to the extent practicable, assist the recovery of the turtle before returning it to the water;
 - iv. Carry and employ dip nets, when appropriate, to handle marine turtles.
 - b) Encourage such vessels to adopt FAD designs that reduce the incidence of entanglement of marine turtles according to international standards;
 - c) Require that operators of such vessels record all incidents involving marine turtles during fishing operations in their logbooks⁴ and report such incidents to the appropriate authorities of the CPC.
10. All CPCs are requested to:
 - a) Where appropriate undertake research trials of circle hooks, use of whole finfish for bait, alternative FAD designs, alternative handling techniques, gillnet design and fishing practices and other mitigation methods which may improve the mitigation of adverse effects on marine turtles;
 - b) Report the results of these trials to the IOTC Scientific Committee, at least 30 days in advance of the annual meetings of the Scientific Committee.

² This information should include, where possible, details on species, location of capture, conditions, actions taken on board and location of release.

³ This information should include, where possible, details on species, location of capture, conditions, actions taken on board and location of release

⁴ This information should include, where possible, details on species, location of capture, conditions, actions taken on board and location of release

-
11. The IOTC Scientific Committee shall request the IOTC Working Party on Ecosystems and Bycatch to:
- a) Develop recommendations on appropriate mitigation measures for gillnet, longline and purse seine fisheries in the IOTC area;
 - b) Develop regional standards covering data collection, data exchange and training;
 - c) Develop improved FAD designs to reduce the incidence of entanglement of marine turtles, including the use of biodegradable materials.

The recommendations of the IOTC Working Party on Ecosystems and Bycatch shall be provided to the IOTC Scientific Committee for consideration at its annual session in 2012. In developing its recommendations, the IOTC Working Party on Ecosystems and Bycatch shall examine and take into account the information provided by CPCs in accordance with paragraph 10 of this measure, other research available on the effectiveness of various mitigation methods in the IOTC area, mitigation measures and guidelines adopted by other relevant organizations and, in particular, those of the Western and Central Pacific Fisheries Commission. The IOTC Working Party on Ecosystems and Bycatch will specifically consider the effects of circle hooks on target species catch rates, marine turtle mortalities and other bycatch species.

12. At its annual session in 2013 the Commission shall consider the recommendations of the IOTC Scientific Committee, together with socio-economic considerations, with a view to adopting further measures to mitigate interactions with marine turtles in fisheries covered by the IOTC Agreement.
13. In researching new mitigation methods, consideration should be given to ensuring that methods do not cause greater harm than they prevent and do not adversely impact other species (particularly threatened species) and/or the environment.
14. CPCs are encouraged to collaborate with the IOSEA and take into account the IOSEA MoU including the provisions of the Conservation and Management Plan in the implementation of bycatch mitigation measures for marine turtles.
15. The IOTC and IOSEA secretariats are encouraged to intensify their collaboration and exchange of information on marine turtle issues in accordance with the protocols agreed by the Commission.
16. CPCs are encouraged to support developing countries in their implementation of the FAO Guidelines and this Resolution.
17. The IOTC Scientific Committee shall annually review the information reported by CPCs pursuant to this measure and, as necessary, provide recommendations to the Commission on ways to strengthen efforts to reduce marine turtle interactions with IOTC fisheries.
18. This Resolution supersedes Recommendation 05/08 *On Sea Turtles* and Resolution 09/06 *On Marine Turtles*.

APPENDIX F**RESOLUTION 12/06****ON REDUCING THE INCIDENTAL BYCATCH OF SEABIRDS IN LONGLINE FISHERIES**

The Indian Ocean Tuna Commission (IOTC),

RECALLING Resolution 10/06 *On reducing incidental bycatch of seabirds in longline fisheries* [superseded by [Resolution 12/06](#)], and in particular, its paragraph 8;

RECOGNISING the need to strengthen mechanisms to protect seabirds in the Indian Ocean, and to harmonise them with ICCAT measures that will enter into force no later than July 2013;

TAKING INTO ACCOUNT the United Nations Food and Agriculture Organization (FAO) International Plan of Action for Reducing the Incidental Catch of Seabirds in Longline Fisheries (IPOA-Seabirds);

NOTING the recommendations of the IOTC Scientific Committee, in agreement with the IOTC Working Party on Ecosystems and Bycatch (WPEB) on measures to mitigate seabird interactions as outlined in their 2007, 2009 and 2011 Reports;

ACKNOWLEDGING that to date some IOTC Contracting Parties and Cooperating Non-Contracting Parties (hereinafter referred to as “CPCs”) have identified the need for, and have either completed or are near finalising, their National Plan of Action on Seabirds;

RECOGNISING the global concern that some species of seabirds, notably albatrosses and petrels, are threatened with extinction;

NOTING that the Agreement on the Conservation of Albatrosses and Petrels, which opened for signatures at Canberra on 19 June 2001, has entered into force;

NOTING that the ultimate aim of the IOTC and the CPCs is to achieve a zero bycatch of seabirds for fisheries under the purview of the IOTC, especially threatened albatrosses and petrel species in longline fisheries;

BEARING in mind studies undertaken in other longline tuna fisheries, demonstrating the economical benefit of measures to mitigate incidental bycatch of seabirds, by significantly increasing catches of targeted species;

ADOPTS, in accordance with the provisions of Article IX, paragraph 1 of the IOTC Agreement, the following:

1. CPCs shall record data on seabird incidental bycatch by species, notably through scientific observers in accordance with [Resolution 11/04](#) and report these annually. Observers shall to the extent possible take photographs of seabirds caught by fishing vessels and transmit them to national seabird experts or to the IOTC Secretariat, for confirmation of identification.
2. CPCs that have not fully implemented the provisions of the IOTC Regional Observer Scheme outlined in paragraph 2 of [Resolution 11/04](#) shall report seabird incidental bycatch through logbooks, including details of species, if possible.
3. CPCs shall provide to the Commission as part of their annual reports, information on how they are implementing this measure.
4. CPCs shall seek to achieve reductions in levels of seabird bycatch across all fishing areas, seasons, and fisheries through the use of effective mitigation measures, while giving due consideration to the safety of crew members and the practicability of mitigation measures.
5. In the area south of 25 degrees South latitude, CPCs shall ensure that all longline vessels use at least two of the three mitigation measures in **Table 1**. These measures should also be considered for implementation in other areas, as appropriate, consistent with scientific advice.
6. Mitigation measures used pursuant to paragraph 5 shall conform to the minimum technical standards for these measures, as shown in **Table 1**.
7. The design and deployment for bird scaring lines should also meet the additional specifications provided in **Annex I**.

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8. The IOTC Scientific Committee, based notably on the work of the WPEB and information from CPCs, will analyse the impact of this Resolution on seabird bycatch no later than for the 2016 meeting of the Commission. It shall advise the Commission on any modifications that are required, based on experience to date of the operation of the Resolution and/or further international studies, research or advice on best practice on the issue, in order to make the Resolution more effective.
 9. The Commission should hold a workshop in the intersessional period before the entry into force of this Resolution to facilitate its implementation, particularly focusing on how to address safety and practical concerns. CPCs shall ensure that fishers make a trial of the safety and practicality of these measures for review at the workshops with a view of resolving their concerns and assuring the orderly implementation, including training for and adaptation to these measures. A second workshop should be held, if necessary to explain the science, theory and application of the line weighting measure.
 10. This Resolution shall enter into force on 1 July 2014.
 11. As of 1 July 2014, the Resolution 10/06 *on reducing incidental bycatch of seabirds in longline fisheries* and the Recommendation 05/09 *on incidental mortality of seabirds* are superseded by this Resolution.

Table 1. Mitigation measures

Mitigation	Description	Specification
Night setting with minimum deck lighting	No setting between nautical dawn and before nautical dusk. Deck lighting to be kept to a minimum.	Nautical dusk and nautical dawn are defined as set out in the Nautical Almanac tables for relevant latitude, local time and date. Minimum deck lighting should not breach minimum standards for safety and navigation.
Bird-scaring lines (Tori lines)	Bird-scaring lines shall be deployed during the entire longline setting to deter birds from approaching the branch line.	<p>For vessels greater than or equal to 35 m:</p> <ul style="list-style-type: none"> • Deploy at least 1 bird-scaring line. Where practical, vessels are encouraged to use a second tori pole and bird scaring line at times of high bird abundance or activity; both tori lines should be deployed simultaneously, one on each side of the line being set. • Aerial extent of bird-scaring lines must be greater than or equal to 100 m. • Long streamers of sufficient length to reach the sea surface in calm conditions must be used. • Long streamers must be at intervals of no more than 5m. <p>For vessels less than 35 m:</p> <ul style="list-style-type: none"> • Deploy at least 1 bird-scaring line. • Aerial extent must be greater than or equal to 75 m. • Long and/or short (but greater than 1 m in length) streamers must be used and placed at intervals as follows: <ul style="list-style-type: none"> ○ Short: intervals of no more than 2 m. ○ Long: intervals of no more than 5 m for the first 55 m of bird scaring line. <p>Additional design and deployment guidelines for bird-scaring lines are provided in Annex I of this Resolution.</p>
Line weighting	Line weights to be deployed on the snood prior to setting.	Greater than a total of 45 g attached within 1 m of the hook or; Greater than a total of 60 g attached within 3.5 m of the hook or; Greater than a total of 98 g weight attached within 4 m of the hook.

