

# A Compendium of Conservation and Management Measures to address the impacts of species bycatch in tuna RFMOs



**HUMANE SOCIETY  
INTERNATIONAL**



**TRAFFIC**  
the wildlife trade monitoring network



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## **A Compendium of Conservation and Management Measures to address the impacts of species bycatch in tuna RFMOs**

### **COVERING STATEMENT**

The following statement is made on behalf of the following environmental NGOs:

- Humane Society International (HSI)
- WWF
- Sea Turtle Conservancy
- TRAFFIC

#### **Background**

Each of the abovementioned environmental NGOs has been endeavouring to assist national and international fisheries managers for many decades to address the impacts of fisheries on bycatch species under the mandate of the tuna RFMOs.

In June 2010, the Kobe II Bycatch workshop was held in Brisbane, Australia. Each of the groups noted above attended this workshop and contributed to the process through the submission of views papers in advance of the workshop, as well as coordinated interventions during the workshop. We note that the workshop produced a number of outcomes:

- it highlighted the similarities in bycatch issues across the tuna RFMOs for each of the five taxonomic groups identified (sharks, seabirds, turtles, juvenile tuna and marine mammals), the need for urgent action and the fact that there was sufficient information available to dictate the need for, and to underpin, immediate management action;
- the Keynote Address by Dr Pamela Mace emphasized that the tuna RFMOs cannot afford to wait any longer to take action across the five taxonomic groups;
- it failed to identify best practice bycatch management techniques but did recommend a set of principles for developing best practice bycatch avoidance and mitigation measures; and
- most significantly in our view, it recommended the formation of a Joint Tuna RFMO Technical Working Group on Bycatch.

#### **Rationale**

We believe that the Technical Working Group provides a unique opportunity to bring together experts in order to share the latest available information and develop coherent, consistent and comprehensive measures to minimise and mitigate the impacts of tuna fisheries on bycatch species. We note, with concern, however, that there is no formal agreement the tuna RFMOs will endorse and support the Technical Working Group's establishment and operation and no proposed time frame for its establishment or completion of its work. As a result, and being

keen to maintain the momentum on this initiative, the environmental NGOs agreed to develop a Compendium best practice of Conservation and Management Measures (CMMs) for the bycatch species taxonomic groups. Development of the CMMs has been lead by HSI and WWF with input from the Sea Turtle Conservancy and TRAFFIC as well as a number of other environmental NGOs.

The Compendium is not intended to pre-empt the work of the Technical Working Group. Rather, it is intended to provide our assessment of the best practice measures for data collection, risk assessment and management of the four bycatch species taxonomic groups for consideration by the Technical Working Group. Each of the CMMs presented explicitly acknowledges the potential role of the Working Group.

However, in light of the uncertainties surrounding the operation of the Technical Working Group, we believe that individual tuna RFMOs must take responsibility for species bycatch and act immediately. This Compendium provides tuna RFMOs with advice on the best practice, precautionary measures that should be implemented on an interim basis pending the advice of the Technical Working Group. These actions can be reviewed and revised to reflect that advice if and when it becomes available.

It is intended that the development of this compendium will promote the development of a common approach and adoption of best practice conservation and management measures across the tuna RFMOs.

### **Conservation and Management Measures (CMMs)**

Four CMMs have been prepared, on the basis of the best available scientific advice and taking into account current practice within tuna RFMOs. The CMMs cover the following four taxonomic groups:

- Seabirds
- Sharks
- Sea turtles
- Marine mammals

We have not included bycatch of juvenile tunas in the Compendium since we consider that this issue is most properly dealt with through development of appropriate management arrangements for the two main target species involved, bigeye and yellowfin tuna. NGOs will continue to press for stronger management measures for these species.

The Compendium is principle-based. It does not attempt to provide all the detailed provisions of the proposed measures. For example, while it might specify a particular hook type, it does not specify a particular hook size. We recognise that there is not a 'one size fits all' solution to some issues and the detail is best left to the RFMO taking into account the operational characteristics of its fleet and the nature and extent of interactions with particular taxonomic

groups. We would, however, be happy to provide further information and advice on specifics of our proposals as appropriate.

In many cases bycatch measures are likely to be relevant to more than one taxonomic group. The Compendium seeks to ensure that all measures suggested can provide positive benefits for all species impacted by bycatch in tuna RFMOs, and that suggested measures for one taxonomic group do not impact adversely on another.

### **Recognising differences across the tuna RFMOs**

For the purposes of the Compendium, it has been necessary to make a number of generalities regarding the structure, operation and particular characteristics of the tuna RFMOs.

1. Each of the RFMOs has a different mandate and provides different roles and responsibility to its Secretariat and subsidiary bodies. However, for the purposes of the CMMs, we have used generic language when referring to operational aspects. For example, the term 'Conservation and Management Measure' is used as a generic description of management measures, resolutions etc used by the various RFMOs, and 'Scientific Committee' is used as a generic description of the structure that provides scientific advice to the RFMO.
2. The tuna RFMOs' understanding of the nature and extent of the bycatch problem for each taxonomic group, and the degree to which they manage aspects of those bycatch problems varies. However, for the purposes of the Compendium we have assumed that no conservation and management measures are in place, although we have drawn on existing measures in developing the Compendium. Where an RFMO has an existing CMM for bycatch of a taxonomic group, the Compendium provides a basis for comparison with current, best practice approaches and improvement as necessary.
3. Issues of data confidentiality will vary across tuna RFMOs and across their members and these issues will need to be addressed in the specific context of each RFMO.
4. The composition of fishing fleets and the particular characteristics of members also varies across RFMOs. For example, it may not be appropriate or practical to apply all measures to small scale artisanal fleets. We have made no attempt to provide for such exceptions in the CMMs since those decisions will be RFMO-specific. It is appropriate that each tuna RFMO determines the relevant exceptions for certain clauses within the CMMs in light of such issues. However, we believe such exceptions should be minimised, so as to ensure that the measures are applied as comprehensively as possible to bycatch species.

We do not believe these differences significantly compromise the development of common, principle-based, best practice conservation and management measures for each of the four taxonomic groups.

