

**REPORT OF THE FIRST MEETING OF THE JOINT TUNA RFMO  
TECHNICAL WORKING GROUP ON BY-CATCH**  
*(La Jolla, California, USA -July 11, 2011)*

**Introduction**

The First meeting of the Joint Tuna RFMO Technical Working Group on By-Catch was held in La Jolla, California, USA, on July 11, 2011. Note that this record of the meeting reflects discussion on a range of issues throughout the day and some recommendations were not fully developed and as such will require further discussion within individual tuna RFMOs. The Kobe process is not a decision-making forum and all recommendations are for discussion and decision by individual tuna RFMOs.

**1. Opening of the meeting**

Prof. Glenn Hurry welcomed the participants. The meeting included representatives from each of the Tuna Regional Fisheries Management Organizations (RFMOs) and invited taxa experts (**Appendix A--List of Participants.**)

**2. Appointment of Chair**

Prof. Glenn Hurry was appointed Chair of the Working Group.

**3. Appointment of Rapporteurs**

Cleo Small and Nina Young were appointed Rapporteurs.

**4. Adoption of the Agenda**

Professor Hurry reviewed the draft Agenda, and stated that he would like to prioritize discussion of data and four or five additional issues that could be developed in greater detail to take to the Kobe III meeting. Professor Hurry emphasized the need to recommend practical issues for tuna RFMOs to take onboard. The Agenda was adopted (**Appendix B.**)

**5. Review of the Kobe II By-catch Meeting Report, including Terms of Reference for the Joint Tuna RFMO Technical Working Group on By-Catch**

The Working Group reviewed the Terms of Reference and, based on the Report of the Kobe II By-Catch Meeting, agreed to focus its discussion on the following areas:

- a) Data, including reporting accuracy, compliance and the role of observers
- b) Gaps in mitigation technologies
- c) Development and deployment of mitigation technologies
- d) Information to and collaboration with the fleets
- e) Capacity building shortfalls

## 6. Update on Tuna RFMO By-Catch Conservation and Management Measures

The RFMO representatives and taxa experts provided an update on work conducted on by-catch including conservation and management measures and their priorities for making progress on by-catch within tuna RFMOs.

