
DRAFT: INDIAN OCEAN MULTI-YEAR SHARK RESEARCH PROGRAM

PREPARED BY: IO-SHYP SMALL WORKING GROUP, 13 OCTOBER 2014

PURPOSE

To provide participants at the 10th Working Party on Ecosystems and Bycatch (WPEB10) with an opportunity to consider a draft work plan for sharks, based on the outcomes of the Indian Ocean Shark Year Program workshop (IO-ShYP01) which was held in Olhão, Portugal from 14 to 16 May 2014.

BACKGROUND

In December 2013 the IOTC Scientific Committee recommended that a detailed multi-year shark research program be prepared by a small group of shark experts and the IOTC Secretariat, to further advance, detail and propose an Indian Ocean Shark multi-Year Program (IO-ShYP) for finalisation at the next WPEB meeting (see SC recommendation SC16.33).

The main objective of the IO-ShYP will be to “*promote cooperation and coordination among IOTC researchers, to improve the quality of the scientific advice on sharks provided to the Commission, namely by conducting quantitative stock assessments for selected species by 2016, and to better assess the impact on shark stocks of the current IOTC Conservation and Management Measures.*”

Participants to the IO-ShYP01 meeting, recommended that the IO-ShYP working group continue its work inter-sessionally via electronic means to develop and refine a 5 year plan of work for the consideration and potential endorsement by the WPEB at its next session to be held in October, 2014 (see Information Paper IOTC–2014–IO-ShYP01–R). Readers of the IO-ShYP01 report are encouraged to interpret it as a document with the sole aim of improving the information at the IOTC for future use in developing stock assessment and/or status indicators for shark species caught by IOTC fisheries and not as compliance issues with IOTC Conservation and Management Measures on provision of data for shark species.

DISCUSSION

Subsequent to the IO-ShYP01 meeting, participants drafted a provisional Program of Work 2015–2019, as detailed in [Appendix A](#) of this paper. The WPEB10 is invited to consider, revise and adopt a Program of Work (2015–2019).

RECOMMENDATION

That the WPEB:

- 1) **NOTE** paper IOTC–2014–WPEB10–11 which provided a draft work plan for sharks, based on the outcomes of the Indian Ocean Shark Year Program workshop (IO-ShYP01) which was held in Olhão, Portugal from 14 to 16 May 2014.
- 2) **CONSIDER** modifying the Program of Work based on discussions held during the WPEB10 meeting.
- 3) **RECOMMEND** a revised Program of Work for 2015–2019 to the Scientific Committee for its consideration and potential endorsement, that includes the IO-ShYP.

APPENDICES

[Appendix A](#): DRAFT: Indian Ocean Shark multi-Year Program of work

APPENDIX A

DRAFT: INDIAN OCEAN SHARK multi-YEAR RESEARCH PROGRAM OF WORK

The following is the Draft Program of Work for sharks, based on the outcomes of the Indian Ocean Shark Year Program workshop (IO-ShYP01). This Program of Work for sharks consists of the following:

- **Table 1:** Priority topics for obtaining the information necessary to develop stock status indicators for sharks in the Indian Ocean based on the Indian Ocean Shark Year Program workshop (IO-ShYP01);
- **Table 2:** High priority topics, by project, for shark species in the Indian Ocean, based on the Indian Ocean Shark Year Program workshop (IO-ShYP01);
- **Table 3:** Proposed timeline for the development of the high priority research projects;
- **Table 4:** Possible funding sources identified for each of the high priority research projects.

Table 1. Priority topics for obtaining the information necessary to develop stock status indicators for sharks in the Indian Ocean based on the Indian Ocean Shark Year Program workshop (IO-ShYP01).

