

OUTCOMES OF THE FIFTEENTH SESSION OF THE SCIENTIFIC COMMITTEE

PREPARED BY: IOTC SECRETARIAT, 9 AUGUST, 2013

PURPOSE

To inform participants at the Working Party on Ecosystems and Bycatch (WPEB09) of the recommendations arising from the Fifteenth Session of the Scientific Committee (SC15) held from 10–15 December 2012, specifically relating to the work of the WPEB.

BACKGROUND

At the 15th Session of the SC, the SC noted and considered the recommendations made by the WPEB in 2012 that included requests to address the deficiencies in data collection, monitoring and reporting by CPCs, as well as to carry out targeted research and analysis on the most commonly caught elasmobranch species.

List of the most commonly caught elasmobranch species		
Common name	Species	Code
Manta and devil rays	Mobulidae	MAN
Whale shark	<i>Rhincodon typus</i>	RHN
Thresher sharks	<i>Alopias spp.</i>	THR
Mako sharks	<i>Isurus spp.</i>	MAK
Silky shark	<i>Carcharhinus falciformis</i>	FAL
Oceanic whitetip shark	<i>Carcharhinus longimanus</i>	OCS
Blue shark	<i>Prionace glauca</i>	BSH
Hammerhead shark	Sphyrnidae	SPY
Other Sharks and rays	–	SKH

Based on the recommendations arising from the WPEB08, two sets of recommendations were adopted at SC15 that are relevant to the work of the WPEB:

- 1) Consolidated set of recommendations of the Fifteenth Session of the Scientific Committee (10–15 December, 2012) to the Commission, relevant to the WPEB (provided at [Appendix A](#)).
- 2) Research recommendations and priorities for IOTC Working Parties in 2013 (provided at [Appendix B](#)).

The recommendations contained in [Appendix A](#) were provided to the Commission for consideration at its 17th Session held in May 2013. A separate paper, IOTC–2013–WPEB09–04 will address the responses from the Commission.

The recommendations contained in [Appendix B](#) will be reviewed and updated throughout the course of the WPEB09 meeting.

DISCUSSION

In addition to the recommendations outlined in [Appendix A](#) and [Appendix B](#), the SC made several other comments relevant to the WPEB, which participants are asked to consider:

Ecological risk assessment

The SC **NOTED** the results of a preliminary ecological risk assessment (ERA) of shark species caught in the Indian Ocean by longline and purse seine gears, which was a request made by the Commission at its 15th Session in 2011. The SC **RECOGNISED** the highly valuable information provided by this ERA which produced a ranked list of the most vulnerable shark species to longline and purse seine gears as detailed below. (para. 104 of the SC15 report)

The SC **NOTED** the list of the 10 most vulnerable shark species to longline gear ([Table 4](#)) and purse seine gear ([Table 5](#)), as determined by the productivity susceptibility analysis, compared to the list of shark species/groups required to be recorded for each gear, contained in Resolution 12/03 *on the recording of catch and effort by fishing vessels in the IOTC area of competence*. (para. 105 of the SC15 report)

TABLE. 4. List of the 10 most vulnerable shark species to longline gear compared to the list of shark species/groups required to be recorded in logbooks, as listed in Resolution 12/03 *on the recording of catch and effort by fishing vessels in the IOTC area of competence*.

PSA vulnerability ranking	Most susceptible shark species to longline gear	FAO Code	Shark species listed in IOTC Resolution 12/03 for longline gear	FAO Code
1	Shortfin mako (<i>Isurus oxyrinchus</i>)	SMA	Blue shark (<i>Prionace glauca</i>)	BSH
2	Bigeye thresher (<i>Alopias superciliosus</i>)	BTH	Mako sharks (<i>Isurus</i> spp.)	MAK
3	Pelagic thresher (<i>Alopias pelagicus</i>)	PTH	Porbeagle shark (<i>Lamna nasus</i>)	POR
4	Silky shark (<i>Carcharhinus falciformis</i>)	FAL	Hammerhead sharks (<i>Sphyrna</i> spp.)	SPN
5	Oceanic whitetip shark (<i>Carcharhinus longimanus</i>)	OCS		
6	Smooth hammerhead (<i>Sphyrna zygaena</i>)	SPZ		
7	Porbeagle (<i>Lamna nasus</i>)	POR		
8	Longfin mako (<i>Isurus paucus</i>)	LMA		
9	Great hammerhead (<i>Sphyrna mokarran</i>)	SPM		
10	Blue shark (<i>Prionace glauca</i>)	BSH		