ANNEX I

Supplemental Guidelines for Design and Deployment of Tori Lines**Preamble**

Minimum technical standards for deployment of tori lines are found in **Table 1** of this Resolution, and are not repeated here. These supplemental guidelines are designed to assist in the preparation and implementation of tori line regulations for longline vessels. While these guidelines are relatively explicit, improvement in tori line effectiveness through experimentation is encouraged, within the requirements of **Table 1** in the Resolution. The guidelines take into account environmental and operational variables such as weather conditions, setting speed and ship size, all of which influence tori line performance and design in protecting baits from birds. Tori line design and use may change to take account of these variables provided that line performance is not compromised. On-going improvement in tori line design is envisaged and consequently review of these guidelines should be undertaken in the future.

Tori line design (see Figure 1)

1. An appropriate towed device on the section of the tori line in the water can improve the aerial extension.
2. The above water section of the line should be sufficiently light that its movement is unpredictable to avoid habituation by birds and sufficiently heavy to avoid deflection of the line by wind.
3. The line is best attached to the vessel with a robust barrel swivel to reduce tangling of the line.
4. The streamers should be made of material that is conspicuous and produces an unpredictable lively action (e.g. strong fine line sheathed in red polyurethane tubing) suspended from a robust three-way swivel (that again reduces tangles) attached to the tori line.
5. Each streamer should consist of two or more strands.
6. Each streamer pair should be detachable by means of a clip so that line stowage is more efficient.

Deployment of tori lines

1. The line should be suspended from a pole affixed to the vessel. The tori pole should be set as high as possible so that the line protects bait a good distance astern of the vessel and will not tangle with fishing gear. Greater pole height provides greater bait protection. For example, a height of around 7 m above the water line can give about 100 m of bait protection.
2. If vessels use only one tori line it should be set to windward of sinking baits. If baited hooks are set outboard of the wake, the streamer line attachment point to the vessel should be positioned several meters outboard of the side of the vessel that baits are deployed. If vessels use two tori lines, baited hooks should be deployed within the area bounded by the two tori lines.
3. Deployment of multiple tori lines is encouraged to provide even greater protection of baits from birds.
4. Because there is the potential for line breakage and tangling, spare tori lines should be carried onboard to replace damaged lines and to ensure fishing operations can continue uninterrupted. Breakaways can be incorporated into the tori line to minimize safety and operational problems should a longline float foul or tangle with the in-water extent of a streamer line.
5. When fishers use a bait casting machine (BCM), they must ensure coordination of tori line and machine by: i) ensuring the BCM throws directly under the tori line protection, and ii) when using a BCM (or multiple BCMs) that allows throwing to both port and starboard, two tori lines should be used.
6. When casting branchline by hand, fishers should ensure that the baited hooks and coiled branchline sections are cast under the tori line protection, avoiding the propeller turbulence which may slow the sink rate.
7. Fishers are encouraged to install manual, electric or hydraulic winches to improve ease of deployment and retrieval of tori lines.

Streamer Line

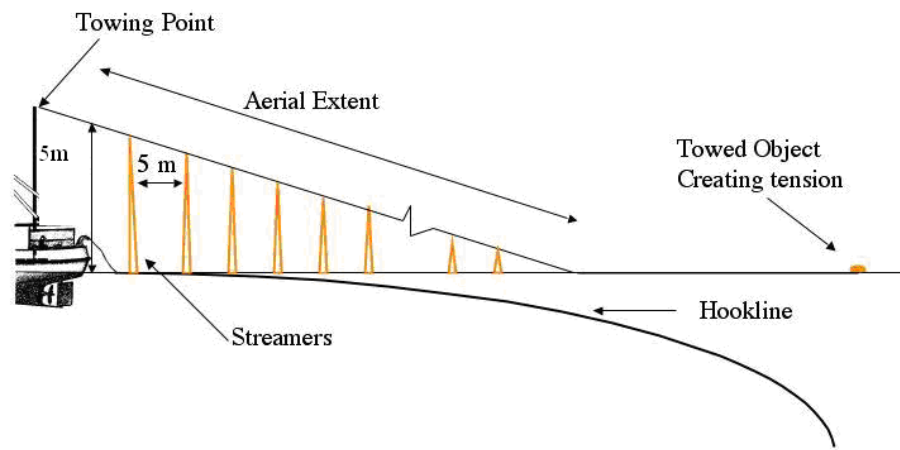


Figure 1. Diagram of Bird Scaring Streamer Line.

APPENDIX G
RESOLUTION 16/04

**ON THE IMPLEMENTATION OF A PILOT PROJECT IN VIEW OF PROMOTING THE REGIONAL
OBSERVER SCHEME OF IOTC**

The Indian Ocean Tuna Commission (IOTC),

TAKING INTO ACCOUNT the need to increase the scientific information, in particular to provide the IOTC Scientific Committee working material in order to improve the management of the tuna and tuna-like species fished in the Indian Ocean;

REITERATING the responsibilities of Flag States to ensure that their vessels conduct their fishing activities in a responsible manner, fully respecting IOTC Conservation and Management Measures;

CONSIDERING the need for action to ensure the effectiveness of the IOTC objectives;

CONSIDERING the obligation of all IOTC Contracting Parties and Cooperating Non-Contracting Parties (hereinafter CPCs) to fully comply with the IOTC Conservation and Management Measures;

AWARE of the necessity for sustained efforts by CPCs to ensure the enforcement of IOTC's Conservation and Management Measures, and the need to encourage Non-CPCs to abide by these measures;

UNDERLINING that the adoption of this measure is intended to promote the implementation of the Resolution 11/04 *on a Regional Observer Scheme*;

CONSIDERING the deliberations of the 18th Session of the IOTC Scientific Committee held in Bali, Indonesia from 23-27 November 2015, notably that CPCs should comply with IOTC data requirements as requested per Resolution 15/01 and 15/02, respectively *on the recording of catch and effort data by fishing vessels in the IOTC area of competence and on mandatory statistical reporting requirements for IOTC Contracting Parties and Cooperating Non-Contracting parties (CPCs)*, given the gaps in available information in the IOTC database and the importance of basic fishery data in order to assess the status of stocks and for the provision of sound management advice.

ADOPTS, in accordance with the provisions of Article IX, paragraph 1 of the IOTC Agreement, the following:

1. Create a pilot project aiming to enhance the implementation of the Resolution 11/04 *on a Regional Observer Scheme* and to raise the level of compliance to the implementation of Resolutions 15/01 and 15/02, respectively *on the recording of catch and effort data by fishing vessels in the IOTC area of competence and on mandatory statistical reporting requirements for IOTC Contracting Parties and Cooperating non-Contracting parties (CPCs)*.
2. This pilot project will be funded through IOTC budget and/or from voluntary contributions. The pilot project will be prepared taking into account the following elements:
 - a) Identification and selection of voluntary participatory Contracting Parties or Cooperating Non-Contracting Parties (CPCs). Participatory CPCs should indicate their vessels that will participate in the project.
 - b) Terms of Reference (ToR) and selection of scientific observers, according to provisions of the Resolutions 11/04, 15/01 and 15/02.
 - c) Definition of an Action Plan for the observers work, including indicatively, a working calendar and an area of activity.
 - d) Mid-term review and a final term review, the latter should include recommendation on how to expand the experiences and results of the pilot project to all IOTC area of competence.
 - e) Cooperation coordination mechanism between CPCs participating in the project.
 - f) Complementarity with the Regional Observer Scheme actions already in place.

3. The IOTC Scientific Committee will draft guidelines regarding the ToR and work of observers, and an indicative budget for approval by the Commission in 2017. This project will focus on developing states, with priority given to promote the implementation of the ROS to small island developing states (SIDS) and least developed countries (LDC).
4. Contracting Parties will provide their comments and suggestions within one month after the IOTC Executive Secretary transmission of the draft project, following the Scientific Committee.
5. The revised draft proposal, including a detailed budget, will be submitted to the Compliance Committee and to the Standing Committee on Administration and Finance for review, and submitted for consideration and approval at the annual meeting of the Commission in 2017.
6. The pilot project will explore the possibilities offered by electronic observation and observation in port.
7. The Scientific Committee will evaluate whether electronic observation or observation in port can be used to collect data matching IOTC standards. Scientific Committee will also propose minimum standards for the implementation of Electronic observation systems and how they can be used to increase levels of observer coverage for Indian Ocean fisheries.
8. The pilot project will not preclude any Regional Observer Scheme's actions already implemented by Contracting Parties or Cooperating non-Contracting Parties and respective fleets.