- 1. WCPFC, Paul Dalzell and Simon Nicol:** WCPFC has implemented conservation and management measures for sharks, sea birds, and sea turtles over the past five years. The WCPFC Ecosystem and By-catch Working Group Chair, Mr. Dalzell, noted that the key issue that dominates discussions is the lack of data on by-catch species and the inability to evaluate by-catch against the population of the species. For example, no information exists on abundance, age structure, and distribution for most by-catch species; therefore it is difficult to evaluate fishery impacts relative to species abundance. It was noted that most observer data came from the metropolitan distant water fishing nations, but even this was heavily skewed by the large volume of data from the Hawaii longline fishery, which only catches a small fraction of the total western and central Pacific Ocean (WCPO) tuna catch. The implementation of observer programs on WCPO purse seine and longline vessels was a welcome development, but there would likely to be problems with data quality which will compromise estimates of fleet-wide by-catch totals, especially for the longline fisheries where the target coverage rate was 5% annually. Simon Nicol described two WCPFC informational databases: (1) the by-catch mitigation information system (BMIS), which has a full compilation of references, a section documenting technical mitigation measures, and information on target and by-catch species; and (2) a shark tagging database (STAGIS) for the Pacific Ocean which should prove useful for estimation of movement and mortality rates. The major need is data, as information on by-catch is generally lacking across all of the by-catch species.
- 2. IOTC, Dr. Francis Marsac:** Lack of data is equally a problem in the Indian Ocean, especially since 50% of the catch comes from the artisanal fleets which are insufficiently monitored. The IOTC, in 2007 and 2008, designed a new observer form to collect by-catch respectively from purse seine and longline fisheries. In 2010, IOTC began implementation of the regional observer scheme, with an observer coverage target of 5% of all fisheries by 2013. The Scientific Committee proposed to the Commission full utilization of catch and the requirement to have shark fins naturally attached to the body, as to replace the current 5% fin:body ratio, but this proposal was not adopted by the Commission. In 2010, the IOTC adopted a provision for thresher sharks that required no retention or sale by commercial or recreation fleet. The IOTC is working with the IATTC to develop and harmonize its shark identification guide, but this should be done across RFMOs. In 2009, the IOTC adopted a sea turtle resolution which included the FAO guidelines for by-catch mitigation and release of sea turtles, collection of information, requirement for live release and the use of dehookers, line cutters, and finfish bait. To assist in implementation of these requirements, the IOTC is preparing sea turtle identification sheets in collaboration with IOSEA. Research is underway on 'ecological FADs' to reduce turtle entanglement. In 2008, IOTC adopted a sea birds mitigation measure that requested that longliners use at least two mitigation measures south of 30 degrees south; in 2010 the IOTC extended the boundary to south of 25 degrees south. Discussion is underway to remove line shooter from the list of mitigation measures. Finally, with regard to marine mammals, depredation of catch in the surface longline fishery is of particular interest, as depredation in some cases may be as high as 20% of catch. In the purse seine fishery, interactions with whales must be further evaluated. Environmental Risk Assessments (ERA) are planned.
- 3. ICCAT, Josu Santiago:** The ICCAT established its Sub-Committee on By-catch and Shark Species in 1995. In 2005 it created a Sub-Committee on Ecosystems, which replaced two earlier Sub-committees on Environment and By-catch. The work of the SCRS has included assessments in 2004 and 2008 for blue sharks and shortfin mako and a joint ICCAT-ICES assessment of porbeagle in 2009; a new assessment for shortfin mako will be conducted in 2012. In 2008, ICCAT undertook an ERA for 9 shark species, and this ERA will be updated for 18 species of sharks in 2012. In 2010 a productivity and susceptibility analysis on species caught in Atlantic tuna fisheries was also conducted. In 2010 a metadata base on by-catch bibliography was created. The *ICCAT Manual* includes descriptions of blue, shortfin mako and porbeagle, and more sharks species will be included in the future. Also identification sheets for the main Atlantic shark species have been published. In 2009, ICCAT finalized its seabird assessment and made recommendations to strengthen the current 2007 seabird mitigation and other measures. In 2010, ICCAT adopted mitigation measures to reduce the effect of tuna fisheries on sea turtles and reporting requirements to undertake an assessment of impacts of tuna fisheries on turtles in 2012. Ten active recommendations and 6 resolutions for by-catch conservation and management have been adopted-- 2 sea birds, 13 sharks, 2 sea turtles. Shark stock assessments have been conducted by the SCRS on the base of

data submitted, since 1995 as part of the ICCAT general statistics request (Task I and Task II). Other by-catch assessments rely on data submitted by the CPCs and consultations with taxa experts. The lack of data and low observer coverage in the purse seine and longline fisheries are obstacles to estimating total by-catch for species with overlapping and/or non homogeneous distribution. Observer data are supplemented with data from market and port sampling.