TABLE. 5. List of the 10 most vulnerable shark species to purse seine gear compared to the list of shark species/groups required to be recorded in logbooks, as listed in Resolution 12/03 *on the recording of catch and effort by fishing vessels in the IOTC area of competence*.

PSA vulnerability ranking	Most susceptible shark species to purse seine gear	FAO Code	Shark species listed in IOTC Resolution 12/03 for purse seine gear	FAO Code
1	Oceanic whitetip shark (<i>Carcharhinus longimanus</i>)	OCS	Whale sharks (<i>Rhincodon typus</i>)	RHN
2	Silky shark (<i>Carcharhinus falciformis</i>)	FAL		
3	Shortfin mako (<i>Isurus oxyrinchus</i>)	SMA		
4	Great hammerhead (<i>Sphyrna mokarran</i>)	SPM		
5	Pelagic stingray (<i>Pteroplatytrygon violacea</i>)	PLS		
6	Scalloped hammerhead (<i>Sphyrna lewini</i>)	SPL		
7	Smooth hammerhead (<i>Sphyrna zygaena</i>)	SPZ		
8	Longfin mako (<i>Isurus paucus</i>)	LMA		
9	Dusky shark (<i>Carcharhinus obscurus</i>)	DUS		
10	Tiger shark (<i>Galeocerdo cuvier</i>)	GAC		

Implementation of the regional observer scheme

The SC **EXPRESSED** its strong concern regarding the low level of reporting to the IOTC Secretariat of both the observer trip reports and the list of accredited observers since the start of the ROS in July 2010. Such a low level of implementation and reporting is detrimental to the work of the SC, in particular regarding the estimation of incidental catches of non-targeted species, as requested by the Commission. In particular, the SC **NOTED** that the IOTC Regional Observe Programme could be a significant source of potential data for marine turtles (e.g. sex and species composition, etc.) for some longline and gillnet fisheries. (para. 217 of the SC15 report)

The SC **RECOGNISED** that the implementation of national observer programmes is not a simple task, e.g. due to piracy activities, and that the financial and human costs involved in the deployment of observers are important to consider, in particular for CPCs with large fishing fleets. However, the SC **AGREED** that the minimum observer coverage of 5% set out by Resolution 11/04 is already below the minimum necessary coverage estimated by simulations, and that it should not be lowered. (para. 221 of the SC15 report)

Executive summaries for marine turtles, seabirds and shark species

The SC15 report may be downloaded from the IOTC website in English and French:

English: <http://iotc.org/files/proceedings/2012/sc/IOTC-2012-SC15-R%5BE%5D.pdf> [14 mb]

French: <http://iotc.org/files/proceedings/2012/sc/IOTC-2012-SC15-R%5BF%5D.pdf> [14 mb]

RECOMMENDATION

That the WPEB **NOTE** paper IOTC–2013–WPEB09–03 which outlined the main outcomes of the Fifteenth Session of the Scientific Committee (SC15), specifically related to the work of the WPEB, and consider how to progress outstanding issues at the present meeting.

APPENDICES

Appendix A: Consolidated set of recommendations of the Fifteenth Session of the Scientific Committee (10–15 December, 2012) to the Commission, relevant to the Working Party on Ecosystems and Bycatch.

Appendix B: Research recommendations and priorities for IOTC working parties in 2013 and 2014.