Annex I
Minimal requirements for observers

Scientific observers

1. Without prejudice to whatever specific training and qualifications are recommended by the Scientific Committee, the designated observers shall have the following qualifications to accomplish their tasks:
 - a) a satisfactory knowledge of the IOTC Conservation and Management Measures;
 - b) the ability to observe and record information accurately;
 - c) a satisfactory knowledge of the language of the flag of the vessel observed;
 - d) sufficient experience to identify species and fishing gear;
 - e) proven training in security and survival at sea.
2. Observers shall:
 - a) record and report upon the fishing activities carried out;
 - b) observe and estimate catches and check consistency with entries made in the logbook;
 - c) note the position of the vessel when engaged in catching activity;
 - d) carry out scientific work such as collecting of IOTC mandatory statistical information and fulfilment of logbooks;
 - e) report the results of these duties on the fishing vessel in the observers report to the flag state fishing authority,
 - f) submit the observer report to Flag State authorities within 30 days from the end of the period of observation;
 - g) treat as confidential all information with respect to the fishing and transshipment operations of the fishing vessels and accept this requirement in writing as a condition of appointment as an observer;
 - h) comply with requirements established in the laws and regulations of the flag State which exercises jurisdiction over the vessel to which the observer is assigned;
 - i) respect the hierarchy and general rules of behaviour which apply to all vessel personnel, provided such rules do not interfere with the duties of the observer under this program, and with the obligations of vessel personnel.

Obligations of the Master

3. The Master shall allow observers to:
 - a) visit the fishing vessel, if weather conditions permit, and to have access to vessel staff and to the gear and equipment but not interfering with the equipment on-board;
 - b) have access to the equipment listed below, if present on the vessels to which they are assigned, in order to facilitate the carrying out of their duties. This shall be done on a request basis. The equipment concerns
 - i) satellite navigation equipment; (consultation only)
 - ii) radar display viewing screens when in use; (consultation only)

-
- iii) electronic means of communication;
 - c) Observers shall be provided with accommodation, including lodging, food and adequate sanitary facilities, equal to those of officers;
 - d) Observers shall be provided with adequate space on the bridge or pilot house for clerical work, as well as space on deck adequate for carrying out observer duties;

Obligations of the Flag State

- 4. The Flag States shall ensure that masters, crew and vessel owners do not obstruct, intimidate, interfere with, influence, bribe or attempt to bribe an observer in the performance of his/her duties.
- 5. No later than two months upon completion of a fishing trip, observer reports will be sent to the IOTC secretariat, who shall manage and keep record of the mentioned observer's reports in a manner consistent with IOTC confidentiality requirements, and will submit copies of the observer reports to the Scientific Committee.
- 6. Data collected in any Coastal State EEZ will also be provided to the Coastal State authorities within the same delays and conditions of the previous paragraph.

Mutual recognition of observers

- 7. The observers selected to participate in this pilot project will be recognised by all CPCs participating in the project.

APPENDIX H
RESOLUTION 11/04
ON A REGIONAL OBSERVER SCHEME

The Indian Ocean Tuna Commission (IOTC),

TAKING INTO ACCOUNT the need to increase the scientific information, in particular to provide the IOTC Scientific Committee working material in order to improve the management of the tuna and tuna-like species fished in the Indian Ocean;

REITERATING the responsibilities of flag States to ensure that their vessels conduct their fishing activities in a responsible manner, fully respecting IOTC Conservation and Management Measures;

CONSIDERING the need for action to ensure the effectiveness of the IOTC objectives;

CONSIDERING the obligation of all IOTC Contracting Parties and Cooperating Non-Contracting Parties (hereinafter CPCs) to fully comply with the IOTC Conservation and Management Measures;

AWARE of the necessity for sustained efforts by CPCs to ensure the enforcement of IOTC's Conservation and Management Measures, and the need to encourage Non-Contracting Parties (NCPs) to abide by these measures;

UNDERLINING that the adoption of this measure is intended to help support the implementation of Conservation and Management Measures as well as scientific research for tuna and tuna-like species;

CONSIDERING the provisions set forth in Resolution 10/04 *On A Regional Observer Scheme* [superseded by [Resolution 11/04](#)], adopted by the Commission;

CONSIDERING the deliberations of the 12th Session of the IOTC Scientific Committee held in Victoria, Seychelles from 30 November to 4 December 2009

ADOPTS, in accordance with the provisions of Article IX, paragraph 1 of the IOTC Agreement, the following:

Objective

1. The objective of the IOTC observer scheme shall be to collect verified catch data and other scientific data related to the fisheries for tuna and tuna-like species in the IOTC area of competence.

Observer Scheme

2. In order to improve the collection of scientific data, at least 5 % of the number of operations/sets for each gear type by the fleet of each CPC while fishing in the IOTC area of competence of 24 meters overall length and over, and under 24 meters if they fish outside their Exclusive Economic Zone (EEZ) shall be covered by this observer scheme. For vessels under 24 meters if they fish outside their EEZ, the above mentioned coverage should be achieved progressively by January 2013.
3. When purse seiners are carrying an observer⁵ as stated in paragraph 1, this observer shall also monitor the catches at unloading to identify the composition of bigeye tuna catches. The requirement for the observer to monitor catches at unloading is not applicable to CPCs already having a sampling scheme, with at least the coverage set out in paragraph 2.
4. The number of the artisanal fishing vessels landings shall also be monitored at the landing place by field samplers⁶. The indicative level of the coverage of the artisanal fishing vessels should progressively increase towards 5% of the total levels of vessel activity (i.e. total number of vessel trips or total number of vessels active).
5. CPCs shall:

⁵ Observer: a person who collects information on board fishing vessels. Observer programmes can be used for quantifying species composition of target species, bycatch, by-products and dead discards, collecting tag returns, etc.

⁶ Field sampler: a person who collects information on land during the unloading of fishing vessels. Field sampling programmes can be used for quantifying catch, retained bycatch, collecting tag returns, etc.

- a) Have the primary responsibility to obtain qualified observers. Each CPC may choose to use either deployed national or non-national of the flag State of the vessel on which they are deployed;
 - b) Endeavour that the minimum level of coverage is met and that the observed vessels are a representative sample of the gear types active in their fleet;
 - c) Take all necessary measures to ensure that observers are able to carry out their duties in a competent and safe manner;
 - d) Endeavour to ensure that the observers alternate vessels between their assignments. Observers are not to perform duties, other than those described in paragraphs 10 and 11 below;
 - e) Ensure that the vessel on which an observer is placed shall provide suitable food and lodging during the observer's deployment at the same level as the officers, where possible. Vessel masters shall ensure that all necessary cooperation is extended to observers in order for them to carry out their duties safely including providing access, as required, to the retained catch, and catch which is intended to be discarded.
6. The cost of the observer scheme in paragraph 2 and 3 shall be met by each CPC.
7. The sampling scheme referred in paragraph 4 will be covered by the Commission's accumulated funds and voluntary contribution on a provisional basis. The Commission will consider an alternative for the financing of this scheme.
8. If the coverage referred in paragraphs 2 and 3 is not met by a CPC, any other CPC may, subject to the consent of the CPC who has not met its coverage, place an observer to fulfil the tasks defined in the paragraphs 1 and 2 until that CPC provides a replacement or the target coverage level is met.
9. CPCs shall provide to the IOTC Executive Secretary and the IOTC Scientific Committee annually a report of the number of vessels monitored and the coverage achieved by gear type in accordance with the provisions of this Resolution.
10. Observers shall:
- a) Record and report fishing activities, verify positions of the vessel;
 - b) Observe and estimate catches as far as possible with a view to identifying catch composition and monitoring discards, by-catches and size frequency;
 - c) Record the gear type, mesh size and attachments employed by the master;
 - d) Collect information to enable the cross-checking of entries made to the logbooks (species composition and quantities, live and processed weight and location, where available); and
 - e) Carry out such scientific work (for example, collecting samples), as requested by the IOTC Scientific Committee.
11. The observer shall, within 30 days of completion of each trip, provide a report to the CPCs of the vessel. The CPCs shall send within 150 days at the latest each report, as far as continuous flow of report from observer placed on the longline fleet is ensured, which is recommended to be provided with 1°x1° format to the IOTC Executive Secretary, who shall make the report available to the IOTC Scientific Committee upon request. In a case where the vessel is fishing in the EEZ of a coastal State, the report shall equally be submitted to that coastal State.
12. The confidentiality rules set out in the Resolution 98/02 [\[superseded by Resolution 12/02\]](#) *Data confidentiality policy and procedures* for fine-scale data shall apply.
13. Field samplers shall monitor catches at the landing place with a view to estimating catch-at-size by type of boat, gear and species, or carry out such scientific work as requested by the IOTC Scientific Committee.
14. The funds available from the IOTC balance of funds may be used to support the implementation of this programme in developing States, notably the training of observers and field samplers.
15. The elements of the Observer Scheme, notably those regarding its coverage, are subject to review and revision, as appropriate, for application in 2012 and subsequent years. Basing on the experience of other Tuna RFMOs, the IOTC Scientific Committee will elaborate an observer working manual, a template to be used for reporting

(including minimum data fields) and a training program.