4. **IATTC, Martin Hall:** The IATTC requires 100% coverage in purse seine fleet and has 18-19 years of data at this level, and lower coverage from 1979. There have been almost no data available from the industrial longline fleet, but a requirement for 5% coverage in the longline fleet has been adopted in 2011. There is a large artisanal fleet in the eastern Tropical Pacific (ETP) that targets many species including tuna and sharks. Collection of data from artisanal fleets should be a focus of capacity building in tuna RFMOs. Dolphin by-catch mitigation in the purse seine fishery has resulted in dramatic reduction in dolphin mortality, while cetacean interactions in the longline fleet are poorly documented. In the eastern tropical Pacific (ETP) the main shark species of concern are silky sharks and oceanic whitetips. IATTC has developed a robust shark identification system, and has adopted prohibitions on finning. In 2011, IATTC adopted a measure for oceanic white tips, the populations of which have declined substantially. A generic resolution requiring full retention of sharks, and release as soon as possible did not pass. The issue of the by-catch of silky sharks, which have declined by more than 70%, remains to be addressed. For manta rays, identification is difficult, release is possible but handling and release methods need to be developed, as do those for whale sharks. For sea turtles, by-catch in the purse seine fishery is not a critical problem (<20 green/black and olive ridley sea turtles were killed in 2010; most turtles captured were released alive). There is a significant by-catch of sea turtles in artisanal longline fisheries in the ETP; to address this by-catch a partnership program with WWF and several nations has promoted the use of circle hooks and the use of release standards. The IATTC has produced (and made available on its website) a video detailing how to handle and release sea turtles. IATTC has conservation and mitigation measures for sea turtles but information on status and trends is still not available for the current year. Spatial distribution data, especially the inter-nesting habitat, would be useful to develop some management measures. IATTC with the Overseas Fishery Cooperation Foundation of Japan studied the causes of sea turtle entanglement in lines of polypropylene and polyethylene, materials with positive buoyancy, and found a simple and cheap solution that is being tested at a larger scale by the government of Ecuador. A minimum set of tools and instruments to handle sea turtles and dehook them was adopted, and vessels should carry this set. In 2011, IATTC adopted a new sea bird resolution; however, more by-catch data are needed from the longline fishery. To address the by-catch of small tunas, IATTC adopted a special closure to reduce the by-catch of small bigeye tuna and it also requires full retention of tuna with the exception of tuna unfit for human consumption. Research on sorting grids shows promise for the release of small tunas, and other small pelagic fishes. Research on acoustics is being carried on in a cruise sponsored by ISSF.
5. **CCSBT, Bob Kennedy:** CCSBT's situation is unique because it covers a single species with no convention area. Bluefin tuna are caught in the convention areas of the IOTC, ICCAT, WCPFC, so any conservation and management measures in those RFMOs are binding on respective CCSBT members. CCSBT, like other RFMOs, also suffers from a lack of adequate data on by-catch. CCSBT has adopted a target observer coverage rate of 10%, which is implemented through national observer programs-- this limits what analysis can be undertaken. Within CCSBT there is no centralized database as the data are maintained by the national programs and nations provide their by-catch assessments. The Ecologically Related Species (ERS) Working Group focuses mostly on the longline fishery as there is no FAD fishing within the purse seine fishery for bluefin tuna. Interactions in the longline fishery are low for marine mammals and sea turtles, but data are lacking from Indonesia. The focus of by-catch mitigation has been primarily on sea birds and sharks. The Ecologically Related Species Working Group will meet in April 2012. CCSBT is in the process of updating its shark and sea bird identification guides.

– *Taxa comments*

6. **Doug Hykle, IOSEA:** IOSEA has 32 Member States around the Indian Ocean, and members have reported data on sea turtle by-catch, implementation of mitigation measures, and turtle tracking data in their respective national reports. A regional assessment of leatherback turtles has been published and one for loggerheads is being finalized. It was noted that IOSEA's parent body, CMS, is undertaking a by-catch study on turtles, with a focus on artisanal fisheries, and this may be useful to the Working Group. IOSEA is involved/collaborates with the IOTC WPEB, and feels that this group is under-resourced.