APPENDIX A

CONSOLIDATED SET OF RECOMMENDATIONS OF THE FIFTEENTH SESSION OF THE SCIENTIFIC COMMITTEE (10–15 DECEMBER, 2012) TO THE COMMISSION RELEVANT TO THE WORKING PARTY ON ECOSYSTEMS AND BYCATCH

Extract of the Report of the Fifteenth Session of the Scientific Committee

(IOTC–2012–SC15–R; Appendix XXXVIII, PAGES 275–288)

STATUS OF MARINE TURTLES, SEABIRDS AND SHARKS IN THE INDIAN OCEAN

Sharks

- SC15.04 (para. 212) The SC **RECOMMENDED** that the Commission note the management advice developed for a subset of shark species commonly caught in IOTC fisheries for tuna and tuna-like species:
- Blue sharks (*Prionace glauca*) – [Appendix XXIV](#)
 - Oceanic whitetip sharks (*Carcharhinus longimanus*) – [Appendix XXV](#)
 - Scalloped hammerhead sharks (*Sphyrna lewini*) – [Appendix XXVI](#)
 - Shortfin mako sharks (*Isurus oxyrinchus*) – [Appendix XXVII](#)
 - Silky sharks (*Carcharhinus falciformis*) – [Appendix XXVIII](#)
 - Bigeye thresher sharks (*Alopias superciliosus*) – [Appendix XXIX](#)
 - Pelagic thresher sharks (*Alopias pelagicus*) – [Appendix XXX](#)

Marine turtles

- SC15.05 (para. 213) The SC **RECOMMENDED** that the Commission note the management advice developed for marine turtles, as provided in the Executive Summary encompassing all six species found in the Indian Ocean:
- Marine turtles – [Appendix XXXI](#)

Seabirds

- SC15.06 (para. 214) The SC **RECOMMENDED** that the Commission note the management advice developed for seabirds, as provided in the Executive Summary encompassing all species commonly interacting with IOTC fisheries for tuna and tuna-like species:
- Seabirds – [Appendix XXXII](#)

GENERAL RECOMMENDATIONS TO THE COMMISSION

Status of development and implementation of Nation Plans of Action for seabirds and sharks

- SC15.10 (para.37) The SC **NOTED** the current status of development and implementation of Nation Plans of Action for sharks and **RECOMMENDED** that all CPCs without an NPOA-Sharks expedite the development and implementation of their NPOA-Sharks, and to report progress to the WPEB in 2013, recalling that NPOA-Sharks are a framework that should facilitate estimation of shark catches, and development and implementation of appropriate management measures, which should also enhance the collection of bycatch data and compliance with IOTC Resolutions.
- SC15.11 (para.38) The SC **RECOMMENDED** that the Commission note the updated status of development and implementation of National Plans of Action for sharks and seabirds, by each CPC as provided at [Appendix V](#).

Report of the Eighth Session of the Working Party on Ecosystems and Bycatch (WPEB08)

Data reporting requirements

- SC15.14 (para.89) **NOTING** that despite the mandatory reporting requirements detailed in Resolutions 05/05, 10/02, 10/06, 12/03 and 12/04, bycatch data remain largely unreported by CPCs and the SC **RECOMMENDED** that the Compliance Committee and the Commission address this non-compliance by taking steps to develop mechanisms which would ensure that CPCs fulfil their bycatch reporting obligations.

Gillnet fisheries of the Indian Ocean

- SC15.15 (para.90) The SC **NOTED** that gillnet fisheries are expanding rapidly in the Indian Ocean, with gillnets often being longer than 2.5 km in contravention with UN and IOTC Resolutions, and that their use is considered to have a substantial impact on marine ecosystems. **NOTING** that in 2012 the Commission adopted Resolution 12/01 on the implementation of the precautionary approach, the majority of the SC **RECOMMENDED** that the Commission freeze catch and effort by gillnet fisheries in the Indian Ocean in the near future, until sufficient information has been gathered to determine the impact of gillnet fleets on IOTC stocks and bycatch species caught by gillnet fisheries targeting tuna and tuna-like species, noting that the implementation of any such measure would be difficult.
- SC15.16 (para.91) The SC **RECOMMENDED** that the Commission considers allocating funds to support a regional review of the data available for gillnet fleets operating in the Indian Ocean. The scientists from all CPCs having gillnet fleets in the Indian Ocean should provide at the next session of the WPEB, a report summarising the known information on bycatch in their gillnet fisheries, including sharks, marine turtles and marine mammals, with estimates of their likely order of magnitude where more detailed data are not available.
- SC15.17 (para.92) The SC **RECOMMENDED** that the Commission allocate funds to carry out training for CPCs having gillnet fleets on species identification, bycatch mitigation and data collection methods and also to identify other potential sources of assistance to carry out such activities.