16. This Resolution supersedes Resolution 10/04 *On A Regional Observer Scheme*.

APPENDIX I

RESOLUTION 15/06

ON A BAN ON DISCARDS OF BIGEYE TUNA, SKIPJACK TUNA, YELLOWFIN TUNA, AND A RECOMMENDATION FOR NON-TARGETED SPECIES CAUGHT BY PURSE SEINE VESSELS IN THE IOTC AREA OF COMPETENCE

The Indian Ocean Tuna Commission (IOTC),

RECOGNISING the need for action to ensure the achievement of IOTC objectives to conserve and manage bigeye tuna, skipjack tuna and yellowfin tuna in the IOTC area of competence;

RECOGNISING that the international community has recognised both ethical concerns and policy regarding discards of species in several international instruments and statements, including United Nations General Assembly resolutions (A/RES/49/118 (1994); A/RES/50/25 (1996); A/RES/51/36 (1996); A/RES/52/29 (1997); A/RES/53/33 (1998); A/RES/55/8 (2000); and A/RES/57/142 (2002)), United Nations Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea (UNCLOS) relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks (United Nations Fish Stocks Agreement); The Rome Consensus on World Fisheries adopted by the FAO Ministerial Conference on Fisheries, Rome, 14–15 March 1995; the Code of Conduct for Responsible Fisheries, the FAO International Plan of Action (IPOA) on sharks; the Convention on Biological Diversity (CBD);

RECALLING that the United Nations Fish Stocks Agreement has underlined the importance of ensuring the conservation and optimum utilisation of highly migratory species through the action of regional fishery bodies such as the IOTC, and provides that “*States should minimize ... discards, ..., catch of non target species, both fish and non-fish species, and impacts on associated or dependent species, in particular endangered species ...*”;

RECALLING that The Rome Consensus on World Fisheries adopted by the FAO Ministerial Conference on Fisheries, Rome, 14–15 March 1995, provides that “*States should...reduce bycatches, fish discards...*”;

RECALLING that the FAO Code of Conduct for Responsible Fisheries provides that “*States should take appropriate measures to minimize waste, discards...collect information on discards ...; ... take account of discards (in the precautionary approach) ...; develop technologies that minimize discards ...; use of selective gear to minimize discards*”;

RECALLING that the Commission adopted [Resolution 12/01](#) on the implementation of the precautionary approach;

CONCERNED about the morally unacceptable waste and the impact of unsustainable fishing practices upon the oceanic environment, represented by the discarding of tunas and non-target species in the purse seine fishery for tunas in the Indian Ocean;

CONSIDERING the important volume of tuna and non-targeted species discarded in the purse seine fishery for tunas in the Indian Ocean;

ADOPTS, in accordance with paragraph 1 of Article IX of the IOTC Agreement, that:

RETENTION OF TUNA SPECIES

1. Contracting Parties and Cooperating Non-Contracting Parties shall require all purse seine vessels to retain on board and then land all bigeye tuna, skipjack tuna, and yellowfin tuna caught, except fish considered unfit for human consumption.
2. Procedures for the implementation of full retention requirements include:
 - a) No bigeye tuna, skipjack tuna, and/or yellowfin tuna caught by purse seine vessels may be discarded after the point in the set when the net is fully pursed and more than one half of the net has been retrieved. If equipment malfunctions affect the process of pursing and retrieving the net in such a way that this rule cannot be complied with, the crew must make efforts to release the tuna as soon as possible.
 - b) The following two exceptions to the above rule shall apply:

- i. Where it is determined by the captain of the vessel that tuna (bigeye tuna, skipjack tuna or yellowfin tuna) caught are unfit for human consumption, the following definitions shall be applied:
 - "unfit for human consumption" are fish that:
 - is meshed or crushed in the purse seine; or
 - is damaged due to depredation; or
 - has died and spoiled in the net where a gear failure has prevented both the normal retrieval of the net and catch, and efforts to release the fish alive;
 - "unfit for human consumption" does not include fish that:
 - is considered undesirable in terms of size, marketability, or species composition; or
 - is spoiled or contaminated as the result of an act or omission of the crew of the fishing vessel.
- ii. Where the captain of a vessel determines that tuna (bigeye tuna, skipjack tuna or yellowfin tuna) was caught during the final set of a trip and there is insufficient storage capacity to accommodate all tuna (bigeye tuna, skipjack tuna or yellowfin tuna) caught in that set. This fish may only be discarded if:
 - the captain and crew attempt to release the tuna (bigeye tuna, skipjack tuna or yellowfin tuna) alive as soon as possible; and
 - no further fishing is undertaken after the discard until the tuna (bigeye tuna, skipjack tuna, and/or yellowfin tuna) on board the vessel has been landed or transhipped.

RETENTION OF SPECIES OTHER THAN THOSE SPECIFIED UNDER PARA 2, A)

3. Contracting Parties and Cooperating Non-Contracting Parties should encourage all purse seine vessels to retain on board and then land all non-targeted species as far as the vessel can ensure appropriate fishing operation (including but not limited to other tunas, rainbow runner, dolphinfish, triggerfish, billfish, wahoo, and barracuda) except fish considered unfit for human consumption (as defined in paragraph 2 b) i). A single exception shall be the final set of a trip, when there may be insufficient storage capacity remaining to accommodate all the non-targeted fish caught in that set.

IMPLEMENTATION

4. The IOTC Scientific Committee, the IOTC Working Party on Tropical Tunas, and the IOTC Working Party on Ecosystems and Bycatch shall annually:
 - a) review the information available on bycatch (retained and discarded) by purse seine vessels; and
 - b) provide advice to the Commission on options to sustainably manage discards in purse seine fisheries.
5. This Resolution shall enter into force on 1 November 2015 and will be revised, according to the advice of the IOTC Scientific Committee resulting from the review of the IOTC Working Party on Tropical Tunas (for bigeye tuna, skipjack tuna and yellowfin tuna) and of the IOTC Working Party on Ecosystems and Bycatch (for non-target species).
6. This Resolution supersedes Resolution 13/11 *On a ban on discards of bigeye tuna, skipjack tuna, yellowfin tuna and a recommendation for non-targeted species caught by purse seine vessels in the IOTC area of competence.*

APPENDIX J
RESOLUTION 13/04
ON THE CONSERVATION OF CETACEANS

The Indian Ocean Tuna Commission (IOTC),

RECOGNISING [Resolution 12/01](#) *On the Implementation of the Precautionary Approach* calls on IOTC Contracting Parties and Cooperating Non-Contracting Parties to apply the precautionary approach when managing tuna and tuna-like species in accordance with Article V of the United Nations Fish Stocks Agreement;

RECOGNISING the ecological and cultural significance of cetaceans in the Indian Ocean;

MINDFUL that cetaceans are particularly vulnerable to exploitation including from fishing;

CONCERNED about the potential impacts of purse seine fishing operations on the sustainability of cetaceans;

NOTING that under [Resolution 10/02](#) *Mandatory Statistical Requirements for IOTC Members and Cooperating Non-Contracting Parties (CPC's)*, paragraph 3: ‘CPCs are also encouraged to record and provide data on species other than sharks and tunas taken as bycatch’;

CONCERNED by the lack of accurate and complete data collection and reporting to the IOTC Secretariat concerning interactions and mortalities of non-target species with fishing vessels in the IOTC area of competence;

FURTHER NOTING that the IOTC Working Party on Ecosystems and Bycatch (WPEB) noted paper IOTC–2011–WPEB07–08 which reviewed the status of the information available on non-target species associated with IOTC fisheries; recommended that data on marine mammal interactions with IOTC fisheries are collected and reported by CPCs to the IOTC Secretariat;

ADOPTS in accordance with paragraph 1 of Article IX of the IOTC Agreement, that:

1. This measure shall apply to all fishing vessels flying the flag of a CPC and on the IOTC Record of Fishing Vessels or authorised to fish tuna and tuna-like species managed by the IOTC on the high seas. The provisions of this measure do not apply to artisanal fisheries operating exclusively in their respective EEZ.
2. Contracting Parties and Cooperating Non-Contracting Parties (collectively, CPCs) shall prohibit their flagged vessels from intentionally setting a purse seine net around a cetacean in the IOTC area of competence, if the animal is sighted prior to the commencement of the set.
3. CPCs shall require that, in the event that a cetacean is unintentionally encircled in a purse seine net, the master of the vessels shall:
 - a) take all reasonable steps to ensure the safe release of the cetacean, while taking into consideration the safety of the crew. These steps shall include following the best practice guidelines for the safe release and handling of cetaceans developed by the IOTC Scientific Committee;
 - b) report the incident to the relevant authority of the flag State, with the following information:
 - i. the species (if known);
 - ii. the number of individuals;
 - iii. a short description of the interaction, including details of how and why the interaction occurred, if possible;
 - iv. the location of the encirclement;
 - v. the steps taken to ensure safe release;
 - vi. an assessment of the life status of the animal on release, including whether the cetacean was released alive but subsequently died.