**RFMO management**

There are a number of underlying issues that RFMOs need to address in order to strengthen the platform for effective management of both bycatch and target species. These include:

- mandating the submission of bycatch data by members and co-operating non-members:
  - underpinning this should be a recognition that in the absence of reliable data, and hence in an environment of uncertainty about the nature and extent of the bycatch problem, a more precautionary approach to management is required.
- the development of science-based observer programmes with clearly specified objectives that:
  - validate data submitted by members and cooperating non-members;
  - are designed to provide statistically robust estimates of the extent of bycatch by species across the temporal and spatial distribution of the fleet; and
  - allow for observers to play a role in monitoring implementation of bycatch mitigation measures.
- the adoption of ecological risk assessments as a means of ensuring that available scientific and management resources are targeted to the most vulnerable species;
- the implementation of effective means of monitoring compliance with all aspects of CMMs by individual members; and
- the introduction of a system of stringent penalties for failure to comply with those CMMs, in particular, failure to comply with data submission (bycatch and target species) requirements.

**Implementation of the CMMs**

We believe that tuna RFMOs must:

- take immediate management action to avoid bycatch interactions and to mitigate the impact of those interactions;
- task the relevant scientific/ecosystem body to better inform the long-term management;
- review and revise the management action as more information comes to hand; and
- take action to strengthen their capacity to manage and monitor compliance with conservation and management measures.

In light of the recognised need for urgent action on species bycatch, reiterated at the Kobe II Bycatch workshop, we are calling for these CMMs to enter into force by 1<sup>st</sup> January in the year following adoption of measure. We note that each Convention has its own procedures, and in acknowledgement of these call for the urgent adoption of the proposed CMMs as appropriate to each Convention. Further, we call for the endorsement, and urgent establishment, of the Joint Tuna RFMO Technical Working Group on Bycatch by the tuna RFMOs.

These actions are required in order to confirm that the tuna RFMOs are committed to addressing bycatch impacts associated with their fisheries.

**DRAFT BINDING CONSERVATION AND MANAGEMENT MEASURE FOR SEABIRDS**

The Commission

*Recalling* the objectives of the Convention

*Acknowledging* that pelagic longlining, particularly in higher latitudes, represents the largest threat to most albatrosses and petrel species

*Acknowledging* that some species of seabirds, notably albatrosses and petrels, are threatened with extinction and that this dictates that bycatch mortality of seabirds in tuna fishing operations should be as close to zero as possible

*Noting* that there is an increasing body of research that indicates that a combination of mitigation measures and/or fishing practices is necessary to reduce seabird bycatch effectively

*Recognizing* that Article 61 of the United Nations Convention on the Law of the Sea of 10 December 1982 (UNCLOS) requires coastal States and States fishing on the high seas to consider the effects of fishing on “species associated with or dependent upon harvested species with a view to maintaining or restoring populations of such associated or dependent species above levels at which their reproduction may become seriously threatened”

*Recalling* that the United Nations Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks (the Fish Stocks Agreement), requires the application of the precautionary approach to management of straddling fish stocks and highly migratory fish stocks in relation to the impact of fishing activities on non-target and associated or dependent species and that coastal States and States fishing on the high seas “minimize pollution, waste, discards, catch by lost or abandoned gear, catch of non-target species, both fish and non-fish species.... and impact on associated and dependent species, in particular endangered species, through measures including, to the extent practicable, the development and use of selective, environmentally safe and cost effective fishing gear and techniques”

*Recalling* that the Food and Agriculture Organization of the United Nations (FAO) *Code of Conduct for Responsible Fisheries* specifies the application of the precautionary approach to conservation and management and exploitation of living aquatic resources in order to protect them and preserve the aquatic environment, and the use of selective and environmentally safe fishing gear and practices in order to maintain biodiversity and conserve the population structure and aquatic ecosystems

*Recognising* that the FAO *International Plan of Action for Reducing Incidental Catch of Seabirds in Longline Fisheries* (IPOA-Seabirds) encourages States to develop National Plans of Action and to strive to cooperate through regional fisheries management organizations (RFMOs) to reduce the incidental catch of seabirds in longline fisheries

*Recalling* that the United Nations General Assembly (UNGA) has requested States and RFMOs to urgently implement the IPOA-Seabirds in order to prevent the decline of seabird populations by minimizing bycatch and increasing post-release survival in their fisheries, including through research and development of gear and bait alternatives, promoting the use of available by-catch mitigation technology, and establishing and strengthening data-collection programmes to obtain standardized information to develop reliable estimates of by-catch (UNGA A/RES/64/72)

*Noting* the best practice advice available in the FAO's guidelines for *Best practices to reduce incidental catch of seabirds in capture fisheries* and in the Agreement for the Conservation of Albatrosses and Petrels' (ACAP) *Best Practice Technical Guidelines - Summary Advice Statement for reducing impact of pelagic longline gear on seabirds*

**Resolves** as follows:

***Objectives***

1. To reduce the mortality of seabirds in tuna fishing operations in the Convention Area to as close to zero as possible.
2. To define the nature of the seabird bycatch problem in fishing operations in the Convention Area including confirmation of:
  - a. the number and rate of seabird bycatch by gear type;

- b. the species taken and their conservation status; and
- c. the spatial and temporal overlap of fishing effort with seabirds.

***Application***

3. Unless otherwise stated, this measure shall apply to all vessels authorized to fish in the Convention Area that are operating in [waters to be determined by each RFMO based on the overlap of the range of seabirds with the Convention Area] and will commence on 1 January in the year immediately following the adoption of this measure.

***Data Collection and Reporting***

4. Before the next Commission meeting Parties and non-Contracting Cooperating Parties (CPCs) shall provide to the Commission any data previously collected on seabird bycatch by all gear types, including the rate and number of seabird interactions, the spatial and temporal characteristics of seabird bycatch, the number and species of seabirds taken, the life status and fate of the seabirds and the mitigation measures in use and how they were deployed at the time of the bycatch incident.
5. CPCs shall provide annual reports to the Commission on all available information (including the information identified in paragraph 4 (ensuring that catch data are linked to the type of mitigation measure/s in use at the time of the interaction) on interactions with seabirds by fishing vessels carrying their flag or authorized to fish by them in order to enable the Scientific Committee to make an annual estimation of seabird mortality in all fisheries within the Convention Area.
6. CPCs shall provide to the Commission annual reports on their implementation of this measure, including a description of the measures in Table 1 they have required their vessels to use and the technical specification of those measures.