Sharks – Status of catch statistics and data reporting

- SC15.18 (para.96) **NOTING** that the information on retained catches and discards of sharks contained in the IOTC database remains very incomplete for most fleets despite their mandatory reporting status, and that catch-and-effort as well as size data are essential to assess the status of shark stocks, the SC **RECOMMENDED** that all CPCs collect and report catches of sharks (including historical data), catch-and-effort and biological data on sharks, as per IOTC Resolutions, so that more detailed analysis can be undertaken for the next WPEB meeting.
- SC15.19 (para.97) **NOTING** that there is extensive literature available on pelagic shark fisheries and interactions with fisheries targeting tuna and tuna-like species, in countries having fisheries for sharks, and in the databases of governmental or non-governmental organisations, the SC **AGREED** on the need for a major data mining exercise in order to compile data from as many sources as possible and attempt to rebuild historical catch series of the most commonly caught shark species. In this regard, the SC **RECOMMENDED** that the Commission allocates funds for this activity, in the 2013 IOTC budget.
- SC15.20 (para.99) **NOTING** that Resolution 10/02 *mandatory statistical requirements for IOTC members and Cooperating Non-Contracting Parties (CPC's)*, makes provision for data to be reported to the IOTC on “*the most commonly caught shark species and, where possible, to the less common shark species*”, without giving any list defining the most common and less common species, and recognising the general lack of shark data being recorded and reported to the IOTC Secretariat, the SC **RECOMMENDED** that Resolution 10/02 is revised in order to include the list of most commonly caught elasmobranch species (Table 3) for which nominal catch data shall be reported as part of the statistical requirement for IOTC CPCs.

TABLE 3. List of the most commonly caught elasmobranch species

Common name	Species	Code
Manta and devil rays	Mobulidae	MAN
Whale shark	<i>Rhincodon typus</i>	RHN
Thresher sharks	<i>Alopias spp.</i>	THR
Mako sharks	<i>Isurus spp.</i>	MAK
Silky shark	<i>Carcharhinus falciformis</i>	FAL
Oceanic whitetip shark	<i>Carcharhinus longimanus</i>	OCS
Blue shark	<i>Prionace glauca</i>	BSH
Hammerhead shark	Sphyrnidae	SPY
Other Sharks and rays	–	SKH

Sharks – Mitigation measures

- SC15.21 (para.100) The SC **RECOMMENDED** research and development of mitigation measures to

minimise bycatch of the oceanic whitetip shark and its unharmed release for all types of fishing gears, and that CPCs with data on oceanic whitetip sharks (i.e. total annual catches, CPUE time series and size data) make these available to the next WPEB meeting.

Sharks – Shark mortality in relation with the use of drifting FADs

SC15.22 (para.103) The SC **RECOMMENDED** that the Commission note the following in regards to the request to the SC outlined in paragraph 11 of Resolution 12/04, on FAD design:

c) *Develop improved FAD designs to reduce the incidence of entanglement of marine turtles, including the use of biodegradable materials*

Only non-entangling FADs, both drifting and anchored, should be designed and deployed to prevent the entanglement of sharks, marine turtles or any other species, based on the following three basic principles:

1. The surface structure of the FAD should not be covered, or only covered with non-meshed material.
2. If a sub-surface component is used, it should not be made from netting but from non-meshed materials such as ropes or canvas sheets.
3. To reduce the amount of synthetic marine debris, the use of natural or biodegradable materials (such as Hessian canvas, hemp ropes, etc.) for drifting FADs should be promoted.

Sharks – Inclusion of two additional shark species to the list of mandatory data requirements for longline gear (Res 12/03)

SC15.23 (para.110) The SC **RECOMMENDED** that, in line with Recommendation 12/15 on the best available science, the list of shark species (or groups of species) for longline gear under Resolution 12/03 should be supplemented by two other shark species which were estimated to be at risk in longline fisheries by the ERA conducted in 2012, the silky shark (*Carcharinus falciformis*) and the oceanic whitetip shark (*Carcharinus longimanus*). The SC **ADVISED** the Commission to define the most appropriate means of collecting this additional information, considering the limitations of both options (logbooks and/or regional observer scheme) presented in paragraphs [108](#) and [109](#).