4. CPCs using other gear types fishing for tuna and tuna-like species associated with cetaceans shall report all interactions with cetaceans to the relevant authority of the flag State and include all the information outlined in paragraph 3b(i–vi).
5. CPCs shall adopt Fish Aggregating Device designs that reduce the incidence of entanglement, according to **Annex III** of [Resolution 13/08](#) (or any subsequent revision).
6. The Commission requests that the IOTC Scientific Committee develop best practice guidelines for the safe release and handling of encircled cetaceans, taking into account those developed in other Regional Fisheries Management Organisations, including the Western and Central Pacific Fisheries Commission, and that these guidelines be submitted to the 2014 Commission meeting for endorsement.
7. CPCs shall report the information and data collected under paragraph 3(b) and paragraph 4, through logbooks, or when an observer is onboard through observer programs, and provide to the IOTC Secretariat by 30 June of the following year and according to the timelines specified in [Resolution 10/02](#) (or any subsequent revision).
8. CPCs shall report, in accordance with Article X of the IOTC Agreement, any instances in which cetaceans have been encircled by the purse seine nets of their flagged vessels.
9. For CPCs having national and state legislation for protecting these species shall be exempt from reporting to IOTC, but are encouraged to provide data for the IOTC Scientific Committee consideration. The IOTC Scientific Committee will analyse the situation concerning the availability of data and will advise the Commission to undertake support measures to developing CPCs to overcome this situation.

APPENDIX K**RESOLUTION 13/05****ON THE CONSERVATION OF WHALE SHARKS (*RHINCODON TYPUS*)****The Indian Ocean Tuna Commission (IOTC),**

RECOGNISING [Resolution 12/01](#) *On the Implementation of the Precautionary Approach* calls on IOTC Contracting Parties and Cooperating Non-Contracting Parties to apply the precautionary approach when managing tuna and tuna-like species in accordance with Article V of the United Nations Fish Stocks Agreement;

RECOGNISING the ecological and cultural significance of whale sharks in the Indian Ocean;

MINDFUL that whale sharks are particularly vulnerable to exploitation including from fishing;

CONCERNED about the possible impacts of purse seine fishing operations on the sustainability of whale sharks;

ACKNOWLEDGING that under [Resolution 10/02](#) *Mandatory Statistical Requirements for IOTC Members and Cooperating Non-Contracting Parties (CPC's)*, paragraph 3: ‘the provisions, applicable to tuna and tuna-like species, shall also be applicable to the most commonly caught shark species and, where possible, to the less common shark species’;

CONCERNED by the lack of complete and accurate data reporting concerning fishing activities on non-target species;

NOTING that the IOTC Working Party on Ecosystems and Bycatch (WPEB) noted paper IOTC–2011–WPEB07–08 that reviewed the status of the information available on non-target species associated with IOTC fisheries; recommended that [Resolution 10/02](#) be revised to include whale sharks in a list of the most commonly caught elasmobranch species for which nominal catch data shall be reported as part of the statistical requirements for IOTC CPCs;

FURTHER NOTING that the WPEB noted paper IOTC–2011–WPEB07–08, paragraph 163: ‘recommended that the recommendations from the KOBE bycatch technical working group are considered to encourage research and development of best practice with regard to setting nets on whale sharks to determine the impacts of the practice’ and that the WPEB also recommended developing best practice methods for extraction of whale sharks from purse seine nets through direct collaboration with the Western and Central Pacific Fisheries Commission;

ADOPTS in accordance with paragraph 1 of Article IX of the IOTC Agreement, that:

1. This measure shall apply to all fishing vessels flying the flag of a CPC and on the IOTC Record of Fishing Vessels or authorised to fish for tuna and tuna-like species managed by the IOTC on the high seas. The provisions of this measure do not apply to artisanal fisheries operating exclusively in their respective EEZ.
2. Contracting Parties and Cooperating Non-Contracting Parties (collectively, CPCs) shall prohibit their flagged vessels from intentionally setting a purse seine net around a whale shark in the IOTC area of competence, if it is sighted prior to the commencement of the set.
3. CPCs shall require that, in the event that a whale shark is unintentionally encircled in the purse seine net, the master of the vessel shall:
 - a) take all reasonable steps to ensure its safe release, while taking into consideration the safety of the crew. These steps shall follow the best practice guidelines for the safe release and handling of whale sharks developed by the IOTC Scientific Committee;
 - b) report the incident to the relevant authority of the flag State, with the following information:
 - i. the number of individuals;
 - ii. a short description of the interaction, including details of how and why the interaction occurred, if possible;
 - iii. the location of the encirclement;
 - iv. the steps taken to ensure safe release;

-
- v. an assessment of the life status of the animal on release, including whether the whale shark was released alive but subsequently died.
 4. CPCs using other gear types fishing for tuna and tuna-like species associated with a whale shark shall report all interactions with whale sharks to the relevant authority of the flag State and include all the information outlined in paragraph 3b(i–v).
 5. CPCs shall adopt Fish Aggregating Device designs that reduce the incidence of entanglement, according to **Annex III** of [Resolution 13/08](#) (or any subsequent revision).
 6. The Commission requests that the IOTC Scientific Committee develop best practice guidelines for the safe release and handling of encircled whale sharks, taking into account those developed in other regional fisheries management organisations including the Western and Central Pacific Fisheries Commission, and that these guidelines be submitted to the 2014 Commission meeting for endorsement.
 7. CPCs shall report the information and data collected under paragraph 3(b) and paragraph 4 through logbooks, or when an observer is onboard through observer programs, and provide to the IOTC Secretariat by 30 June of the following year and according to the timelines specified in [Resolution 10/02](#) (or any subsequent revision).
 8. CPCs shall report, in accordance with Article X of the IOTC Agreement, any instances in which whale sharks have been encircled by the purse seine nets of their flagged vessels.
 9. For CPCs having national and state legislation for protecting the species shall be exempt from reporting to IOTC, but are encouraged to provide data for the IOTC Scientific Committee consideration. The IOTC Scientific Committee will analyse the situation concerning the availability of data and will advise the Commission to undertake support measures to developing CPCs to overcome this situation.

APPENDIX L**RESOLUTION 12/12****TO PROHIBIT THE USE OF LARGE-SCALE DRIFTNETS ON THE HIGH SEAS IN THE IOTC AREA****The Indian Ocean Tuna Commission (IOTC),**

RECALLING that the United Nations General Assembly (UNGA) Resolution 46/215 calls for a global moratorium on large-scale high seas driftnet fishing;

NOTING that a number of vessels continue to engage in large-scale high seas driftnet fishing in the Indian Ocean area (IOTC area of competence);

MINDFUL that any vessel fishing with large-scale driftnets on the high seas in the IOTC area of competence, or configured to conduct large-scale high seas driftnet operations, has the capacity to take species of concern to the IOTC and is likely to undermine the effectiveness of IOTC Conservation and Management Measures;

NOTING with concern that recent information indicates that such vessels are interacting more frequently with highly migratory species, such as tunas, swordfish, sharks, and other species covered by the IOTC Agreement; and that associated “ghost fishing” by lost or discarded driftnets have serious detrimental effects on these species of concern and the marine environment;

ADOPTS in accordance with paragraph 1 of Article IX of the IOTC Agreement, that:

1. The use of large-scale driftnets⁷ on the high seas within the IOTC area of competence shall be prohibited.
2. Each Contracting Party and Cooperating Non-Contracting party (hereinafter referred to as CPCs) shall take all measures necessary to prohibit their fishing vessels from using large-scale driftnets while on the high seas in the IOTC area of competence.
3. A CPC-flagged fishing vessel will be presumed to have used large-scale driftnets on the high seas in the IOTC area of competence if it is found operating on the high seas in the IOTC area of competence and is configured⁸ to use large-scale driftnets.
4. Paragraph 3 shall not apply to a CPC-flagged vessel duly authorised to use large-scale driftnets in their EEZs. While on the high seas in the IOTC area of competence all of such driftnets and related fishing equipment shall be stowed or secured in such a manner that they are not readily available to be used for fishing.
5. CPCs shall include in their Annual Reports a summary of monitoring, control, and surveillance actions related to large-scale driftnet fishing on the high seas in the IOTC area of competence.
6. The IOTC shall periodically assess whether additional measures should be adopted and implemented to ensure that large-scale driftnets are not used on the high seas in the IOTC area of competence. The first such assessment shall take place in 2013.
7. Nothing in this measure shall prevent CPCs from applying more stringent measures to regulate the use of large-scale driftnets.
8. This Resolution supersedes Resolution 09/05 *to prohibit the use of large-scale driftnets on the high seas in the IOTC area.*

⁷ “Large-scale driftnets” are defined as gillnets or other nets or a combination of nets that are more than 2.5 kilometers in length whose purpose is to enmesh, entrap, or entangle fish by drifting on the surface of, or in, the water column.

