

## OUTCOMES OF THE 16<sup>th</sup> SESSION OF THE SCIENTIFIC COMMITTEE

PREPARED BY: IOTC SECRETARIAT, 13 JUNE 2014

### PURPOSE

To inform participants at the 4<sup>th</sup> Working Party on Neritic Tunas (WPNT04) of the recommendations arising from the 16<sup>th</sup> Session of the IOTC Scientific Committee (SC) held from 2–6 December 2013, specifically relating to the work of the WPNT.

### BACKGROUND

At the 16<sup>th</sup> Session of the SC, the SC noted and considered the recommendations made by the WPNT in 2013 that included requests to address the deficiencies in data collection, monitoring and reporting by CPCs, as well as to carry out targeted research on understanding stock structure of the neritic tuna species under the IOTC mandate.

IOTC code	English name	Scientific name
LOT	Longtail tuna	<i>Thunnus tonggol</i>
FRI	Frigate tuna	<i>Auxis thazard</i>
BLT	Bullet tuna	<i>Auxis rochei</i>
KAW	Kawakawa	<i>Euthynnus affinis</i>
COM	Narrow-barred Spanish mackerel	<i>Scomberomorus commerson</i>
GUT	Indo-Pacific king mackerel	<i>Scomberomorus guttatus</i>

Based on the recommendations arising from the WPNT03, the SC16 adopted a set of recommendations, provide at [Appendix A](#) of this paper.

The recommendations contained in [Appendix A](#) were provided to the Commission for consideration at its 18<sup>th</sup> Session held in May 2014. A separate paper, IOTC–2014–WPNT04–04 addresses the responses and actions of the Commission.

In addition, the SC16 reviewed and endorsed a work plan for the WPNT (*Research recommendation and priorities for IOTC Working Parties*), including a revised assessment schedule, as detailed in [Appendix B](#) and [Appendix C](#). A separate paper (IOTC–2014–WPNT04–04) will outline the review and development process for a *Program of Work* for the WPNT for the next five years.

### DISCUSSION

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

#### *Stock structure research*

The SC **AGREED** that in the absence of reliable evidence relating to stock structure bullet tuna, frigate tuna, kawakawa, longtail tuna, Indo-Pacific king mackerel and narrow-barred Spanish mackerel are assumed to exist as single stocks throughout the Indian Ocean, until proven otherwise. The need for genetic and tagging studies on neritic tunas in order to further define the stock structure of neritic tunas was identified as a high priority. (para. 35 of the SC15 Report)

#### *Environmental conditions/functioning*

**NOTING** the importance of the environmental conditions and their inter-annual variability on CPUE indices of IOTC species, and more generally, on recruitment and biomass, the SC **REQUESTED** that the working parties take into account more environment and ecosystem-related issues when undertaking stock assessment analyses. This could be achieved by encouraging a greater participation of oceanographers and ecosystem modellers in the work of the working parties. Additional funds may be needed to attract modellers to IOTC working parties. (para. 140 of the SC15 Report)

**Identification cards – general**

The SC **AGREED** that IOTC CPCs should 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. (para. 148 of the SC15 Report)

**Executive summaries for neritic tuna species**

The SC also adopted revised Executive Summaries for each of the neritic tuna species that can be found as appendices to the SC16 report, and which can be downloaded from the IOTC website in English and French:

English: <http://iotc.org/science/scientific-committee>

French: <http://iotc.org/fr/science/comit%C3%A9-scientifique>

**RECOMMENDATION**

That the WPNT:

- 1) **NOTE** paper IOTC–2014–WPNT04–03 which outlined the main outcomes of the 16<sup>th</sup> Session of the Scientific Committee (SC16), specifically related to the work of the WPNT.
- 2) **CONSIDER** how best to progress these issues at the present meeting.

**APPENDICES**

**Appendix A:** Consolidated set of recommendations of the 16<sup>th</sup> Session of the Scientific Committee (2–6 December 2013) to the Commission, relevant to the Working Party on Neritic Tunas.