- 7. Jack Frazier, IOSEA Advisory Committee:** Mr. Frazier noted that for him what is important is collaboration: specialists and other organizations can support tuna RFMOs in identifying and resolving by-catch issues. This may involve commissioning experts and universities. He said is also the need to be clear on the definition of ‘by-catch’, and the wider ecosystem issues including incidental catch. In addition, there is a critical need to understand socio-economic factors in relation to by-catch.
- 8. Sandra Andraka, WWF:** WWF has undertaken a sea turtle program in the eastern Pacific since 2005, working with artisanal fleets in 9 countries. Progress varies between countries, but work has involved over 400 vessels, undertaking experiments on C versus J hooks, using forms developed by IATTC, standardized across the region. Work is underway to fill gaps in knowledge of overall by-catch rates. Two issues are: (i) the need to build national capacity in relation to observer programs, and (ii) that there may be limited availability of mitigation devices (e.g. circle hooks) in countries which restrict implementation. It was noted that while there is no single mitigation recommendation for sea turtle by-catch, a common need is for fisheries to have tools for release, and training for fishermen to use these.
- 9. Warren Papworth, ACAP:** Seabird by-catch mitigation has the advantage of good databases, including the ACAP breeding site databases, ACAP species assessments, and the BirdLife International tracking database. There is also a good understanding of by-catch mitigation. However, there are limited by-catch data from high seas fisheries, and next to no information on compliance with mitigation requirements, nor mechanism to collect these data. It was noted that ACAP has a database and a national reporting system that could be made available to tuna RFMOs. A strength of this Joint Tuna RFMO By-Catch Group is its global focus, which is necessary to address by-catch of migratory species such as albatrosses. The Terms of Reference emphasize the importance of data and data accessibility.
- 10. Ed Melvin, Washington Sea Grant:** Mr Melvin’s experience includes work on seabird by-catch for many years across a range of gear types, most recently working with Japan in South Africa. Research demonstrates that seabird by-catch mitigation is possible even in the most difficult areas, by using a combination of night setting, line weighting and bird scaring (tori) lines. It was noted that a high proportion of seabird by-catch can come from secondary interactions, which underlines the importance of line weighting. Funding is essential for progress. It was also noted that appropriate seabird by-catch mitigation may differ between the north and south hemisphere, with surface foragers dominating in the northern hemisphere. Compliance is a key issue and more information is needed on the successes and failures of implementation.
- 11. Cleo Small, BirdLife International:** BirdLife has been working with the tuna RFMOs since 2005, working closely with the ecosystem and by-catch working groups. Inputs include the albatross and petrel tracking database, inputs into the seabird ERAs in ICCAT, WCPFC and IOTC, and data on observer standards. BirdLife also operates the Albatross Task Force, which works directly with fishermen in 7 countries in South America and southern Africa, increasing uptake of mitigation measures, training observers and undertaking mitigation research. Suggestions for practical issues that this Joint Tuna RFMO By-catch Working Group could take forward include harmonizing observer data standards and establishing interoperable databases, and recommending a joint tuna RFMO by-catch research program, dedicated ecosystem/by-catch staff in each Secretariat, and pilot projects for electronic video observer programs.
- 12. Sonja Fordham, Shark Advocates International:** A key issue is that sharks are both by-catch and targeted species. Rays and skates must be considered as well as sharks. There is a problem of new markets for Chinese medicine and meat. Priorities are to improve data, but also taking action in cases where available data are already sufficient to demand action. There is a key need for capacity building in developing countries, as lack of capacity is used as reasons not to adopt conservation and management measures. Another issue is the adoption of measures with loopholes that significantly reduce the effectiveness of measures, while giving an impression of making progress. Across the board, there is a need for further bans on retention of the most vulnerable shark species, and development of protocols for handling and releasing sharks. Landing sharks with fins naturally attached has clear benefits of species identification and assessments. Shark Advocates International agrees that pilot studies for video monitoring are important, including for compliance. A comparison of existing tuna RFMO shark data collection requirements would be useful.

**13. Eric Gilman, Hawaii Pacific University:** The University of Hawaii research team focuses primarily on gear technology approaches to by-catch mitigation in tuna fisheries. Two in-progress studies of relevance to the Tuna RFMO By-Catch Working Group are: (i) a performance assessment of global RFMOs' governance of by-catch and discards, which will be published as an IUCN technical report in late 2011; and (ii) the development of tuna product procurement specifications for retail and supplier partners of the international NGO, Sustainable Fisheries Partnership. The Group also noted the existence of FAO Fisheries Circular 1025 (<http://www.fao.org/docrep/010/a1426e/a1426e00.htm>), produced by Eric and colleagues at FAO in 2007, which reviews progress in addressing by-catch of seabirds and sea turtles by RFMOs, and that it would prove useful to the tuna RFMO by-catch working group to have this document updated and expanded to cover other vulnerable by-catch species groups.