⁸ “Configured” to use large-scale drift-nets means having on board assembled gear that collectively would allow the vessel to deploy and retrieve large-scale driftnets.

APPENDIX M
RESOLUTION 18/04
ON BIOFAD EXPERIMENTAL PROJECT

Keywords: BIOFAD, Research project, biodegradability

The Indian Ocean Tuna Commission (IOTC),

MINDFUL of the call upon States, either individually, collectively or through regional fisheries management organisations and arrangements in the United Nations General Assembly Resolution 67/79 on Sustainable fisheries to collect the necessary data in order to evaluate and closely monitor the use of large-scale fish aggregating devices and others, as appropriate, and their effects on tuna resources and tuna behaviour and associated and dependent species, to improve management procedures to monitor the number, type and use of such devices and to mitigate possible negative effects on the ecosystem, including on juveniles and the incidental bycatch of non-target species, particularly sharks and marine turtles;

RECALLING that the objective of the IOTC Agreement is to ensure, through appropriate management, the conservation and optimum utilisation of stocks under its competence and to encourage the sustainable development of fisheries based on such stocks while minimising the level of bycatch;

HAVING REGARD to Annex V of the International Convention for the Prevention of Pollution from Ships (MARPOL);

RECOGNISING that promoting the use of natural origin biodegradable materials in the construction of FADs could contribute to the reduction of marine litter;

NOTING that the IOTC Scientific Committee advised the Commission that only non-entangling FADs, both drifting and anchored, should be designed and deployed to prevent the entanglement of sharks, marine turtles and other species;

RECALLING that Resolution 12/04 established that the Commission at its annual session in 2013 should consider the recommendations of the IOTC Scientific Committee as regards the development of improved FAD designs to reduce the incidence of entanglement of marine turtles, including the use of biodegradable materials, together with socio-economic considerations, with a view to adopting further measures to mitigate interactions with marine turtles in fisheries covered by the IOTC Agreement;

RECALLING that Resolution 17/08 [superseded by Resolution 18/08] established procedures on a fish aggregating device (FAD) management plan, including more detailed specifications of catch reporting from FAD sets, and the development of improved FAD designs and use of biodegradable materials to reduce the incidence of entanglement of non-target species as specified in Annex III of Resolution 17/08 [superseded by Resolution 18/08]; calling to reduce the amount of synthetic marine debris and promote the use of biodegradable materials (such as hessian canvas, hemp ropes, etc.);

Further RECALLING that the Scientific Committee noted the challenges in conducting studies on biodegradable FADs (BIOFADs), such as the limit on the number of active FADs per purse seine vessel in the Indian Ocean that may hinder the deployment of biodegradable FADs following experimental sampling designs, and also engagement with the fleet is necessary in order to incentivise them to deploy biodegradable FADs that may not be successful for fishing;

Furthermore, NOTING that IOTC, along with other tuna RFMOs, recommended and adopted resolutions to promote reduction of the amount of synthetic marine debris by the use of natural or biodegradable materials for drifting FADs; RECALLING that SC20 ENDORSED (IOTC SC20 paras 157 to 165) a scientific research project (“the BIOFAD Research Project”, IOTC-2017-SC20-INF07) by a consortium (‘the Project Consortium’) led by the Technological Center for Food and Marine Innovation (AZTI), the Spanish Oceanographic Institute (IEO) and the Institut de recherche pour le développement (IRD) to test the use of biodegradable materials and designs for the construction of drifting FADs in natural environmental conditions and REQUESTED the project to present the outcomes of the at sea trials to the next WPEB, WPTT and SC meetings;

NOTING that, the Scientific Committee ENDORSED that the Project Consortium carries out a large-scale experiment with the deployment of 1000 biodegradable FADs with experimental sampling designs (BIOFADs) in 2018-2019 in order to obtain sufficient data by the BIOFAD Research Project to conduct reliable scientific research and to avoid the

limitations identified in earlier small scale trials (250 in each quarter to analyse temporal effects). The SC equally noted that the project counts on the active collaboration of Seychelles, Mauritius and European Union purse seiners with a participation of 42 purse seine vessels operating in the Indian Ocean. The SC noted that in total, each vessel will deploy around 24 BIOFADs, 6 BIOFADs by trimester (2 BIOFADS per vessel/month for the duration of the project from April 2018 to April 2019).

AGREES, in accordance with the provisions of Article IX, paragraph 1 of the IOTC Agreement, the following:

1. To acknowledge and support the Biodegradable FAD (BIOFAD) project with the objective of reducing the impact and the amount of synthetic marine debris of the use of non-biodegradable FAD in the ecosystem as requested in Resolution 17/08 [superseded by Resolution 18/08]. The description of the project is contained in Annex 1.
2. BIOFADs used for the collection of scientific data on biodegradable FADs tested under the supervision of the BIOFAD Project Consortium and the Scientific Committee, and deployed by the Project Consortium, shall not be exempted from the application of FADs limit number established by Resolutions 17/01 [superseded by Resolution 18/01] and 17/08 [superseded by Resolution 18/08].
3. As part of the project referred to in paragraph 1, each BIOFAD deployed shall be marked in a clear manner by the Project Consortium to distinguish it from other FADs and to avoid that it becomes unreadable or disassociated with the BIOFAD Research project.
4. Vessels not participating in the Research Project fishing on FADs clearly identified as a BIOFAD shall specifically report to their national scientists the BIOFAD (and devices) status and activities on this BIOFAD (including catch data if applicable). Vessels not participating in the Research Project that encounter such FADS are encouraged to report to their national scientists the BIOFAD (and devices) status and activities on this BIOFAD.
5. The Project Consortium will make available to the IOTC Scientific Committee the results of the project at the latest two months in advance of its 2020 meeting. The Scientific Committee will analyse the outcomes of the project and provide scientific advice on possible additional FAD management options for consideration by the Commission in 2021.

ANNEX I

BIOFAD PROJECT INFORMATION AND GUIDELINES TO DEPLOY AND USE OF BIOFADS

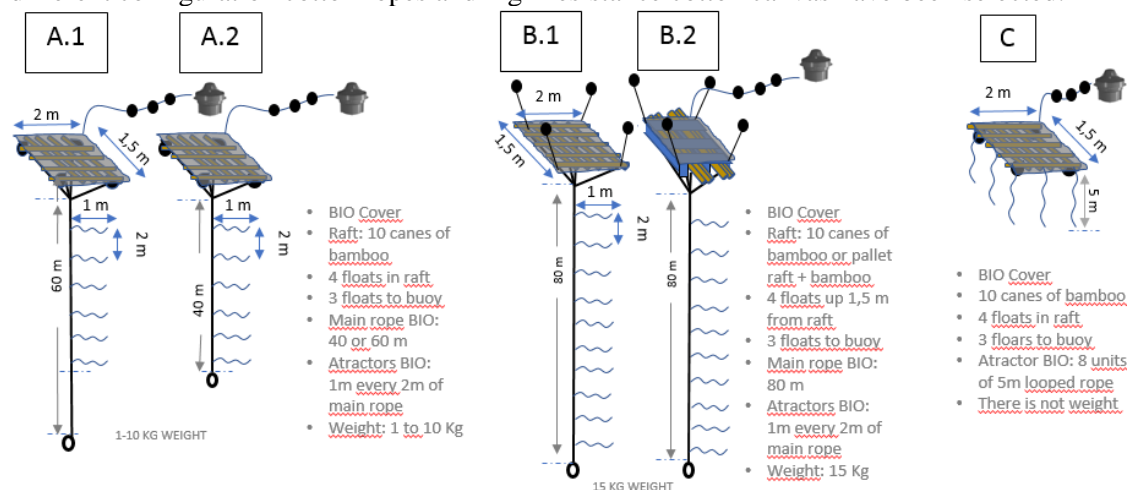
The consortium formed by AZTI, IRD and IEO aims through the project “Testing designs and identify options to mitigate impacts of drifting FADs on the Ecosystem” to address current impediments and to provide solutions that shall support the implementation of non-entangling and biodegradable FADs in the IOTC Convention Area. This project will have the collaboration of the EU, Seychelles and Mauritius purse seine fishery and the International Seafood Sustainability Foundation active. The purpose of this specific contract is to:

- i) to test the use of specific biodegradable materials and designs for the construction of drifting FADs in natural environmental conditions;
- ii) to identify options to mitigate drifting FADs impacts on the ecosystem, and
- iii) to assess the socio-economic viability of the use of BIO FADs (i.e. non-entangling and biodegradable) in the purse seine tropical tuna fishery.