**Appendix B:** Research recommendations and priorities for the IOTC Working Party on Neritic Tunas (WPNT).

**Appendix C:** Assessment schedule for WPNT.

## APPENDIX A

**CONSOLIDATED SET OF RECOMMENDATIONS OF THE 16<sup>th</sup> SESSION OF THE SCIENTIFIC COMMITTEE (2-6 DECEMBER 2013) TO THE COMMISSION RELEVANT TO THE WORKING PARTY ON NERITIC TUNAS**

*Extract of the Report of the 16<sup>th</sup> Session of the Scientific Committee*

*(IOTC-2013-SC16-R; Appendix XXXVIII, PAGES 301-312)*

**STATUS OF TUNA AND TUNA-LIKE RESOURCES IN THE INDIAN OCEAN**

*Tuna and seerfish – Neritic species*

- SC16.03 ([para. 165](#)) The SC **RECOMMENDED** that the Commission note the management advice developed for each neritic tuna species as provided in the Executive Summary for each species:
- Bullet tuna (*Auxis rochei*) – [Appendix XVII](#)
  - Frigate tuna (*Auxis thazard*) – [Appendix XVIII](#)
  - Kawakawa (*Euthynnus affinis*) – [Appendix XIX](#)
  - Longtail tuna (*Thunnus tonggol*) – [Appendix XX](#)
  - Indo-Pacific king mackerel (*Scomberomorus guttatus*) – [Appendix XXI](#)
  - Narrow-barred Spanish mackerel (*Scomberomorus commerson*) – [Appendix XXII](#)

**GENERAL RECOMMENDATIONS TO THE COMMISSION, TO SPECIFIC CPCs AND/OR OTHER BODIES**

*Standardisation of IOTC Working Party and Scientific Committee report terminology*

- SC16.07 ([para. 23](#)) The SC **ADOPTED** the reporting terminology contained in [Appendix IV](#) and **RECOMMENDED** that the Commission considers adopting the standardised IOTC Report terminology, to further improve the clarity of information sharing from, and among its subsidiary bodies.

*Report of the Third Session of the Working Party on Neritic Tunas (WPNT03)*

- SC16.10 ([para. 32](#)) The SC **RECOMMENDED** that the Commission increase the IOTC Capacity Building budget line so that capacity building workshops/training can be carried out in 2014 and 2015 on the collection, reporting and analyses of catch and effort data for neritic tuna and tuna-like species. Where appropriate this training session shall include information that explains the entire IOTC process from data collection to analysis and how the information collected is used by the Commission to develop Conservation and Management Measures.
- SC16.11 ([para. 33](#)) **NOTING** that some CPCs, in particular from India, Indonesia and Thailand, have collected large data sets on neritic tuna species over long time periods, the SC reiterated its previous **RECOMMENDATION** that this data, as well as data from other CPCs, be submitted to the IOTC Secretariat as per the requirements adopted by IOTC Members in Resolution 10/02. This would allow the WPNT to develop stock status indicators or comprehensive stock assessments of neritic tuna species in the future.
- SC16.12 ([para. 34](#)) **NOTING** that monofilament gillnets are recognised to have highly detrimental impacts on pelagic ecosystems, as they are non-selective, and that the use of monofilament gillnets have already been banned in a large number of IOTC CPCs, the SC **RECOMMENDED** that each CPC using monofilament gillnets to estimate total catch and bycatch, etc., taken by monofilament gillnets in comparison to other net material, and to report the findings at the next WPNT meeting.

**Stock structure research**

- SC16.13 ([para. 36](#)) The SC **RECOMMENDED** that the IOTC Secretariat act in a project coordination role, as well as to seek funding for stock structure projects in the Indian Ocean. Initially, this would require the establishment of an intersessional discussion group with participants from the WPNT, and experts in the field of stock structure differentiation. CPCs with current or planned stock structure studies are encouraged to circulate project proposals to the wider group for comment that may be considered for submitting to prospective funding partners with support from the IOTC Secretariat.

*Summary discussion of matters common to Working Parties***Capacity building activities**

SC16.56 ([para. 136](#)) The SC **RECOMMENDED** that the Commission increase the IOTC Capacity Building budget line so that capacity building workshops/training can be carried out in 2014 and 2015 on the collection, reporting and analyses of catch and effort data for neritic tuna and tuna-like species. Where appropriate this training session shall include information that explains the entire IOTC process from data collection to analysis and how the information collected is used by the Commission to develop Conservation and Management Measures.

*Implementation of the Regional Observer Scheme*

SC16.65 ([para. 177](#)) The SC **RECOMMENDED** that as a priority, the IOTC Secretariat should immediately commence work with CPCs that are yet to develop and implement a Regional Observer Scheme that would meet the requirements contained in Resolution 11/04, and provide an update at the next session of the WPEB.

SC16.66 ([para. 178](#)) The SC **RECOMMENDED** that the Commission considers funding of future activities under the Regional Observer Scheme, by allocating specific funds to the implementation of capacity building activities in developing coastal countries of the IOTC Region, as detailed in [Table 17](#).