***Scientific Advice***

7. Within 2 years of the adoption of this measure, and with the cooperation of ACAP, the Scientific Committee will:

- a. conduct an ecological risk assessment of seabirds that interact with fisheries managed by the Commission including
    - i. identification of important foraging areas for seabirds within the Convention Area,
    - ii. identification of 'hot spots' of seabird interactions to inform the development of time/area closures, and
    - iii. a review of the risk posed to seabirds by all gear types including purse seine fisheries;
  - b. on the basis of the above analysis, advise the Commission of the need for and specification of area and seasonal closures to fishing in order to reduce seabird bycatch;
  - c. review the data available to determine whether the mitigation measures/practices in Table 1 should be refined to reflect different operational and species composition interactions across the longline fleet;
  - d. advise the Commission on levels of seabird bycatch by gear type that would be consistent with the goal of reducing seabird bycatch to as close to zero as possible;
  - e. review the specified line weighting regime in Annex 1 to reflect the optimal configuration consistent with a prescribed baited hook sink rate, taking into account the latest research results available; and
  - f. advise the Commission on the appropriate scientific design of an observer program to allow estimation of seabird mortality associated with fishing activities in the Convention Area, including, as necessary, differential levels of coverage to reflect 'hot spots' of seabird interactions.
8. The Scientific Committee, using the information reported under Paragraph 5 and including observer data, will provide the Commission with an annual estimation of seabird mortality in fisheries in the Convention Area.

**Interim Management Measures**

9. CPCs shall ensure that all longline vessels operating in the area specified in Paragraph 3 use at least three of the mitigation measures/practices in Table 1 including at least two from Column A and one different measure from Column B. The technical specifications for these measures are provided in Annexes 1 and 2.
10. In addition, where a higher risk of seabird bycatch has been identified, CPCs shall require the use of night setting and weighted branch lines and tori lines.

**Table 1: Mitigation measures/practices**

Column A	Column B
Side setting with a bird curtain and weighted branchlines	Tori line
Night setting with minimum deck lighting	Weighted branch lines
Weighted branch lines	Whole fish bait <sup>1</sup>
	Underwater setting device

11. CPCs shall encourage their longline vessels to use offal discharge management, as described in Annex 1.
12. CPCs shall require their fishers to adopt measures to ensure that seabirds captured alive are released alive and in as good condition as possible and that, wherever possible, hooks are removed without jeopardizing the life of the seabird.
13. Consistent with the IPOA-Seabirds, CPCs with longline fisheries should assess the interactions of their fisheries with seabirds and if a problem exists develop national plans of action for the reduction of incidental mortality of seabirds and shall report to the Commission on their implementation of the IPOA-Seabirds.

<sup>1</sup> Blue dyed squid has been shown to be effective for mitigating seabird bycatch. However, whole fish, rather than squid, has been shown to be an effective mitigation measure for turtle bycatch and blue dyed squid has been shown to have little impact on turtle bycatch rates. In the interests of consistency between proposed longline mitigation measures for both seabirds and turtles, whole fish has, on balance, been proposed as the recommended bait type in each case.

14. CPCs are encouraged to undertake research to further develop and refine measures to mitigate seabird bycatch and, in particular, to define the most effective configuration of line weighting. 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.

***Review***

15. Upon receipt of the advice from the Scientific Committee as outlined in Paragraph 7, and taking into account any advice received from the Joint Tuna RFMO Technical Working Group on Bycatch, this conservation and management measure will be reviewed and refined by the Commission as necessary.
16. The Scientific Committee, in conjunction with the relevant bycatch/ecosystem body, shall review the impact of this measure on levels of seabird bycatch annually and advise the Commission on any modifications, based on data, experience or research, that are necessary to improve the effectiveness of this measure in achieving the goal of negligible seabird bycatch.

***Assistance to Developing States***

17. The Commission shall consider appropriate assistance to developing CPCs for the purposes of implementing the provisions of this measure.

## Annex 1

Mitigation Measure	Description	Specification
Side setting with a bird curtain and weighted branchlines	Combination of side setting together with weighted branch lines (see below for specifications of weighted branch lines)	<p>Mainline deployed from port or starboard side as far from stern as practicable (at least 1m), and if mainline shooter is used, must be mounted at least 1m forward of the stern.</p> <p>When seabirds are present the gear must ensure mainline is deployed slack so that baited hooks remain submerged. Bird curtain must be employed:</p> <ul style="list-style-type: none"> <li>• Pole aft of line shooter at least 3m long</li> <li>• Minimum of 3 main streamers attached to upper 2m of pole</li> <li>• Main streamer diameter minimum 20mm</li> <li>• Branch streamers attached to end of each main streamer long enough to drag on water (no wind) – minimum diameter 10mm.</li> </ul>
Night setting with minimum deck lighting	No setting between nautical dawn and before nautical dusk. Deck lighting to be kept to a minimum	<p>Nautical dusk and nautical dawn are defined as set out in the Nautical Almanac tables for relevant latitude, local time and date.</p> <p>Minimum deck lighting should not breach minimum standards for safety and navigation.</p>

<b>Mitigation Measure</b>	<b>Description</b>	<b>Specification</b>
Weighted branch lines	Weights must be attached to all branch lines in accordance with specifications provided. The attached weight must be an integral part of the branchline construction.	20g at the hook 40g at 0.9m from the hook 60g at 1.8m from the hook 80g at 3.5m from the hook' 120g at 5.2m from the hook 160g at 6.9m from the hook <sup>2</sup>
Bird-scaring line (tori line)	A bird-scaring line shall be deployed during longline setting to deter birds from approaching the branch line.	Design and deployment for bird-scaring lines are provided in Annex 2
Underwater setting device	Trials of various underwater setting devices are underway. There are currently no best practice specifications available	
Whole fish bait	Whole fish not pieces	
<b>Supplementary Mitigation Measure</b>		
Management of offal discharge	No offal discharge during setting or hauling, or if discharged during hauling, released on the opposite side of the vessel to the hauling bay.	No offal discharge during setting. Offal discharge during hauling should be avoided if possible. If offal discharge is essential during hauling, it must be from the opposite side of the boat to hauling activity.

<sup>2</sup> This regime assumes that the least amount of weight at the greatest distance possible to achieve a mean sink rate of around 2 seconds/m<sup>-1</sup> is the most preferred line weighting option. Research into an optimal line weighting regime for seabirds is ongoing and further results are expected by 2011.

**Annex 2****Specification of Bird Scaring Lines****Design**

1. The bird scaring line shall be a minimum of 150 m in length
2. The above water section of the line shall 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. Streamers shall be made of material that is conspicuous and produces an unpredictable lively action (e.g. strong fine line sheathed in red polyurethane tubing) and shall be suspended in pairs from a robust three-way swivel attached to the bird scaring line and shall reach the sea-surface in calm conditions. Streamers must be less than 5m apart.
4. The number of streamers shall be adjusted for the setting speed of the vessel, with more streamers necessary at slower setting speeds.