The consortium will oversee both the construction of experimental BIOFADs and the monitoring of deployed BIOFADs, and their paired conventional non-entangling FADs (hereafter named CONFAD), at sea, as well as the data collection and reporting. Purse seine vessels participating in the BIOFAD project in the Indian Ocean will follow the summarized protocol regarding i) material and prototypes selection, ii) deployment strategy and identification of experimental FADs, and iii) data collection and reporting.

i) MATERIAL AND PROTOTYPES

Three are the prototypes selected for the BIOFAD project. These designs include all the details in terms of dimension and materials as guide for their construction by the tuna purse seine industry. These prototypes were designed in consensus and aim to cover the different drifting performance that fisherman currently seek with the conventional non-entangling FADs: superficial FADs (prototype C), semi-superficial FADs (prototypes A1 and A2), and deep FADs (B1 and B2). Synthetic material like plastic gallons, plastic bottles, fishing nets, synthetic canvas, and metallic frame used for the construction of the raft are all prohibited for the construction of BIOFAD. To replace these synthetic material different configuration cotton ropes and high-resistance cotton canvas have been selected.



Summary of the dimensions and materials of the prototypes selected for the BIOFAD project.

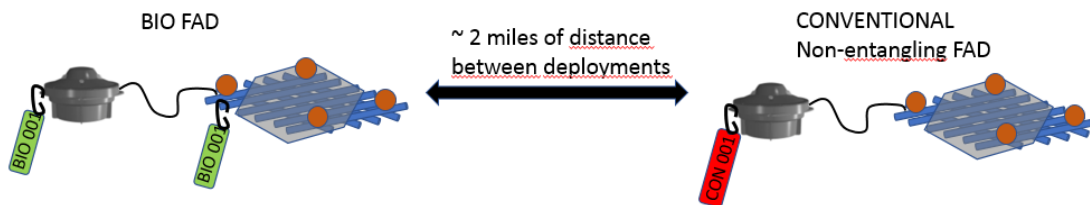
ii) DEPLOYMENT STRATEGY AND IDENTIFICATION

An effective FAD deployment strategy will be adopted considering the PS fleet FAD fishing strategy and its dynamics in the Indian Ocean. A total of 1000 BIOFADs (24 FADs per vessel) are planned to be deployed from April 2018 to April 2019, 2 BIOFADs per month and vessel (6 BIOFADs per vessel and quarter-season, preferably). Deployment effort will be shared among the 42 purse seiners from Mauritius, Seychelles and EU operating in the Indian Ocean. This will make it approximately 250 FADs being deployed each quarter.

To assess the efficiency of BIOFADs in terms of tuna and non-tuna species aggregation, structure durability and degradation rate, and FAD performance (e.g., drift), comparison between BIOFADs and currently using conventional non-entangling FADs (hereafter named CONFAD) will be conducted.

The following deployment procedure is defined:

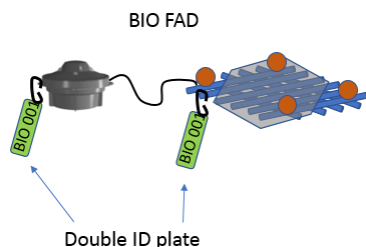
- Every BIOFAD deployment will be accompanied by a “pair” CONFAD deployment.
- The CONFAD construction will be of similar dimension of its pair BIOFAD but made by currently used synthetic material.
- The BIOFAD and its pair CONFAD will use same model/brand of echo-sounder buoy at first deployment.
- The distance between the deployment of BIOFAD and its pair CONFAD will be approximately 2 miles.



Drawing of the deployment strategy for the BIOFAD and its pair CONFAD.

BIOFAD and CONFAD identification procedure are described in the following points:

- All the BIOFADs and CONFADs will be identified in every moment by an identification number to ensure their traceability (e.g. from BIO-0001 to BIO-1000 and from CON-0001 to CON-0001).
- This ID number will always belong to the same BIOFAD or CONFAD through all its lifetime.
- All BIOFADs will be identified by two metallic plates showing the ID number. One of them will be attached to the raft and the other to the echo-sounder buoy associated with the BIOFAD.
- CONFADs as its pair BIOFADs will share same serial number (e.g. CON-0001 and BIO-0001).
- All CONFAD will be identified by a unique metallic plate showing the ID number and attached to the associated echo-sounder buoy.
- The metallic plate attached to the raft of the BIOFAD will never be removed from it. Only if the part of the structure where the plate is attached is replaced, the ID plate will be removed and attached again to the newly replaced part.
- It is very important that when a BIOFAD or CONFAD change hands (i.e. every time there is an echo-sounder buoy replacement), the ID number plate will be transferred from old buoy to newly associated buoy.



Drawing of the procedure to attach the BIOFAD ID number shown in the metallic plate to the raft and associated echo-sounder buoy.

iii) DATA COLLECTION AND REPORTING

The following fishing operations have been considered for the data collection procedure related to BIOFAD and CONFAD:

- In every new deployment of BIOFAD or CONFAD: type of prototype (e.g. A1), ID number of the metallic plate (e.g. BIO-0001), and associated echo-sounder buoy codification number will be collected.
- In every set, visit with buoy replacement, or retrieval of a BIOFAD or CONFAD: ID number of the metallic plate, codification number of the echo-sounder buoy, the prototype type, and FAD's component state control will be recorded. If there is buoy replacement codification number of new buoy and old buoy must be recorded.
- In every simple visit (no buoy replacement) to a BIOFAD or CONFAD: It will encourage to record above described information.

To provide information on BIOFAD components status control the following procedure is defined:

- Every time there is a set on BIOFAD or CONFAD, if possible, the experimental FAD will be lifted up for the assessment of the state control of FAD's components.
- Observers onboard and crew (Skipper/Captain) will be responsible to collect this information.
- All parts of the structure described in the table below will be checked. A scale from 1 to 4 will be applied to value the status of the FADs (1 = Very good, not damaged; 2 = Good, a bit damaged; 3 = Bad, quite damaged; 4 = Very bad, close to sinking). More detailed description of each of the values for each component is also provided.

APPENDIX N

RESOLUTION 18/09

ON A SCOPING STUDY OF SOCIO-ECONOMIC DATA AND INDICATORS OF IOTC FISHERIES

Keywords: Socio-Economics, scoping study.

The Indian Ocean Tuna Commission (IOTC),

CONSIDERING the objective of the Commission provided for in Article V to promote cooperation among its Members with a view to ensuring, through appropriate management, the conservation and optimum utilization of stocks covered by this Agreement and encouraging sustainable development of fisheries based on such stocks;

FURTHER CONSIDERING the responsibility of the Commission provided for in Article V(2)(d) to keep under review the economic and social aspects of the fisheries based on the stocks covered by the Agreement bearing in mind, in particular, the interest of developing coastal states;

FURTHER CONSIDERING the objective of the Commission to maintain stocks in perpetuity and with high probability, at levels not less than those capable of producing their maximum sustainable yield as qualified by relevant environmental and economic factors including the special requirements of developing States in the IOTC area of competence;

RECOGNISING the special requirements of the developing states, particularly Small Island Developing States in Article 24, of the Agreement for the Implementation of the Provisions of the United Nations Convention of the Law of the Sea of December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks (UNFSA);

RECALLING paragraph 75 of the 20th Session of the IOTC Scientific Committee report (IOTC-2017-SC20-R) that states:

“75. The SC AGREED that the development of the ecosystem report card is a first step in developing the approach. Initiating the process with the development and monitoring of simple indicators and then linking these to management objectives and actions is an iterative process where the data collection and research activities are based on higher level guidance from the Commission. The SC noted that the consideration of socioeconomic dimensions are specifically mentioned in the IOTC Agreement and so the scientific subsidiary bodies are therefore mandated to work on these issues as well.”