## APPENDIX B

## RESEARCH RECOMMENDATIONS AND PRIORITIES FOR IOTC WORKING PARTIES IN 2014 AND 2015

*Extract of the Report of the 16<sup>th</sup> Session of the Scientific Committee  
(IOTC–2013–SC16–R; Appendix XXXIV, PAGES 292–294)*

The SC **NOTED** the proposed work plans and priorities of each of the Working Parties and **AGREED** to the revised work plans as outlined in Appendix XXXIV. The Chairs and Vice-Chairs of each working party shall ensure that the efforts of their working party is focused on the core areas contained within the appendix, taking into account any new research priorities identified by the Commission at its next Session. (IOTC–2013–SC16–R, Para. 193)

The SC **REQUESTED** that all Working Parties provide their work plans with items prioritised based on the requests of the Commission of the SC. (IOTC–2013–SC16–R, Para. 194)

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**Working Party on Neritic Tunas (WPNT)**

*(Extracts from IOTC–2013–WPNT03–R)*

**Priority species for research in 2014**

The WPNT **AGREED** to the list of priority research topics for neritic tunas (priority species) as provided in Table 1.

The WPNT **AGREED** that as regionally appropriate, kawakawa, longtail tuna and narrow-barred Spanish mackerel, are the priority species for research in 2014, although research may also continue on other neritic tuna species on an opportunistic basis.

The WPNT **AGREED** that once the new Fishery Officer (Science) is recruited to the Secretariat, that he/she shall undertake a literature review of all available population parameters for either kawakawa or longtail tuna, to support further stock assessment of these species in 2014.

**Capacity building**

Capacity building activities (regional or sub-regional) by the IOTC Secretariat should focus on using a single neritic tuna species as an example, for the following core areas. Focus species should be kawakawa and longtail tuna for the eastern Indian Ocean and kawakawa and narrow-barred Spanish mackerel for the western Indian Ocean.

- Data collection, compilation and reporting
- Stock structure determination (population genetics)
- Data poor stock assessment approaches.

**Priority projects for 2013 and 2014****Stock structure – High priority**

The WPNT **AGREED** that there was a clear need to determine the degree of shared stocks for all neritic tunas under the IOTC mandate in the Indian Ocean, so as to better equip the SC in providing management advice based on unit stocks delineated by geographic distribution and connectivity.

The WPNT **AGREED** that Table 2 should be used as a starting point for research project development to delineate potential stock structure for neritic tunas in the Indian Ocean, and that in the absence of reliable evidence relating to stock structure, a precautionary approach should be undertaken whereby bullet tuna, frigate tuna, kawakawa, longtail tuna, Indo-Pacific king mackerel and narrow-barred Spanish mackerel are assumed to exist as single stocks throughout the Indian Ocean, until proven otherwise.

The WPNT **AGREED** that research on stock structure should take two separate approaches:

- genetic research to determine the connectivity of neritic tunas throughout their distributions: such studies should be developed at the sub-regional level (Table 2), with the assistance and support from the IOTC Secretariat for the development of project proposals.
- tagging research to better understand and estimate exploitation rates, the movement dynamics, possible spawning locations, natural mortality, fishing mortality and post-release mortality of neritic tunas from various fisheries in the Indian Ocean.

The WPNT **NOTED** that tagging projects could potentially be more expensive for neritic tunas than for oceanic tunas, due to their lower abundance and that catches are mainly by artisanal vessels for which an extensive recovery network would need to be developed through the different coastal states of the Indian Ocean.

The WPNT **AGREED** that genetic studies be given a higher priority for immediate research over tagging studies until appropriate funding has been identified. Any study should be designed in a such a way as to simultaneously collect biological material (e.g. tissue/fin clippings, otoliths, gonads, length/weight, and possibly morphometrics) in order to estimate biological parameters for future stock assessments. Both genetic, tagging and biological studies would need to be rigorously planned and preferably combined, to ensure data is collected across all temporal and spatial strata for each gear type to ensure biological parameters are representative of the population(s) being fished.

#### **Biological information**

The WPNT **AGREED** that quantitative biological studies are necessary for all neritic tunas throughout their range to determine key biological parameters including age-at-maturity and fecundity-at-age/length relationships, age-length keys, age and growth, which will be fed into future stock assessments.

#### **CPUE standardisation**

The WPNT **AGREED** that there was an urgent need to develop standardised CPUE series for each neritic tuna species for the Indian Ocean as a whole or by sub-region as appropriate, once stock structure and management units have been determined.