## 7. Discussion and Recommendations of the Working Group

The Working Group had broad discussions in the areas of data including:

- Standardization in data collection protocols, data sharing, improving data accuracy, observer training and certification; it was noted that all RFMOs and taxa experts indicated that data was the major issue for management and mitigation.
- Sharks, including ecological risk assessment, stock assessment and by-catch, emerged as a key issue for immediate consideration within RFMOs with participants noting that the issue was broader than by-catch and needed to acknowledge that full stock assessment should be conducted for those shark species where data are available. For those species lacking data, consistent with the FAO IPOA-Sharks, precautionary, science-based conservation and management measures for sharks should be taken in fisheries within each tuna RFMO, including as appropriate: (1) measures to improve the enforcement of existing finning bans; (2) prohibitions on retention of particularly vulnerable or depleted shark species, based on advice from scientists and experts; (3) concrete management measures in line with best available scientific advice with priority given to overfished populations; (4) precautionary fishing controls on a provisional basis for shark species for which there is no scientific advice; and (5) measures to improve the provision of data on sharks in all fisheries and by all gears.
- Collaborative research, with members noting the importance of websites and databases to share information and, in this context, the importance of the WCPFC By-catch Management Information System, the ICCAT database and an independent database on bibliographies (e.g., IOSEA has an extensive online sea turtle bibliography as well as a list of projects in the 32 signatory States) were noted and later agreement was reached to further to integrate them into the WCPFC website.
- Collaborative partnerships were noted by many Working Group members as the best way to facilitate research and to develop mitigation measures and that these partnerships worked well when RFMOs, industry and NGOs worked in partnership and collaboration.
- Compliance: This was seen as an issue for members as they were unsure, given the lack of reporting by some nations, if mitigation and management measures had been adopted and implemented properly and as such it was difficult at a later time to assess their effectiveness. It was also pointed out that there need to be clear and compelling incentives for compliance to work, and that sanctions alone are insufficient.
- By-catch in artisanal fleets: This was described as a different issue to data collection in industrial fleets and as such needed different approaches and has other challenges for data collection and extension exist.
- Measures to harmonization and develop handling and release standards were needed urgently and priority should be attached to their development. However, it was noted that there are different ocean species and practices that need consideration and that handling and release standards should be species specific and take into consideration differences in oceans, gear type, and fishing operations.

### *– Definition of by-catch*

The Group had some discussion on the definition of by-catch in relation to the scope of issues to be addressed by this Working Group, recognizing that there are differing definitions of 'by-catch', 'discards' and 'incidental catch', that these include species that are fully utilized, with economic and socio-cultural value, as well as discards of target and non-target species. The group agreed that its scope included finfish and shark species, and that the term 'by-catch' may not capture it all sufficiently, but that the focus of the group was on those species which weren't part of the list of species to be managed by the tuna RFMOs. It was also emphasized that without

a clear understanding of the ‘ecosystem approach’ to fishing, there can be no clear understanding of ‘by-catch’. The Group acknowledged that further definition may be needed at a future time.

The Working Group focused its discussion and recommendations on data harmonization, sharks, collaboration and research, provisional list of research priorities, and finally the future of the Working Group and its work plan. The following recommendations were developed.

#### ***A. Data collection and harmonization Recommendations***

1. The Working Group agreed that there should be minimum data standards, with data fields that are collected across all RFMOs with a view to allowing interoperability.
2. All members of all RFMOs are encouraged to improve the quality of data collection system to improve fisheries and by-catch assessments.
3. All members of all RFMOs are strongly encouraged to share data or information within RFMOs collected from observer and log book programs for the purposes of by-catch management and research.
4. The Working Group will prepare a short report on data harmonization using all existing data forms from all tuna RFMOs by December 31, 2011. To facilitate this process, the IATTC forms will be circulated for comparison with the other tuna RFMOs.
5. Noting that there is a working group to be convened between IATTC and WCPFC on data harmonization, including by-catch, the Working Group recommends involving the other tuna RFMOs at this workshop.
6. Seabird identification: The tuna Secretariats will provide ACAP with existing seabird identifications, and ACAP will develop a standardized identification guide. The drafts of the identification guides will be reviewed by the Working Group and tuna RFMO working groups.
7. Shark identification: The Working Group, with WCPFC and ICCAT taking the lead, will harmonize guidance for shark identification, in collaboration with the IUCN shark specialist group and others. (Note: the IATTC shark ID guide is available on its website and it provides a useful model for observer use).
8. Sea turtle identification: The Secretariats will provide the Working Group Chair with the materials currently in use for turtle identification so these can be harmonized and distributed to all tuna RFMOs.
9. The Working Group should consider a process to develop harmonized marine mammal identification guides for the fisheries for which they are not available.