**Deployment**

1. The bird scaring line must be deployed before longlines enter the water.
2. The line shall have an aerial coverage of at least 150m. To achieve this coverage the line shall be suspended from a point a not less than 7m above the water at the stern point.
3. The bird line shall be set so that the streamers pass over baited hooks in the water.
4. Because there is potential for line breakage and tangling spare bird scaring lines shall be carried onboard to replace damaged lines and to ensure fishing operations can continue uninterrupted.

**DRAFT BINDING CONSERVATION AND MANAGEMENT MEASURE FOR SHARKS**

The Commission

*Recalling* the objectives of the Convention

*Acknowledging* the ecological significance of sharks in pelagic ecosystems, the economic benefits from eco-tourism for coastal and island nations and the cultural significance of sharks in some regions

*Acknowledging* that many shark species are caught as bycatch (retained or discarded non-target catch) in target tuna and billfish fishing operations, that there is a financial incentive to retain some of these species and that unmanaged, targeted shark fishing operations are occurring within the Convention Area

*Acknowledging* that the close stock-recruitment relationship, long recovery times in response to overfishing and complex spatial structures of shark populations make them significantly more vulnerable to overfishing than the tuna, tuna-like and billfish species targeted in the Convention Area

*Acknowledging* that the mortality of shark species incurred through bycatch and target fishing operations may be unsustainable and the data available on catch, effort, discards and trade as well as information on the biological parameters of many shark species and their stock status is inadequate

*Recognizing* that many of the shark species taken in these fishing operations are identified as highly migratory species under Annex 1 of the 1982 United Nations Convention on the Law of the Sea and that, as a result, the provisions of the United Nations Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks (the Fish Stocks Agreement) apply directly to these species

*Recognizing* further that the Fish Stocks Agreement requires the application of the precautionary approach to management of straddling fish stocks and highly migratory fish stocks and requires coastal States and States fishing on the high seas to minimize the effects of

fishing on non-target and associated and dependent species and through measures including, to the extent practicable, the development and use of selective, environmentally safe and cost effective fishing gear and techniques

*Recalling* that the Food and Agriculture Organization of the United Nations (FAO) *Code of Conduct for Responsible Fisheries* specifies the application of the precautionary approach to conservation and management and exploitation of living aquatic resources in order to protect them and preserve the aquatic environment, and the use of selective and environmentally safe fishing gear and practices in order to maintain biodiversity and conserve population structure and aquatic ecosystems

*Recognizing* that the FAO's *Responsible Fish Trade* guidelines specify that international trade in fish and fishery products should not compromise the sustainable development of fisheries and responsible utilization of living aquatic resources and that States should cooperate in developing and implementing catch documentation schemes

*Recognising* that the FAO's International Plan of Action for the Conservation and Management of Sharks (IPOA-Sharks)<sup>3</sup>, encourages States to develop National Plans of Action and to strive to cooperate through regional fisheries management organizations (RFMOs) to ensure the sustainability of shark stocks

*Recalling* that the United Nations General Assembly (UNGA) has repeatedly called upon States working through RFMOs to implement the IPOA-Sharks for directed and non-directed shark fisheries urgently, and for immediate and concerted action to improve the implementation of, and compliance with, existing RFMO and national measures that regulate shark fisheries, 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 each fin naturally attached (UNGA A/RES/61/105; 62/177 and 64/72)

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<sup>3</sup> For the purposes of the IPOA, and for this CMM, the term 'sharks' refers to all species of shark, skates, rays and chimaeras (Class *Chondrichthyes*)

*Noting* that the Second Joint Tuna RFMO meeting agreed that each RFMO should take immediate action to establish precautionary, science-based conservation and management measures for sharks taken in fisheries within its Convention Area and that this agreement was endorsed by the UNGA in 2009 (UNGA A/RES/64/72)

*Recognizing* that the 2010 Review Conference of the Fish Stocks Agreement agreed that the conservation and management of sharks should be strengthened by: establishing and implementing species-specific data collection requirements for shark species caught in directed shark fisheries or as bycatch in other fisheries; conducting biological assessments and developing associated conservation and management measures for such sharks; and strengthening, on the basis of the best scientific information available, enforcement of existing prohibitions on shark finning, including through, inter alia, requiring that sharks be landed with their fins naturally attached or through different means that are equally effective and enforceable

*Recognizing* that certain species of sharks encountered in tuna fishing operations in the Convention Area have been listed on Appendix II of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) and that the Parties to CITES have made recommendations for action by RFMOs in relation to management of shark catches (Res. Conf. 12.6)

*Recognizing* that certain species of sharks encountered in tuna fishing operations in the Convention Area have been listed on Appendix I and/or II of the Convention on Migratory Species (CMS) and that many shark species are listed as critically endangered, endangered or vulnerable by the International Union for the Conservation of Nature (IUCN)

**Resolves** as follows:

***Objectives***

1. To prohibit targeting of shark species in the Convention Area until such time as the Commission has implemented precautionary management measures for these species on the basis of the best available scientific advice.

2. To reduce, to the greatest extent possible, the mortality and discards of sharks taken as bycatch in the Convention Area.
3. To ensure the Commission implements precautionary management measures for sharks reflecting the best available scientific advice and the application of precautionary target and limit reference points.

***Application***

4. This measure shall apply to all fishing vessels authorized by Parties and Cooperating non-contracting Parties (CPCs) to fish in the Convention Area and will commence on 1 January in the year immediately following the adoption of this measure.

***Reporting***

5. Prior to the next Commission meeting, CPCs shall provide to the Commission all available historical shark data on:
  - a. catch, including discards and landings, and effort (from commercial logsheets, research cruise records, observer records, recreational catch records, landing and market data, port sampling programs, etc);
  - b. fishery-specific biological data (including length, weight and sex data, condition and fate records); and
  - c. if no such data are available, CPCs will advise the Commission of this.
6. CPCs shall report annually to the Commission on catches, discards (and life status) and landings of sharks to species level.
7. CPCs shall advise the Commission of the shark trade codes they have in place and provide available trade data on sharks to the Commission annually, including by source of imports and destination of exports.
8. CPCs shall report annually to the Commission on their implementation of this measure.