RECALLING Article IV, paragraph 2(d) of the IOTC Agreement which states:

“2. In order to achieve these objectives, the Commission shall have the following functions and responsibilities, in accordance with the principles expressed in the relevant provisions of the United Nations Convention on the Law of the Sea: (d) to keep under review the economic and social aspects of the fisheries based on the stocks covered by this Agreement bearing in mind, in particular, the interests of developing coastal state”

ADOPTS in accordance with paragraph 1 of Article IX of the IOTC Agreement, that:

1. The terms of reference for a scoping study of socio-economic aspects of IOTC fisheries, are those specified in Annex I.
2. Pursuant to Article XII.5 of the Agreement, the Commission shall review the results of the scoping study and determine if a permanent Working Party on the Socio-Economic Aspects of the Fisheries the IOTC Area of the Competence is needed, at its 23rd Session in 2019.
3. The IOTC Secretariat shall facilitate the process of recruitment of the consultant or consulting company for delivery of the scoping study as specified in Annex I. The Commission requested the Secretariat to seek sources of extra-budgetary funds to support the proposed work.
4. The CPCs shall cooperate with the consultant for the purpose of this study, using their best endeavors and in line with their respective national legislation.

ANNEX I**TERMS OF REFERENCE FOR A SCOPING STUDY ON THE SOCIO-ECONOMIC DATA AND INDICATORS OF IOTC FISHERIES****Objectives**

1. To describe the economic and social aspects of the fisheries, bearing in mind, in particular, the interests of developing coastal States, and identify the availability of data and socio-economic indicators that would describe the respective CPCs economic and social aspects of fisheries, including but not limited to: socio-economic contribution to the fisheries, economic dependence on fishery resources; income from exports; employment conditions and interactions between fleet segments; impact of fishery resource rents, including fisheries agreements with third parties to the local economies in terms of income, investments and jobs.
2. To evaluate and document what socio-economic data have been, and are currently collected by CPCs or other organisations that are in the public domain, on IOTC fisheries;
3. To evaluate and document what socio-economic data have been, and are currently collected by CPCs or other organisations but are not in the public domain on IOTC fisheries, where feasible under domestic law;
4. To evaluate if a) the data can be feasibly and uniformly collected, and b) would be adequate to calculate the indicators proposed. This should include, where feasible, a discussion on the data themselves, data quality, time periods and coverage rates;
5. To make recommendations on indicators taking into consideration the available data. To make recommendations on data requirements and harmonisation; and
6. To make recommendations on data management, reporting and associated costs to IOTC.
7. The consultant shall consider existing initiatives focusing on the socio-economic importance of fisheries, including, where applicable, the Overseas Fisheries Cooperation Foundation of Japan (OFCF) pilot project on socio-economic aspect of fisheries, to avoid any duplication

Outputs

8. A draft of the Consultant's report will be provided 120 days in advance of the 23rd Session of the IOTC (S23) in 2019.
9. The CPCs shall be tasked to review the report and provide feedback to the Consultant 60 days before the 23rd Session of the IOTC (S23), via the IOTC Secretariat.
10. The final Consultant's report shall be submitted to the IOTC Secretariat no later than 30 days prior to the commencement of the 23rd Session in 2019, in accordance with the IOTC Rules of Procedure (2014).

The final Consultant's report should be presented to the Commission for consideration at its meeting in 2019 and a presentation by the Consultant during the Session to answer any questions from CPCs.

PROPOSALS RELEVANT TO THE WPEB12 NOT ADOPTED BY THE 21ST SESSION OF THE COMMISSION

**APPENDIX O
ON THE CONSERVATION OF MOBULA AND MANTA RAYS CAUGHT IN ASSOCIATION
WITH FISHERIES IN THE IOTC AREA OF COMPETENCE**

IOTC–2018–S22–PropL
SUBMITTED BY: MALDIVES, SEYCHELLES, MOZAMBIQUE, AUSTRALIA and SOUTH AFRICA;
20 APRIL 2018

The Indian Ocean Tuna Commission (IOTC),

RECOGNISING Resolution 12/01 *On the implementation of the Precautionary Approach* calls on IOTC Contracting Parties and Cooperating Non-Contracting Parties to apply the precautionary approach when managing tuna and tuna-like species in accordance with Article V of the United Fish Stocks Agreement;

RECALLING IOTC Resolution 05/05 *concerning the conservation of sharks caught in association with fisheries managed by IOTC*;

CONSIDERING that the species of the family *Myliobatidae* which includes *Manta* and *Mobula* rays, are extremely vulnerable to overfishing as they take a long time to reach sexual maturity, have long gestation periods, and often give birth to only a few pups;

RECOGNISING the ecological and cultural significance of mobula and manta rays in the Indian Ocean;

CONCERNED about the possible impacts of purse seine fishing operations on the sustainability of mobula and manta rays, as well as other fishing activities, using driftnets and longlines in particular;

CONSIDERING that the United Nations Food and Agriculture Organization (FAO) International Plan of Action for Sharks calls on States to cooperate through regional fisheries management organizations to ensure the sustainability of shark and stocks;

CONCERNED by the lack of complete and accurate data reporting concerning fishing activities on non-targeted species;

RECOGNIZING the need to improve the collection of species-specific data on catch, catch rates, discards, and trade as a basis for improving the conservation and management of mobula and manta ray stocks;

NOTING that the IOTC Working Party on Ecosystems and Bycatch (WPEB) noted in paper IOTC-2016-WPEB12-29 that *Myliobatidae* species are caught in association with IOTC purse seine fisheries; that manta and mobula rays are now listed on the Convention on the International Trade in Endangered Species (CITES); and that material is also available on best practice guidelines for the safe handling and release of mobula and manta rays which are currently followed by 100% of the EU and Seychelles purse seine fleets.

FURTHER NOTING that the WPEB recognized that full stock assessments may not be possible because of data limitations and that it is essential that some stock assessment evaluation should be carried out;

ADOPTS, in accordance with the provisions of Article IX, paragraph 1 of the IOTC Agreement, the following:

1. Paragraph 2 – 4 of this measure shall apply to all fishing vessels flying the flag of a Contracting Party or Cooperating Non-Contracting Party (hereinafter referred to collectively as CPC) and on the IOTC record of fishing vessels or authorized to fish for tuna and tuna like species managed by the IOTC, except vessels that are less than 24 metres overall length that operate solely within the EEZ of the flag CPC that take *Manta* or *Mobula* rays exclusively for domestic consumption.
2. CPCs shall prohibit all vessels to which paragraphs 2 – 4 of this Resolution apply from intentionally setting any gear type known to catch Mantas or Mobula's (i.e. purse seine, gillnet), on a school of tuna associated with *Manta* or *Mobula* rays in the IOTC Area of Competence, if the animal is sighted prior to commencement of the set.

3. CPCs shall prohibit all vessels to which paragraphs 2 – 4 of this Resolution apply retaining onboard, transshipping, landing, storing, selling, or offering for sale any part or whole carcass of *Manta* and *Mobula* rays caught in the IOTC Area of Competence.
4. CPCs shall require all vessels to which paragraphs 2 – 4 of this Resolution apply to promptly release unharmed, to the extent practicable, *Manta* and *Mobula* rays as soon as they are seen in the net, on the hook, or on the deck, and do it in a manner that will result in the least possible harm to the individuals captured, following the guidance detailed in Annex 1 of this Resolution.
5. CPCs shall report the information and data collected on interactions (number of discards and releases) with *Manta* and *Mobula* Rays by vessels to which paragraph 2 – 4 of this Resolution apply, through logbooks, and through observer programs. The data shall be provided to the IOTC Secretariat by 30 June of the following year and according to the timelines specified in Resolution 15/02 (or any subsequent revision). In respect of vessels to which paragraphs 2 – 4 do not apply, CPCs are encouraged to provide this information and data to the IOTC Secretariat in the same time frame.
6. Scientific observers shall be allowed to collect biological samples of *Manta* and *Mobula* rays caught in the IOTC Area of Competence that are dead at haulback, provided that the samples are a part of a research project approved by the IOTC Scientific Committee (SC). In order to obtain the approval, a detailed document outlining the purpose of the work, number of samples intended to be collected and the spatio-temporal distribution of the sampling effort must be included in the proposal. Annual progress of the work and a final report on completion shall be presented to the SC.

ANNEX 1**Live release guidance**

1. Prohibit the gaffing of rays.
2. Prohibit the lifting of rays by the gill slits or spiracles.
3. Prohibit the punching of holes through the bodies of rays (e.g. to pass a cable through for lifting the ray).
4. Rays too large to be lifted safely by hand should be, to the extent possible, brailed out of the net using best available method such as those recommended in document WCPFC-SC8-2012/EB-IP-12 (*Poison et al, 2012. Good practices to reduce the mortality of sharks and rays caught incidentally by the tropical tuna purse seiners*).
5. Large rays that cannot be released safely before being landed on deck, should be returned to the water as soon as possible, preferably utilizing a ramp from the deck connecting to an opening on the side of the boat, or if no such ramp is available, lowered with a sling or net.