#### **Stock assessment**

**NOTING** that there is an urgent need to carry out stock status determinations for neritic tunas and tuna-like species under the IOTC mandate, and that at present the data held at the IOTC Secretariat would be insufficient to undertake integrated stock assessments for any stock, the SC **AGREED** that alternative approaches be used to determine stock status, by building layers of partial evidence, such as CPUE indices combined with catch data, life-history parameters and yield-per recruit metrics, as well as the use of data poor assessment approaches. In 2014, kawakawa, longtail tuna and narrow-barred Spanish mackerel should be the focus species.

**Table 1.** Priority research projects for obtaining the information necessary to develop stock status indicators for neritic tuna species in the Indian Ocean

<b>Research project</b>	<b>Sub-projects</b>	<b>Priority</b>
Stock structure (connectivity)	Genetic research to determine the connectivity of neritic tunas throughout their distributions	High
	Tagging research to better understand the movement dynamics, possible spawning locations, natural mortality, fishing mortality and post-release mortality of neritic tunas from various fisheries in the Indian Ocean	Med
	Gen-tag methodology	Med
	Otolith microchemistry/isotope research	Low
Biological information (parameters for stock assessment)	Age and growth research	High
	Age-at-Maturity	High
	Fecundity-at-age/length relationships	Medium
Ecological information	Review of literature on life history parameters to assess stock structure on morphometric data	High
	Feeding ecology	Low
	Life history research	Low
CPUE standardisation	Develop standardised CPUE series for each neritic tuna species for the Indian Ocean	High
Stock assessment / Stock indicators	At present the data held at the IOTC Secretariat would be insufficient to undertake stock assessments for any neritic tuna species under the IOTC mandate/simplified approaches could be pursued	High
	Develop alternative approaches to determining stock status via and indicator based assessment	High

**Table 2.** Neritic tunas and tuna-like species under the IOTC mandate with potential sub-regions/countries/management unit/sub-stocks identified for collaborative research.

Species / Stock	Possible sub-regions and countries / Management Units				
	East Africa (Kenya, Tanzania, Mozambique, Madagascar, Seychelles, Mauritius, La Réunion, Comoros, <b>Somalia</b> )	Gulf, Oman Sea (I.R. Iran, Oman, Pakistan, <b>U.A.E.</b> , Yemen, <b>Somalia, Qatar</b> )	West India (India, Pakistan, Sri Lanka, Maldives)	East India/Bay of Bengal (India, Sri Lanka, Malaysia, Indonesia, Thailand, <b>Myanmar,</b> <b>Bangladesh</b> )	Indonesia and Australia (Australia, Malaysia, Indonesia, Thailand)
Bullet tuna ( <i>Auxis rochei</i> )	-	-	████████████████████	████████████████████	████████████████████
Frigate tuna ( <i>Auxis thazard</i> )	████████████████████	████████████████████	████████████████████	████████████████████	████████████████████
Kawakawa ( <i>Euthynnus affinis</i> )	████████████████████	████████████████████	████████████████████	████████████████████	████████████████████
Longtail tuna ( <i>Thunnus tonggol</i> )	████████████████████	████████████████████	████████████████████	████████████████████	████████████████████
Indo-Pacific king mackerel ( <i>Scomberomorus guttatus</i> )	████████████████████	████████████████████	████████████████████	████████████████████	████████████████████
Narrow-barred Spanish mackerel ( <i>Scomberomorus commerson</i> )	████████████████████	████████████████████	████████████████████	████████████████████	████████████████████

Black bars refer to potential management units for further examination/research, by species. Countries in red text are not yet Members of the IOTC, however collaborative research is encouraged.

**APPENDIX C**  
**ASSESSMENT SCHEDULE FOR IOTC WORKING PARTIES**

*Extract of the Report of the 16<sup>th</sup> Session of the Scientific Committee*

*(IOTC–2013–SC16–R; Appendix XXXV, PAGE 297)*

The SC **ADOPTED** a revised assessment schedule, ecological risk assessment and other core projects for 2014–18, for the tuna and tuna-like species under the IOTC mandate, as well as the current list of key shark species of interest, as outlined in Appendix XXXV. (IOTC–2014–SC16–R, Para. 195)

Species	2014	2015	2016	2017	2018
<i>Working Party on Neritic Tunas</i>					
Bullet tuna	Indicators	<b>Full assessment</b>			
Frigate tuna	Indicators	<b>Full assessment</b>			
Kawakawa	<b>Full assessment</b>	Indicators			
Longtail tuna	<b>Full assessment</b>	Indicators			
Indo-Pacific king mackerel	Indicators	<b>Full assessment</b>			
Narrow-barred Spanish mackerel	<b>Full assessment</b>	Indicators			