Topic	Sub-topic	Priority
Fisheries and data collection	Implementation of Regional Observer Schemes in major IOTC fleets, including coastal artisanal fleets, and/or the collection of scientific data by all other means available.	High
	Historical data mining for the key species and fleets, such as artisanal gillnet and longline coastal fisheries, and intergration with current observer programs to reconstruct species composition and catches of sharks.	High
	Collection of information about catch and effort and spatial distribution of fleets which are believed to have large catches on pelagic catches (i.e. various longline fleet, gillnet and coastal fisheries) and where those statistics are mostly absent.	High
Biology and ecology	Age and growth, prioritizing BSH, SMA and OCS	High
	Stock identification (e.g., tagging and genetics), prioritizing BSH, SMA and OCS	High
	Migrations and habitat use (e.g., electronic and conventional tagging) prioritizing BSH, SMA and OCS	High
	Post-release mortality (electronic tagging), prioritizing OCS and Threshers	High
	Reproduction	Medium
Mitigation measures: Operational and technological aspects	Assess efficiency of measure on currently prohibited shark species (Resolutions 12/09, 13/03)	High
	Assess efficiency of the combination of circle hooks and bait types.	High
	Identify pelagic shark hotspots and investigate associated environmental conditions affecting shark distribution	High
	Improve the knowledge on the use of wire/braided nylon traces and assess economic implications	High
	Gillnet selectivity studies, including mesh size, hanging ratio, net twine material, and others.	High
Mitigation measures: Best practices	Develop guidelines and protocols for safe handling and release of sharks and other protected species from longlines and gillnets	High
	Post-release mortality of whale sharks released from purse seine, to assess the efficiency of the best practice currently set in place	High
	Test and improve the efficiency of shark release procedure through a release panel in purse-seines. Experiments are being carried out by ISSF in other oceans.	Medium to High
	Efficiency and economics impacts of corrodible hooks	Medium
	Efficiency and economics impacts of weak hooks	Medium
	Efficiency and economics impacts of permanent magnets, electropositive rare earth metals (EPREM) and other electrical measures	Medium

Impact of soaking time on the shark bycatch and target catch levels for major fleets, and determine an optimal soaking time by target species	Medium
Develop and test the efficiency of artificial baits in longline fisheries	Medium
Test the use and efficiency of acoustic attractants that produce sounds with a strong attractive effect on sharks and potentially attract sharks away from the fishing gear.	Medium

Table 2. High priority topics, by project, for shark species in the Indian Ocean, based on the Indian Ocean Shark Year Program workshop (IO-ShYP01).

Topic	Sub-topic and Project	Priority
Fisheries and data collection	<p>Historical data mining for the key species and IOTC fleets (e.g. as artisanal gillnet and longline coastal fisheries) and implementation of Regional Observer Schemes, including:</p> <ul style="list-style-type: none"> • Capacity building of fisheries observers (including the provision of ID guides, training, etc.); • Define observer scheme (including minimum requirements) for fleets which are believed to have large catches on pelagic sharks (i.e. various longline and gillnet coastal fisheries) and where those statistics are mostly absent; • Historical data mining for the key species, including the collection of information about catch, effort and spatial distribution of those fleets; • Integration of data mining with observer programs to reconstruct species composition and catches of sharks. 	High
Biology and ecology	<p>Develop basic biology and ecology studies to fill essential knowledge gaps on the key IOTC shark species, including:</p> <ul style="list-style-type: none"> • Age and growth studies for the blue (BSH), shortfin mako (SMA) and oceanic whitetip (OCS) sharks; • Stock delimitation identification (i.e., tagging and genetics*) for the blue (BSH), shortfin mako (SMA) and oceanic whitetip (OCS) sharks; • Migration and habitat use, including identification of hotspots and investigate associated environmental conditions affecting the sharks distribution, and making use of conventional and electronic tagging, for blue (BSH), shortfin mako (SMA) and oceanic whitetip (OCS) sharks; • Post-release mortality (electronic tagging), to assess the efficiency of management resolutions on no retention species (i.e. oceanic whitetip (OCS) and threshers sharks). 	High
Mitigation measures	<p>Develop studies on shark mitigation measures (operational, technological aspects and best practices), including:</p> <ul style="list-style-type: none"> • Longline selectivity, to assess the effects of hooks styles, bait types and trace materials on shark catch rates, hooking-mortality, bite-offs and fishing yield (socio-economics); • Gillnet selectivity, to assess the effect of mesh size, hanging ratio and net twine on sharks catches composition (i.e. species and size); • Post-release mortality of whale sharks in purse-seine fisheries, to assess the efficiency of the best practice currently set in place; • Develop guidelines and protocols for safe handling and release of sharks caught on longlines and gillnets fisheries. 	High