Sharks – Fin to body weight ratio

SC15.24 (para.111) The SC **ADVISED** the Commission to consider, that the best way to encourage full utilisation of sharks, to ensure accurate catch statistics, and to facilitate the collection of biological information, is to revise the IOTC Resolution 05/05 *concerning the conservation of sharks caught in association with fisheries managed by IOTC* such that all sharks must be landed with fins attached (naturally or by other means) to their respective carcass. However, the SC **NOTED** that such an action would have practical implementation and safety issues for some fleets and may degrade the quality of the product in some cases. The SC **RECOMMENDED** all CPCs to obtain and maintain the best possible data for IOTC fisheries impacting upon sharks, including improved species identification.

Sharks – Wire leaders/traces

SC15.25 (para.113) On the basis of information presented to the SC in 2011 and in previous years, the SC **RECOGNISED** that the use of wire leaders/traces in longline fisheries may imply targeting of sharks. The SC therefore **RECOMMENDED** to the Commission that if it wishes to reduce catch rates of sharks by longliners it should prohibit the use of wire leaders/traces.

Marine turtles – Data and reporting requirements

SC15.26 (para.114) The SC **RECOMMENDED** that IOTC Resolution 12/04 *on the conservation of marine turtles* is strengthened to ensure that CPCs report annually on the level of incidental catches of marine turtles by species, as provided at Table 6.

TABLE 6. Marine turtle species reported as caught in fisheries within the IOTC area of competence.

Common name	Scientific name
Flatback turtle	<i>Natator depressus</i>
Green turtle	<i>Chelonia mydas</i>
Hawksbill turtle	<i>Eretmochelys imbricata</i>
Leatherback turtle	<i>Dermochelys coriacea</i>
Loggerhead turtle	<i>Caretta caretta</i>

Olive ridley turtle

Lepidochelys olivacea

SC15.27 (para.117) The SC **NOTED** that it is mandatory for marine turtles (in number) to be recorded on logbooks for purse seine and gillnet but not for longline and **RECOMMENDED** that marine turtles, as a group, be added to Resolution 12/03 *on the recording of catch and effort by fishing vessels in the IOTC area of competence*, in Annex II (Record once per set/shot/operation) paragraph 2.3 (SPECIES) for longline gear.

SC15.28 (para.118) **NOTING** that Resolution 10/02 does not make provisions for data to be reported to the IOTC on marine turtles, the SC **RECOMMENDED** that Resolution 10/02 is revised in order to make the reporting requirements coherent with those stated in Resolution 12/04 on the conservation of marine turtles.

Marine turtles – Ecological Risk Assessment Marine Turtles

SC15.29 (para.122) **NOTING** that only a few CPCs have made data available to the consultant, the SC **RECOMMENDED** that all IOTC CPCs contact the scientist leading the ERA in order to refine and complete the analysis before the next WPEB meeting.

SC15.30 (para.123) The SC **RECOMMENDED** that the IOTC Secretariat include an additional 20 day consultancy in the 2013 IOTC budget for the Commission's consideration, so that the Ecological Risk Assessment for marine turtles may be continued and that new information received may be incorporated.

Requests contained in IOTC Conservation and Management Measures

SC15.31 (para.124) The SC **RECOMMENDED** that the Commission note the following in regards to the requests to the SC outlined in paragraph 11 of Resolution 12/04:

a) *Develop recommendations on appropriate mitigation measures for gillnet, longline and purse seine fisheries in the IOTC area*

Gillnet: The absence of data for marine turtles on effort, spatial deployment and bycatch in the IOTC area of competence makes any recommendation regarding mitigation measures for this gear premature. Improvements in data collection and reporting of marine turtle interactions with gillnets, and research on the effect of gear types (i.e. net construction and colour, mesh size and soak times) are necessary.