**Scientific Advice**

9. Within two years of the adoption of this measure, the Scientific Committee, in conjunction with any relevant bycatch/ecosystem bodies of the RFMO, will conduct an assessment of the fisheries in which sharks are targeted and/or taken as bycatch. The assessment will include:
- a. estimation of mortality by gear type and, to the extent that the available data allows, by species;
  - b. identification of shark species that are considered to be targeted, or likely to be targeted, and provision of precautionary management advice on these species including as appropriate catch limits, move-on provisions<sup>4</sup> (triggered by specific catch rates), time/area closures, minimum/maximum size limits etc;
  - c. identification of 'hot spots' of shark interactions to inform the development and implementation of time/area closures;
  - d. preliminary advice on the status of the species taken, taking into account their conservation status on the IUCN Red List of Threatened Species and shark species listed on CITES and CMS;
  - e. identification of those species for which stock assessments can be undertaken and development of a timely program of research and data synthesis for undertaking those assessments;
  - f. for those shark species for which stock assessments are not available, conduct ecological risk assessments (ERAs) and provide precautionary management recommendations for the most vulnerable species;
  - g. advice on best practice bycatch mitigation measures for shark species taken as bycatch, focused if possible and appropriate, on the most vulnerable species including species listed on CITES and CMS, and taking into account characteristics

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<sup>4</sup> Move-on provisions require that vessels are required to move away from certain areas should a defined level of bycatch be taken in one fishing shot.

such as the likelihood of post release survival and catch rates of sharks associated with different fishing practices

- i. noting that development of best practice mitigation measures should include consideration of the effectiveness, individually and in combination, of measures including, but not restricted to, hook type, bait type, leader material, set times and depth of set and should include assessment of impacts on both capture mortality and post-release mortality;
  - h. advice on the data collection needs of shark species including the range of data that should be collected, the level of data collection and the nature of data collection and validation programs (including logbooks, scientific design of an observer program, port sampling, catch documentation schemes, product tagging); and
  - i. advice on a comprehensive program of additional research to better inform management of sharks and to provide definitive advice on the effectiveness of potential mitigation measures noting that:
    - i. the need for research into bycatch mitigation measures to be undertaken collaboratively with industry and stakeholders and to include an assessment of the practical feasibility, safety and economic implications of the measures as well as their effectiveness on reducing bycatch mortality; and
    - ii. 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.
10. As information becomes available for shark species from the ERA and stock assessments, develop limit and target reference points.

***Interim Management Measures***

11. Until such time as the information in Paragraphs 9 and 10 is available for consideration by the Commission or the Commission has agreed otherwise, the following measures shall apply:

- a. targeted fishing of shark species in the Convention Area for purposes other than scientific research conducted as part of a program of research approved by the Scientific Committee is prohibited;
- b. in order to prevent the targeting of sharks by longline vessels, the use of wire traces/leaders shall be prohibited and longline vessels will be required to use monofilament traces/leaders;
- c. any bycatch of shark shall be dehooked and released immediately to enhance post-release survival;
- d. in order to minimize bycatch and to maximize survival of released sharks the following mitigation measures will apply:
  - i. purse seine sets on whale sharks shall be prohibited;
  - ii. pelagic longlines must be weighted to achieve a minimum baited hook sink rate in accordance with the following<sup>5</sup>
    - 20g at the hook
    - 40g at 0.9m from the hook
    - 60g at 1.8m from the hook
    - 80g at 3.5m from the hook
    - 120g at 5.2m from the hook
    - 160g at 6.9m from the hook;
  - iii. the use of J hooks shall be prohibited and longline vessels will be required to use large circle hooks; and

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<sup>5</sup> This regime assumes that the least amount of weight at the greatest distance possible to achieve a mean sink rate of around 2 seconds/m<sup>-1</sup> is the most preferred line weighting option. This regime is based on research for seabird bycatch mitigation and is proposed here for consistency across fishing operations. Research into an optimal line weighting regime for seabirds is ongoing and further results are expected by 2011.

- iv. the use of squid bait shall be prohibited and longline vessels will be required to use fish bait.
  - e. Any retained sharks must be stored on board, transshipped and landed with the fins naturally attached to the shark. Naturally attached refers to shark fins that remain attached to the shark carcass by at least some portion of uncut skin.
12. The Commission will develop and implement a catch documentation scheme for all shark products.
13. Consistent with the IPOA-Sharks, States whose vessels routinely catch sharks in directed or non-directed fisheries should conduct an assessment of their shark fisheries, develop national plans of action for the conservation and management of sharks and report annually to the Commission on their implementation of the IPOA-Sharks. States whose vessels do not routinely catch sharks in directed or non-directed fisheries should submit a statement of this to the Commission on an annual basis.

***Review***

14. Upon receipt of the advice from the Scientific Committee as outlined in Paragraphs 9 and 10, and taking into account any advice received from the Joint Tuna RFMO Technical Working Group on Bycatch and any subsequent advice from the Scientific Committee on shark management, this conservation and management measure will be reviewed and refined by the Commission as necessary.
15. The Scientific Committee will report to the Commission annually on the extent to which the objectives of this measure have been achieved and recommend amendments to improve the effectiveness of the measure as necessary.

***Assistance to Developing States***

16. The Commission shall consider appropriate assistance to developing CPCs for the purposes of implementing the provisions of this measure.

**DRAFT BINDING CONSERVATION AND MANAGEMENT MEASURE FOR SEA TURTLES**

The Commission

*Recalling* the objectives of the Convention

*Acknowledging* that incidental catch of sea turtles in fisheries managed by tuna regional fisheries management organizations (RFMOs) is a critical source of mortality for many species of sea turtles

*Valuing* the ecological and cultural significance of sea turtles

*Recognizing* that many sea turtle populations have declined dramatically in recent decades and that the International Union for the Conservation of Nature (IUCN) includes six of the world's seven species of sea turtles as Vulnerable, Endangered or Critically Endangered on its Red List of Threatened Species

*Noting* that all species of sea turtles are listed on Appendix I of the Convention on International Trade in Endangered Species of Wild Fauna and Flora, six species are listed on both Appendices I and II of the Convention on Migratory Species (CMS) and the seventh species is listed on Appendix II of the CMS

*Acknowledging* that globally recognized levels of endangerment dictate reducing bycatch mortality of sea turtles in tuna fishing operations to as close to zero as possible

*Recognizing* that Article 61 of the United Nations Convention on the Law of the Sea of 10 December 1982 requires coastal States and States fishing on the high seas to consider the effects of fishing on "species associated with or dependent upon harvested species with a view to maintaining or restoring populations of such associated or dependent species above levels at which their reproduction may become seriously threatened"

*Recalling* that the United Nations Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks, requires the application of the precautionary approach to management of the impact of fishing activities on non-target and associated or dependent species and that coastal States and States

fishing on the high seas to “minimize pollution, waste, discards, catch by lost or abandoned gear, catch of non-target species, both fish and non-fish species.... and impact on associated and dependent species, in particular endangered species, through measures including, to the extent practicable, the development and use of selective, environmentally safe and cost effective fishing gear and techniques”