* Genetic studies might be integrated in a single study including all major IOTC tuna and tuna-like species.

Table 3: Proposed timeline for the development of the high priority research projects.

Project	Task	Year 1 - 2015				Year 2 - 2016				Year 3 - 2017				Year 4 - 2018				Year 5 - 2019			
		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Fisheries and data collection	Capacity building of fisheries observers (including the provision of ID guides, training, etc.)																				
	Define observer scheme (including minimum requirements) for fleets which are believed to have large catches on pelagic sharks (i.e. various longline and gillnet coastal fisheries) and where those statistics are mostly absent																				
	Historical data mining for the key species, including the collection of information about catch, effort and spatial distribution of those fleets																				
	Integration of data mining with observer programs to reconstruct species composition and catches of sharks																				
	Reporting to the IOTC WPEB and IOTC SC																				
Biology and ecology	Age and growth studies for the blue (BSH), shortfin mako (SMA) and oceanic whitetip (OCS) sharks		BSH				BSH+SMA+OCS				SMA+OCS				OCS						
	Stock delimitation identification (i.e., tagging and genetics*) for the blue (BSH), shortfin mako (SMA) and oceanic whitetip (OCS) sharks		BSH				BSH+SMA+OCS				SMA+OCS				OCS						
	Migration and habitat use, including identification of hotspots and investigate associated environmental conditions affecting the sharks distribution, and making use of conventional and electronic tagging, for blue (BSH), shortfin mako (SMA) and oceanic whitetip (OCS) sharks			BSH			BSH+SMA				BSH+SMA+OCS				SMA+OCS						
	Post-release mortality (electronic tagging), to assess the efficiency of management resolutions on no retention species (i.e. oceanic whitetip (OCS) and threshers sharks).						THR				OCS										
	Reporting to the IOTC WPEB and IOTC SC																				
Mitigation measures	Longline selectivity, to assess the effects of hooks styles, bait types and trace materials on shark catch rates, hooking-mortality, bite-offs and fishing yield (socio-economics)																				
	Gillnet selectivity, to assess the effect of mesh size, hanging ratio and net twine on sharks catches composition (i.e. species and size)																				
	Post-release mortality of whale sharks in purse-seine fisheries, to assess the efficiency of the best practice currently set in place																				
	Develop guidelines and protocols for safe handling and release of sharks caught on longlines and gillnets fisheries																				
	Reporting to the IOTC WPEB and IOTC SC																				

* Genetic studies might be integrated in a single study including all major IOTC tuna and tuna-like species.

Table 4: Possible funding sources identified for each of the high priority research projects.

Topic	Possible funding source	Time and limitations
Fisheries and data collection	IOTC annual budget	The Commission may approve additional budget items for 2015.
	WWF	Ad hoc concept notes submitted for consideration (<\$50K)
	ISSF	Ad hoc concept notes submitted for consideration (\$30–50K)
	PEW; World Bank; Shark Alliance; GEF-ABNJ	Ad hoc concept notes submitted for consideration. Funding variable
Biology and ecology	IOTC annual budget	The Commission may approve additional budget items for 2015.
	CPCs (e.g., EU)	Member specific topics and timeframe
Mitigation measures	IOTC annual budget	The Commission may approve additional budget items for 2015.
	CPCs (e.g., EU)	Member specific topics and timeframe