Longline: Current information suggests inconsistent spatial catches (i.e. high catches in few sets) and by gear/fishery. The most important mitigation measures relevant for longline fisheries are to:

1. Support further research into the effectiveness of circle hooks as part of a multiple species approach, so as to avoid, as far as possible, promoting a mitigation measure for one bycatch taxon that might exacerbate bycatch problems for other taxa.
2. Release live animals after careful dehooking/disentangling/line cutting (see handling guidelines in the IOTC marine turtle identification cards).

Purse seine: see c) below

b) *Develop regional standards covering data collection, data exchange and training*

1. The development of standards using the IOTC guidelines for the implementation of the Regional Observer Scheme should be undertaken, as it is considered the best way to collect reliable data related to marine turtle bycatch in the IOTC area of competence.
2. The Chair of the WPDCS to work with the IOSEA MoU Secretariat, which has already developed regional standards for data collection, and revise the observer data collection forms and observer reporting template as appropriate, as well as current recording and reporting requirements through IOTC Resolutions, to ensure that the IOTC has the means to collect quantitative and qualitative data on marine turtle bycatch.
3. Encourage CPCs to use IOSEA expertise and facilities to train observers and crew to increase post-release survival rates of marine turtles.

c) *Develop improved FAD designs to reduce the incidence of entanglement of marine turtles, including the use of biodegradable materials*

1. Refer to paragraph [103](#) above.

Summary discussion of matters common to Working Parties**IOTC species identification cards****Shark, marine turtle and seabird identification cards**

- SC15.42 (para.181) The SC **RECOMMENDED** that the Commission allocate additional funds in 2013 to print further sets of the shark, seabird and marine turtle identification cards developed by the IOTC Secretariat, noting that expected costs are in the vicinity of US\$6,000 per 1000 sets of cards.

Identification cards – general

- SC15.45 (para.185) The SC **RECOMMENDED** that IOTC CPCs translate, print and disseminate the identification cards to their observers and field samplers (Resolution 11/04), and as feasible, to their fishing fleets targeting tuna, tuna-like and shark species. This would allow accurate observer, sampling and logbook data on tuna and tuna-like species to be recorded and reported to the IOTC Secretariat as per IOTC requirements.

Employment of a Fisheries Officer (Science)

- SC15.48 (para.195) **NOTING** the rapidly increasing scientific workload at the IOTC Secretariat, including a wide range of additional science related duties assigned to it by the SC and the Commission, and that the current Fishery Officer supporting the IOTC scientific activities will depart at the end of February 2013, the SC strongly **RECOMMENDED** that the Commission approve the hiring of a Fishery Officer (Science) to work on a range of matters in support of the scientific process, including but not limited to science capacity building, bycatch and regional observer schemes.

Implementation of the Regional Observer Scheme

- SC15.51 (para.218) The SC **RECOMMENDED** that all IOTC CPCs urgently submit, and keep up-to-date, their list of accredited observers to the IOTC Secretariat and implement the requirements of Resolution 11/04 *on a Regional Observer Scheme*, which states that:
“The observer shall, within 30 days of completion of each trip, provide a report to the CPCs of the vessel. The CPCs shall send within 150 days at the latest each report, as far as continuous flow of report from observer placed on the longline fleet is ensured, which is recommended to be provided with 1°x1° format to the Executive Secretary, who shall make the report available to the Scientific Committee upon request. In a case where the vessel is fishing in the EEZ of a coastal state, the report shall equally be submitted to that Coastal State.” (para. 11)
- SC15.52 (para.220) The SC **RECOMMENDED** that the Commission consider how to address the lack of implementation of observer programmes by CPCs for their fleets and reporting to the IOTC Secretariat as per the provision of Resolution 11/04 *on a Regional Observer Scheme*, noting the update provided in [Appendix XXXIII](#).