*Recalling* that the *FAO Code of Conduct for Responsible Fisheries* specifies the application of the precautionary approach to conservation and management and exploitation of living aquatic resources in order to protect them and preserve the aquatic environment and the use of selective and environmentally safe fishing gear and practices to maintain biodiversity and conserve population structure and aquatic ecosystems

*Noting* the advice contained in the *FAO’s Guidelines to Reduce Sea Turtle Mortality in Fishing Operations* and research in relation to effective turtle bycatch reduction and mitigation measures and, in particular, the *Guidelines’* acknowledgement of the effectiveness of replacement of J hooks with wider circle hooks and the adoption of prescribed handling and release practices as measures to reduce sea turtle interactions and increase survival rates of captured sea turtles

*Recalling* that the United Nations General Assembly (UNGA) has requested States and regional fisheries management organizations to urgently implement the measures recommended in the *FAO’s Guidelines to Reduce Sea Turtle Mortality in Fishing Operations* to prevent the decline of sea turtle populations by minimizing by-catch and increasing post-release survival in their fisheries, including through research and development of gear and bait alternatives, promoting the use of available bycatch mitigation technology, and establishing and strengthening data-collection programmes to obtain standardized information to develop reliable estimates of the by-catch of these species (UNGA A/RES/64/72)

**Resolves** as follows:

***Objectives***

1. To define the nature of the sea turtle bycatch problem in fishing operations in the Convention Area including:

- a. the number of interactions and rate of sea turtle bycatch by gear type;
  - b. the species captured and the type of interaction; and
  - c. the spatial and temporal overlap of fishing effort with sea turtles, including sea surface temperatures.
2. To reduce the mortality of sea turtles in tuna fishing operations in the Convention Area to as close to zero as possible.

***Application***

3. This measure, shall, unless otherwise stated, apply to all vessels authorized by Parties and Co-operating non-Parties (CPCs) to fish in the Convention Area and will commence on 1 January in the year immediately following the implementation of this measure.

***Data collection and Reporting***

4. Before the next Commission meeting CPCs shall provide to the Commission any data previously collected on sea turtle bycatch through mechanisms including commercial logsheets, research cruise reports, observer records, landing records by all gear types. This information should include the number and rate of sea turtle interactions, the spatial and temporal characteristics of sea turtle bycatch, the species of sea turtles taken and the life status and fate of sea turtles.
5. Using standardized data collection methodology within the Convention Area, CPCs shall report annually to the Commission on catches, size and fate of sea turtles taken by their fishing vessels by gear type (including by type of purse seine set, hook type, baits used, etc).
6. CPCs shall also furnish, as applicable, information to the Scientific Committee on successful conservation and management measures for sea turtles in the Convention Area, and threats to the species.
7. CPCs shall report to the Commission on their progress in implementing the *FAO Guidelines to Reduce Sea Turtle Mortality in Fishing Operations*.
8. CPCs shall report to the Commission annually on their implementation of this measure.

**Scientific Advice**

9. The Scientific Committee shall, prior to the next meeting of the Commission:
- a. provide a standard data collection logsheet form for all sea turtle species;
  - b. develop recommendations on appropriate mitigation measures for gillnet, longline and purse-seine fisheries in the Convention Area and, in particular, provide the best available advice as to whether the use of circle hooks should be mandated in all longline fishing operations and, if so, the associated measures required to maximise the impact of circle hooks (including hook gauge, depth setting, time of set and bait);
  - c. develop guidelines for the appropriate handling and release of sea turtles that are affected by fisheries under the purview of the Commission drawing on existing advice in NOAA's *Careful release protocols for sea turtle release with minimal injury* and the FAO's *Guidelines to reduce Sea Turtle Mortality in Fishing Operations* and in available guidelines developed by other RFMOs;
  - d. consider the need for an ecological risk assessment of sea turtles;
  - e. analyze available data to determine the effectiveness of time/area closures in avoiding interactions with sea turtles;
  - f. identify 'hot spots' of turtle interactions to inform the development of time/area closures and explore the potential of incentive-based mechanisms to encourage fishers to avoid these areas;
  - g. advise on appropriate catch rates that would trigger move-on provisions<sup>6</sup>;
  - h. recommend to the Commission levels of sea turtle bycatch by gear type consistent with the goal of reducing sea turtle bycatch mortality to as close to zero as possible and develop a decision rule framework specifying management responses to specified levels of interaction;

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<sup>6</sup> Move-on provisions require that vessels are required to move away from certain areas should a defined level of bycatch be taken in one fishing shot.

- i. work with Parties to develop rigorous research protocols for those interested in conducting research;
- j. assess the effectiveness of ecological fish aggregating devices (FADs)<sup>7</sup> and, if appropriate, develop guidelines for the construction and use of such devices;
- k. advise the Commission on the appropriate scientific design of an observer program to allow estimation of sea turtle mortality associated with fishing activities in the Convention Area, including, as necessary, differential levels of coverage to reflect 'hot spots' of turtle interactions;
- l. develop regional standards covering data collection, data exchange and training; and
- m. produce, or adopt an existing, sea turtle identification guide for the Convention Area.

#### ***Interim Management Measures***

- 10. Until such time as the Information in paragraph 9 is available for consideration by the Commission, or the Commission has agreed otherwise, the measures in paragraphs 11-20 shall apply.
- 11. Operators of all vessels must record all incidents involving sea turtles during fishing operations in their logbooks and report such incidents to the appropriate authorities of the CPC. This information should be provided:
  - a. by gear and set type (deep or shallow set longline and FAD or non-associated purse seine) and include, where possible, details on species and size, location of capture, location and type of injury, actions taken on board, fate of the turtle, location of release and fishing conditions; and
  - b. to the Commission as part of the reporting requirements of paragraph 5.

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<sup>7</sup> Ecological FADs are FADs that do not have hanging panels of nets with large mesh size that can cause entanglements of animals; are not be covered by several layers of nets where turtles can be trapped; should have surface structures on which turtles cannot climb; and should be made of biodegradable materials as much as possible. Ecological FADs have been developed under the European Commission funded MADE Program.