**Note:** One member expressed the view that the amount of data and information which observers are requested to collect in each tuna RFMO is almost reaching the limit of the ability of a single observer to collect all of the information. Thus, in the future, the Working Group may want to consider reducing or improving the efficiency of data collection, and improving the availability of data through the exchange of information among tuna RFMOs. It was further noted, that while the training of observers is critical to the effective implementation of observer program and the acquisition of quality data, observer training takes time and requires financial resources. Finally, it was noted that data sharing should be conducted within the range of confidentiality defined by each tuna RFMO.

#### ***B. Shark Recommendations***

The Working Group noted that sharks are often targeted as well as taken as incidental catch, and that this discussion includes all elasmobranchs including sharks, rays and skates. The Working Group noted the previous Kobe recommendations on sharks, and these should not be lost in any further discussion on sharks.

1. The Working Group is concerned with the practice of intentional sets on whale sharks, in RFMOs where there is evidence of the practice occurring, and recommends that tuna RFMOs initiate research to determine the impact and outcome of this practice.
2. RFMOs should conduct risk assessment processes to develop their priorities for shark species which may need further assessment or mitigation. RFMOs may wish to consider the WCPFC key shark nomination processes (**Appendix C**).

3. [RFMOs require their members and CPCs to record in the logbooks the number of sharks discarded]\*.
4. RFMOs should take action to improve data collection on sharks and manta and devil rays in targeted industrial and artisanal fisheries. As an example, the Working Group noted that a fins naturally attached requirement would improve species identification and enforcement and should be considered as part of existing shark finning bans.
5. RFMOs should consider supporting studies to investigate post-release survival of sharks in longline fisheries in relation to hook type and duration of set, among other factors.
6. RFMOs should consider supporting studies to further develop shark by-catch mitigation strategies for longline fisheries.
7. RFMOs should evaluate the costs and benefits of banning the use of wire leaders in tuna longline fisheries.
8. RFMOs should develop handling and release protocols for all sharks and manta and devil rays, taking into consideration the safety of the crews.

– *Discussion regarding sharks*

For the sharks, it was noted that only ICCAT has conducted full stock assessments, which are for blue shark, shortfin mako shark and porbeagle. In the course of these stock assessments, the historical catches were estimated using a variety of methods, and CPUEs estimated using catch and effort data of longline were also reported from varieties of fleets. Where data are available, full stock assessments should be a goal within tuna RFMOs. Where data are not available, ecological risk assessments can be used to highlight the most vulnerable species. The current work underway in the WCPFC will also add significantly to the knowledge of shark data, assessment and status. IATTC and IOTC also have work underway on shark species, despite limited data. It was suggested that the best way to evaluate the quality of data may be to attempt to conduct a quantitative stock assessment with the available data. Sensitivity to outcomes of assessments based on limited data assumptions needed for estimating stock status would then be useful for identifying additional data requirements to reduce uncertainty in stock status evaluations. There was considerable discussion of the fact that sharks are more likely to be retained than the other species being discussed by the Working Group (marine mammals, sea turtles, seabirds) and that interest in sharks varies among Parties and fleets, from targets to welcome secondary catch to species that should be avoided.

**C. Collaboration and research Recommendations**

1. The Working Group agreed to meet to develop a centralized bibliographic by-catch database that includes information on mitigation, by-catch conservation and management measures adopted by the RFMOs and past assessments undertaken by RFMOs; the effort will be led by ICCAT, IOTC, and WCPFC.
2. Each RFMO should designate/employ a dedicated by-catch staff person to work collaboratively with other RFMOs to promote by-catch related work.
3. The Working Group should consider meeting in person every three years to prioritize research in line with the Terms of Reference of the Working Group.
4. The Working Group, in consultation with experts, should undertake a review of ecological risk assessments used by the RFMOs and provide recommendations to standardize these assessments across RFMOs.

– *Discussion regarding collaboration and research*

The Working Group also noted the importance of genetic studies to determine stock structure and surveys to measure/monitor stock status and trends of rarely caught, protected, and biologically sensitive species.