RECOMMENDATIONS TO SPECIFIC CPCs AND/OR OTHER BODIES

Report of the Eighth Session of the Working Party on Ecosystems and Bycatch (WPEB08)

Sharks – Status of catch statistics and data reporting

- SC15.74 (para.95) The SC **NOTED** the main shark data issues that are considered to negatively affect the quality of the statistics available at the IOTC Secretariat, by type of dataset and fishery, which are provided in Appendix VIII of the WPEB08 report (IOTC–2012–WPEB08–R), and **RECOMMENDED** that the CPCs listed in the Appendix, make efforts to remedy the data issues identified and to report back to the WPEB at its next meeting, noting the status and type of datasets that need to be provided for sharks, and other bycatch species provided at Appendix IX of the WPEB08 report (IOTC–2012–WPEB08–R).
- SC15.75 (para.98) The SC **NOTED** the absence of information on shark catches from artisanal fisheries in Mozambique and **RECOMMENDED** that information on shark catches from those fisheries is collected and reported in due course.

Summary discussion of matters common to Working Parties

CPUE discussion summary

- SC15.93 (para.187) The SC **EXPRESSED** concern that the majority of the important recommendations issued by the SC to the various working parties in previous years in regards to CPUE standardisation have often not been addressed, and that there was no major progress on these issues during the past two years. Therefore, the SC **RECOMMENDED** that the scientists in charge of this work make every possible effort to consider those guidelines in future CPUE standardisation work in order to improve the quality of CPUE series which are essential to stock assessments.

- SC15.94 (para.188) **NOTING** that a set of ‘core areas’ which are likely to be robust to frequent fluctuations of external factors, may be more informative than using all of the data available, especially when other species were being targeted, the SC **RECOMMENDED** that ‘core areas’ be identified and agreed to by each working party so as to facilitate and monitor population abundance trends across all fleets. This should be carried out intersessionally and presented at the proposed longline CPUE workshop, to be held in the second quarter of 2013.

Risk-based approaches to determining stock status

- SC15.95 (para.190) The SC **RECOMMENDED** that the IOTC Secretariat facilitate a process to provide the necessary information to the SC so that it may consider the Weight-of-Evidence approach to determine species stock status, as an addition to the current approach of relying solely on fully quantitative stock assessment techniques.

APPENDIX B

RESEARCH RECOMMENDATIONS AND PRIORITIES FOR IOTC WORKING PARTIES IN 2013 AND 2014

Extract of the Report of the Fifteenth Session of the Scientific Committee

(IOTC–2012–SC15–R; Appendix XXXV, PAGES 263, 266–268)

The IOTC Scientific Committee **RECOMMENDED** that each of its Working Parties undertake the following research tasks as priorities in 2013 and tentatively for 2014:

Working Party on Ecosystems and Bycatch (WPEB)

Core topics for research

The SC **RECOMMENDED** the following core topic areas as priorities for research over the coming two years, taking into account data gaps, capacity among CPCs, and areas for implementation:

- ***Ecological Risk Assessment***
 - i. Sharks – interpretation of consultant report
 - ii. Marine turtles – interpretation of consultant report
- ***Shark stock status analyses (development of abundance indices)***
 - i. Develop/improve accurate CPUE indices for analysis
 - ii. Develop methods to estimate historical catch series by gear.
 - iii. Develop life history and biological patterns for the species (namely migration patterns and distribution patterns).
- ***Depredation***
 - i. Longline fishery depredation
- ***Bycatch mitigation***
 - i. Sharks
 - ii. Seabirds – line weighting
 - iii. Marine turtles
 - iv. Marine mammals
- ***Capacity building***
 - i. Scientific assistance to CPCs and specific fleets considered to have the highest risk to bycatch species (e.g. gillnet fleets and longline fleets).

Extract of the Report of the Fifteenth Session of the Scientific Committee

(IOTC–2012–SC15–R; Appendix XXXVI, PAGE 269)

The IOTC Scientific Committee **RECOMMENDED** that each of its Working Parties undertake stock assessments and development of stock status indicators following the schedule shown in Table 1.

Table 1. Schedule of stock assessments for IOTC species and species of interest in 2013 and tentatively for 2014–2017, and for the WPM priorities.

Species	2013	2014	2015	2016	2017
<i>Working Party on Ecosystems and Bycatch</i>					
Bigeye thresher sharks	Indicators				
Blue sharks	Indicators				
Silky sharks	Indicators				
Oceanic whitetip sharks	Indicators				
Pelagic thresher sharks	Indicators				
Shortfin mako sharks	Indicators				
Scalloped hammerhead sharks	Indicators				