12. CPCs shall require vessels targeting species covered by the Convention to bring aboard, if practicable, and using dip nets, any captured hard shelled 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.
13. CPCs shall ensure that their fishermen are trained in and use available best practice sea turtle bycatch mitigation and handling techniques, as identified in paragraphs 14-16, and keep on board all necessary equipment for the release of sea turtles.
14. CPCs with *gillnet* vessels that fish for species covered by the Convention shall:
  - a. to the extent practicable, release all sea turtles observed entangled; and
  - b. report the type of gillnet used and the fate of turtles.
15. CPCs with *longline* vessels that fish for species covered by the Convention shall:
  - a. ensure that these vessels, and as a priority vessels using shallow set longlines, use large circle hooks, which are fishing hooks that are generally circular or oval in shape and originally designed and manufactured so that the point is turned perpendicularly back to the shank, and those hooks shall have an offset of not more than 10 degrees;
  - b. ensure that the operators of all longline vessels carry and use line cutters and de-hookers in order to facilitate the appropriate handling and prompt release of sea turtles caught or entangled, and that they do so in accordance with Guidelines to be developed under Paragraph 9. CPCs shall also ensure that operators of such vessels are required to carry and use, where appropriate, dip-nets;
  - c. require the use of weighted branch lines in the following configuration<sup>8</sup>:
    - 20g at the hook
    - 40g at 0.9m from the hook
    - 60g at 1.8m from the hook
    - 80g at 3.5m from the hook

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<sup>8</sup> This regime assumes that the least amount of weight at the greatest distance possible to achieve a mean sink rate of around 2 seconds/m<sup>-1</sup> is the most preferred line weighting option. This regime is based on research for seabird bycatch mitigation and is proposed here for consistency across fishing operations. Research into an optimal line weighting regime for seabirds is ongoing and further results are expected by 2011.

- 120g at 5.2m from the hook
    - 160g at 6.9m from the hook; and
  - d. require the use of whole finfish bait and prohibit the use of squid bait.
- 16. CPCs with *purse seine* vessels that fish for species covered by the Convention shall:
  - a. ensure that operators of such vessels, while fishing in the Convention Area:
    - i. to the extent practicable, avoid encirclement of sea turtles, and if a sea turtle is encircled or entangled, take practicable measures to safely release the turtle,
    - ii. to the extent practicable, release all sea turtles observed entangled in FADs or other fishing gear,
    - iii. if a sea 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. require such vessels to register, monitor and recover all FADs when not in use and report monitoring results to the Commission as part of the reporting requirement in Paragraph 5, and
    - v. carry and employ dip nets, when appropriate, to handle turtles.
- 17. All CPCs are requested to:
  - a. where appropriate undertake research trials of circle hooks (including analysis of hooked area i.e. gut/mouth hooked), 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 sea turtle bycatch; and
  - b. report the results of these trials to the Scientific Committee.
- 18. 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.

19. CPCs will implement, as appropriate, the *FAO Guidelines to Reduce Sea Turtle Mortality in Fishing Operations*.

**Review**

20. At its next annual session the Commission shall consider the recommendations of the Scientific Committee on the advice requested under Paragraph 9, and any advice available from the joint Tuna RFMO Technical Working Group on Bycatch, with a view to improving its measures to mitigate interactions with sea turtles in fisheries covered by the Convention.

21. The Scientific Committee shall review annually the information reported by CPCs pursuant to this measure and, as necessary, provide recommendations to the Commission on ways to strengthen efforts to reduce sea turtle interactions with fisheries in the Convention Area.

**Assistance to Developing States**

22. The Commission shall consider appropriate assistance to developing CPCs for the purposes of implementing the provisions of this measure.

**DRAFT BINDING CONSERVATION AND MANAGEMENT MEASURE FOR MARINE  
MAMMALS**

The Commission

*Recalling* the objectives of the Convention

*Acknowledging* that interactions with marine mammals occur in purse seine, longline and gillnet fishing gear used in tuna fisheries, and that entanglements in live and discarded fishing gear also causes significant marine mammal mortality

*Acknowledging* the ecological significance of marine mammals in ecosystems, the economic benefits from eco-tourism for coastal and island nations and the cultural significance of marine mammals in some regions

*Recognizing* that, despite fishing practices adopted to reduce mortality of dolphins in purse seine sets, there remains a high mortality rate and a likelihood of significant long-term physiological damage to dolphin populations through the chase, injury and capture of dolphins taken in sets made on dolphin-associated schools

*Recognizing* that there is a lack of data on the species composition level of interactions with, and the extent of mortality of, marine mammals in some tuna fisheries

*Recognizing* that many of the cetacean species taken in these fishing operations are identified as highly migratory species under Annex 1 of the 1982 United Nations Convention on the Law of the Sea (UNCLOS)

*Recognizing* that Article 61 of UNCLOS requires coastal States and States fishing on the high seas to consider the effects of fishing on “species associated with or dependent upon harvested species with a view to maintaining or restoring populations of such associated or dependent species above levels at which their reproduction may become seriously threatened”

*Recognizing* that the provisions of the United Nations Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory

Fish Stocks (the Fish Stocks Agreement) apply directly to these highly migratory species of cetaceans

*Recalling* that the Fish Stocks Agreement requires the application of the precautionary approach to management of straddling fish stocks and highly migratory fish stocks including in relation to the impact of fishing activities on non-target and associated or dependent species

*Recalling* that the Fish Stocks Agreement requires coastal States and States fishing on the high seas to “minimize pollution, waste, discards, catch by lost or abandoned gear, catch of non-target species, both fish and non-fish species.... and impact on associated and dependent species, in particular endangered species, through measures including, to the extent practicable, the development and use of selective, environmentally safe and cost effective fishing gear and techniques.”

*Recalling* that the *FAO Code of Conduct for Responsible Fisheries* specifies the application of the precautionary approach to conservation and management and exploitation of living aquatic resources in order to protect them and preserve the aquatic environment and the use of selective and environmentally safe fishing gear and practices in order to maintain biodiversity and conserve the population structure and aquatic ecosystems

*Noting* that one-quarter of marine mammal species are regarded as threatened by the IUCN Red List of Threatened Species and that many more are listed as “Data Deficient”

*Noting* that some species of marine mammals are listed on the Appendices of the Convention on International Trade in Endangered Species of Wild Fauna and Flora and of the Convention on Migratory Species

*Recognizing* that depredation by marine mammals on tuna longline catch imposes significant costs for fishers as well as a greater risk of entanglement for the marine mammal species involved, and that reducing interactions with marine mammals would have both ecological and economic benefits

**Resolves** as follows:

***Objectives***

1. To define the nature of the marine mammal bycatch problem in fishing operations in the Convention Area including confirmation of:
  - a. the number of interactions and rate of marine mammal bycatch by gear type;
  - b. the species captured and the type of interaction (including entanglement in discarded fishing gear); and
  - c. the spatial and temporal overlap of fishing effort with marine mammal populations.
2. To reduce the mortality of marine mammals in tuna fishing operations in the Convention Area.