**D. Provisional List of Research Priorities**

The Working Group developed the following provisional list of research priorities that will be further developed and refined at subsequent meetings of the Working Group:

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\* The Working Group to determine intersessionally.

- Sea turtle by-catch mitigation and distribution
- Post-release survival of sharks, manta and devil rays, sea turtles, and seabirds
- Best practices for handling and release techniques of all taxa listed above
- Shark by-catch mitigation, primarily in longlines and also purse seines and gillnets
- Seabird by-catch mitigation in artisanal fisheries
- Sorting grids for small fish, tunas and other species
- Economic benefits of reducing by-catch
- Multi-taxa impacts of by-catch mitigation measures
- Assess impacts of gillnets/driftnet fishing on by-catch species
- Rate of marine mammal depredation and its relation to by-catch in longline fisheries
- Review of Ecological Risk Assessment methods
- Research to improve life history parameters, including biological parameters on all by-catch species
- Evaluate the feasibility of video and other electronic monitoring and other technology in the context of tuna RFMO
- Pursue observer coverage and adequate sampling of artisanal fisheries

## **8. Future of the Joint By-catch Working Group and Work Plan**

The Working Group agreed to meet electronically every three months and to meet in person whenever possible in conjunction with Kobe meetings or, in the absence of a Kobe meeting, every three years. Over the next several years the Working Group proposes the following work plan:

- Harmonization of data collection
- Development of harmonized identification guides and release protocols
- Identify and recommend research priorities
- Prioritization of collaborative work
- Progress BMIS information sharing website
- Funding sources
- Compliance with data reporting requirements

In accordance with the Joint Tuna RFMO Technical Working Group Terms of Reference, the Working Group hereby forwards its report, recommendations, provisional list of research priorities, and work plan for consideration by each RFMO, including, as appropriate, their technical bodies, in accordance with the procedures of each RFMO. The Working Group noted that the discussions and conclusions from this meeting in no way supersede or take away from the “Proposals for Immediate Action” from Kobe 2 and the Kobe 2 By-Catch Workshop. The Working Group looks forward to receiving feedback from the RFMOs as it continues its work.

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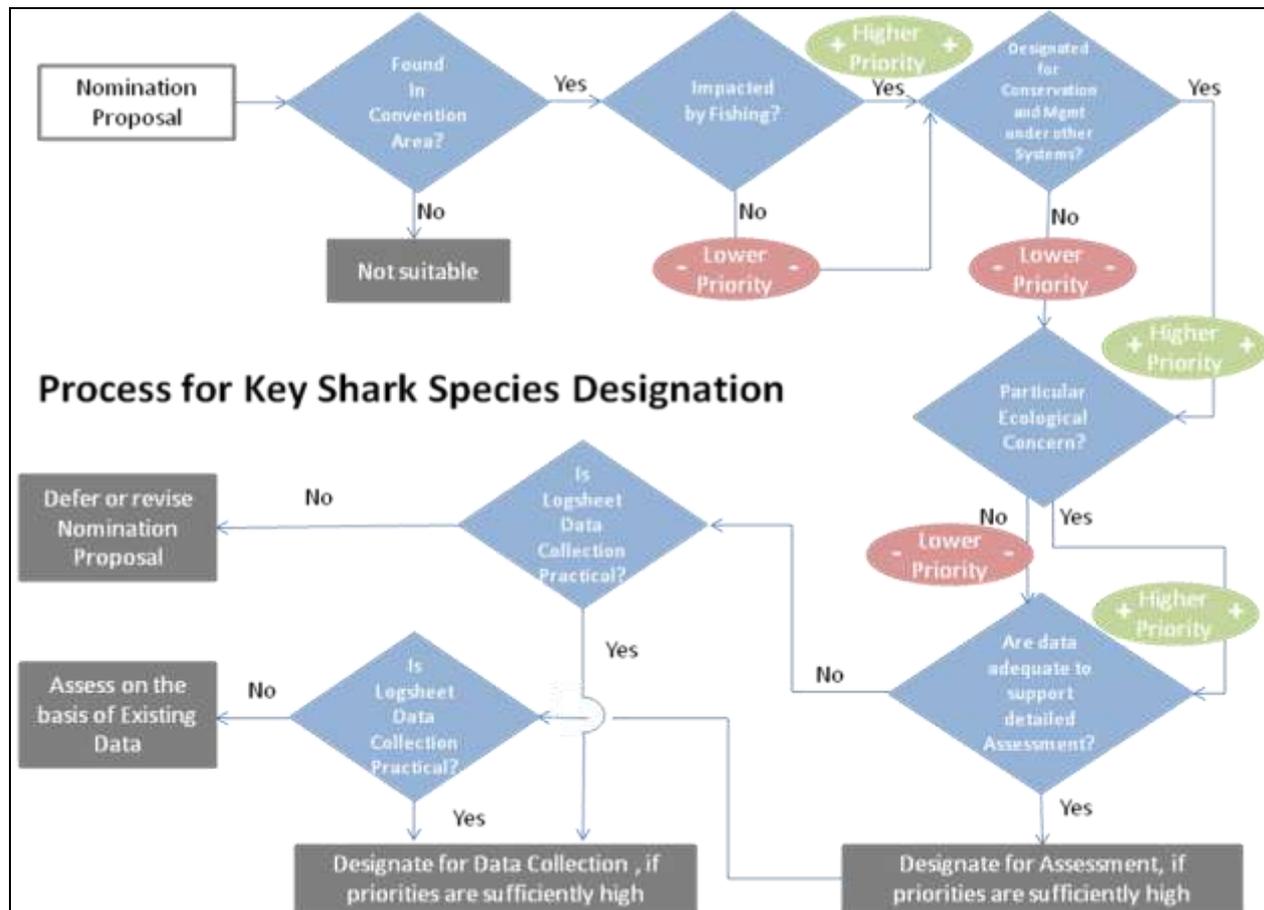
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## Appendix B

### AGENDA

1. Opening of the meeting
2. Appointment of Chair
3. Appointment of Rapporteurs
4. Adoption of the Agenda
5. Review of the Kobe II By-Catch Meeting Report, including Terms of Reference for the Joint Tuna RFMO Technical Working Group on By-Catch
6. Update on tuna RFMO by-catch conservation and management measures
7. Review existing by-catch data collection requirements of the Tuna RFMOs, including data fields and collection protocols of logbook and observer by-catch data
8. Recommendations to be presented at Kobe III
  - a) Provide guidance, to the extent possible, on the harmonization of data collection protocols among Tuna RFMOs
  - b) As time allows, recommendations on the harmonization of conservation and management measures across RFMOs
9. Develop a work plan for future meetings of working group
  - a) This plan should include, inter alia, the following elements:
    - i) Further discussions on data protocols and harmonization, including guidance for improving data collection efforts (e.g., information to be collected) within individual RFMOs and among RFMOs collectively
    - ii) Review existing by-catch measures by each Tuna RFMO
10. Review existing by-catch mitigation measures adopted by each Tuna RFMO
11. Consider new mitigation research findings to assess the potential utility of such measures in areas covered by other Tuna RFMOs taking into consideration differences among such areas
12. Identify species of concern that, based on their susceptibility to fisheries and their conservation status, require immediate action across Tuna RFMOs.
13. As appropriate, develop recommendations to improve by-catch management within and amongst RFMOs
  - i) Review and identify appropriate qualitative and quantitative species population status determination methods for by-catch species.
  - ii) Review data analyses to identify all fishery and non-fishery (e.g. oceanographic and physical) factors contributing to by-catch, taking into account the confidentiality rules of each RFMO.
  - iii) Review and compile information on by-catch research that has been already conducted or is currently underway to delineate future research priorities and areas for future collaboration.
    - a) Discuss appropriate role for observers at future meetings
14. Other matters
15. Adoption of Report
16. Adjournment

PROCESS FOR KEY SHARK SPECIES DESIGNATION



**Figure 1.** Flowchart illustrating a qualitative process based on factors (blue diamonds) to be considered in designation of key shark species for the WCPFC, and how these considerations lead to one of five outcomes (gray rectangles). Clarke, S. 2011. A Proposal for a Process for Designating WCPFC Key Shark Species for Data Provision and Assessment. Secretariat of the Pacific Community. WCPFC-SC7-2011/EB-WP-05.