***Application***

3. This measure, shall, unless otherwise stated, apply to all vessels authorized to fish in the Convention Area and will commence on 1 January of the year immediately following adoption of this measure

***Reporting***

4. Before the next Commission meeting, Parties and Co-operating non-Parties (CPCs) shall provide to the Commission any data previously collected on marine mammal bycatch through mechanisms including commercial logsheets, research cruise reports, observer records and landing records, by all gear types. These data should include stranding records, records of wounds and scars on surviving individuals, records of entanglement events involving discarded fishing gear, the rate and number of marine mammal interactions, the spatial and temporal characteristics of marine mammal bycatch, the species of marine mammals taken and the sex (if female, whether pregnant or lactating), life status and the fate of marine mammals with which interactions occur.
5. CPCs shall report annually to the Commission on:

- a. interactions with marine mammals, by gear type (including by type of purse seine set), by target fishery and by location and time of interaction. The data shall include life status and fate of marine mammals with which interactions occur, data on strandings, entanglements, events with discarded fishing gear, and observations of marine mammals with bycatch related injuries/scarring; and
- b. their implementation of this measure.

### ***Scientific Advice***

6. The Scientific Committee shall within two years of the adoption of this measure, and in collaboration with other relevant bodies (e.g. the Scientific Committee of the International Whaling Commission):
- a. conduct an ecological risk assessment of marine mammals;
  - b. assess levels of depredation by marine mammals;
  - c. assess spatial and temporal overlap of fishing effort with marine mammal populations;
  - d. analyse the available data and advise on the need for and nature of appropriate management measures to avoid interactions with marine mammals including:
    - i. catch rates that would trigger move-on provisions,<sup>9</sup>
    - ii. interaction 'hot spots' that may underpin time/area closures,
    - iii. seasonal and spatial restrictions on fishing gear and practices; and
    - iv. per stock, per year limits on marine mammal mortality;
  - e. develop recommendations on appropriate long-term mitigation measures for marine mammals in gillnet, longline and purse-seine fisheries in the Convention Area including but not limited to:
    - i. use of safety panels,

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<sup>9</sup> Move-on provisions require that vessels are required to move away from certain areas should a defined level of bycatch be taken in one fishing shot.

- ii. implementation of back down procedures<sup>10</sup>,
  - iii. acoustic and physical deterrent or detection devices,
  - iv. use of risk averse forms of fishing gear, and
  - v. with regard to long line fishing, strategies to reduce marine mammal chances of finding vessels;
- f. develop, or adopt existing, guidelines for the appropriate handling, disentanglement and unharmed release of marine mammals from all gear types;
- g. develop regional standards covering data collection, data exchange and training and, in particular, develop an observer program that is capable of supporting annual estimates of the rate of interactions with marine mammals across the fishery as a whole; and
- h. produce, or adopt an existing, marine mammal identification guide for the Convention Area.
7. The Scientific Committee will provide the Commission with an annual estimate of the rate of interactions with marine mammals.

#### ***Interim Management Measures***

8. Until such time as the Information in paragraph 6 is available for consideration by the Commission, or the Commission has agreed otherwise, the measures in paragraphs 9-14 shall apply.
9. CPCs with vessels that fish for species covered by the Convention shall:
- a. require that operators of such vessels record all incidents involving marine mammals during fishing operations in their logbooks and report such incidents to the appropriate authorities of the CPC

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<sup>10</sup> Back down procedure: takes place when fishermen reverse the vessel's direction after approximately one-half of the purse seine net has been rolled onboard. Further precautions may include covering the top portion of the purse seine with a skirt of mesh that prevents dolphins from catching their beaks or heads in the net, as well as using divers to guide the dolphins through the back down channel and aid any that are entangled or otherwise in trouble.

- i. this information should include, where possible, details on species, location and time of incident, sex and life status of marine mammal, gear type involved, actions taken on board, outcome of incident to marine mammal and location of release (if pertinent); and
    - ii. in addition, this information should include details of marine mammal depredation of the target catch;
  - b. provide the results of the reporting under paragraph 9(a) to the Commission as part of the reporting requirement of paragraph 5; and
  - c. require that vessels carry approved equipment for safely removing gear from hooked or entangled animals.
10. CPCs with *longline vessels* that fish for species covered by the Convention shall:
- a. encourage operators to refrain from deploying in an area in which marine mammals have been visually or acoustically confirmed to be present;
  - b. ensure that operators refrain from the use of rifles and /or explosive devices to deter marine mammals from depredation;
  - c. ensure that any marine mammal hooked or entangled in longline gear is released unharmed immediately, that the pelagic longline gear is retrieved and that fishing operations do not recommence within 1nm (2km) from the location of the incident;
  - d. record the deaths of any animals that cannot be released; and
  - e. encourage operators of such vessels, while fishing in the Convention Area, to trial marine mammal bycatch mitigation devices such as physical and/or acoustic deterrents, to assess their effectiveness within the Convention Area.
11. CPCs with *purse seine* vessels that fish for species covered by the Convention shall:
- a. ensure that operators of such vessels, while fishing in the Convention Area, do not set on dolphin or whale associated schools; and

- b. adopt approved measures for manually disentangling any incidental catch of marine mammals in nets and ensure that vessels carry gear to facilitate disentanglement of marine mammals.
12. CPCs with *gillnet* vessels that fish for species covered by the Convention shall encourage operators of such vessels, while fishing in the Convention Area, to trial marine mammal bycatch mitigation devices such as acoustic deterrent devices and acoustically reflective nets, to assess their effectiveness.
13. All CPCs are requested to:
- a. where appropriate, undertake research trials to develop effective bycatch mitigation techniques and alternative handling techniques, gear design and fishing practices and other mitigation methods which may improve the mitigation of adverse effects on marine mammals; and
  - b. report the results of these trials to the Scientific Committee.
14. 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.

### ***Review***

15. Upon receipt of the advice in Paragraph 5, and any advice available from the joint Tuna RFMO Technical Working Group on Bycatch, the Commission will review this measure with a view to improving its measures to mitigate interactions with marine mammals in fisheries covered by the Convention.
16. The Scientific Committee shall review annually 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 mammal interactions with fisheries in the Convention Area.

### ***Assistance to Developing States***

17. The Commission shall consider appropriate assistance to developing CPCs for the purposes of implementing the provisions of this measure.