OUTCOMES OF THE FIFTENTH SESSION OF THE SCIENTIFIC COMMITTEE

PREPARED BY: IOTC SECRETARIAT, 16 JUNE 2013

PURPOSE

To inform participants at the Third Working Party on Neritic Tunas (WPNT03) of the recommendations arising from the Fifteenth Session of the IOTC Scientific Committee (SC) held from 10–15 December 2012, specifically relating to the work of the WPNT.

BACKGROUND

At the 15th Session of the SC, the SC noted and considered the recommendations made by the WPNT 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 on understanding stock structure of the neritic tuna species under the IOTC mandate.

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

Based on the recommendations arising from the WPNT02, two sets of recommendations were adopted at SC15 that are relevant to the work of the WPNT:

1) Consolidated set of recommendations of the Fifteenth Session of the Scientific Committee (10–15 December, 2012) to the Commission, relevant to the WPNT (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–WPNT03–04 will address the responses from the Commission.

The recommendations contained in Appendix B will be reviewed and updated throughout the course of the WPNT03 meeting.

DISCUSSION

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

Requests for guidance from CPCs

The SC **ENDORSED** the request from coastal CPCs having fisheries targeting neritic tunas that the IOTC Secretariat coordinate the different research activities developed and implemented at national and regional levels if appropriate, with the aiming of determining the stock structure and more generally, the status of neritic tuna stocks in the IOTC area of competence. (para. 172 of the SC15 Report)

Stock structure

The SC **NOTED** 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. (para. 173 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 SC15 report, and which can 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 WPNT **NOTE** paper IOTC–2013–WPNT03–03 which outlined the main outcomes of the Fifteenth Session of the Scientific Committee (SC15), specifically related to the work of the WPNT, and consider how to progress outstanding issues at the present meeting.

APPENDICES

Appendix A: Consolidated set of recommendations of the Fourteenth Session of the Scientific Committee (12–17 December, 2011) to the Commission, relevant to the Working Party on Neritic Tunas.

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 NERITIC TUNAS

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

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

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

Tuna and mackerel – Neritic species

SC15.03 (para. 211) 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 XVIII
- Frigate tuna (*Auxis thazard*) – Appendix XIX
- Kawakawa (*Euthynnus affinis*) – Appendix XX
- Longtail tuna (*Thunnus tonggol*) – Appendix XXI
- Indo-Pacific king mackerel (*Scomberomorus guttatus*) – Appendix XXII
- Narrow-barred Spanish mackerel (*Scomberomorus commerson*) – Appendix XXIII

GENERAL RECOMMENDATIONS TO THE COMMISSION

Meeting Participation Fund (MPF)

SC15.07 (para.13) The SC **NOTED** that the increased attendance by national scientists from developing CPCs to IOTC Working Parties and the SC in 2012 (46 in 2012; 33 in 2011) was partly due to the IOTC MPF, adopted by the Commission in 2010 (Resolution 10/05 *on the establishment of a Meeting Participation Fund for developing IOTC Members and non-Contracting Cooperating Parties*), and **RECOMMENDED** that the Commission maintain this fund into the future.

SC15.08 (para.15) The SC **RECOMMENDED** that the rules of procedure for the administration of the IOTC meeting participation fund be modified to include funding for Chairs and Vice-Chairs from IOTC developing coastal states, noting that without access to this fund, the ability of developing coastal state scientists to offer their services as Chairs and Vice-Chairs will be very limited. The same rules for document provision shall apply to Chairs and Vice-Chairs funded by the MPF.

Report of the Second Session of the Working Party on Neritic Tunas (WPNT02)

SC15.36 (para.165) The SC **RECOMMENDED** that the Commission note that neritic tuna and tuna-like species under the IOTC mandate have become as important or more important as the three tropical tuna species (bigeye tuna, skipjack tuna and yellowfin tuna) to most IOTC coastal states with a total estimated catch of 605,359 t being landed in 2011, and as a result, should be receiving appropriate management resources from the IOTC. In fact, neritic tuna species are in many cases, the major commercial tuna and tuna-like species being exploited by the majority of Indian Ocean coastal states and as such, should be given the same status in terms of time and resource investment.

SC15.37 (para.166) **NOTING** that monofilament gillnets are recognised to have highly detrimental impacts on fishery 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 the IOTC Secretariat facilitate a review of the use of monofilament gillnets by IOTC CPCs to i) determine the number of CPCs using then, ii) estimate total catch and bycatch, etc., taken by monofilament gillnets in comparison to other net material, and iii) to report the findings at the next WPNT meeting.

IOTC database for neritic tunas

SC15.38 (para.168) The SC **NOTED** that some CPCs have data collection systems that do not include provisions for the sampling of neritic tuna species, as required by the Commission, and **RECOMMENDED** that the existing sampling systems are extended to facilitate data collection for neritic tunas, by species, so as to fulfil their mandatory reporting requirements regarding those species. The SC further **NOTED** that some CPCs have fisheries directed at neritic tuna species and may require assistance with the implementation of data collection for those fisheries and **RECOMMENDED** that such CPCs contact the IOTC Secretariat for further guidance.

Summary discussion of matters common to Working Parties

Capacity building activities

SC15.39 (para.177) The SC **RECOMMENDED** that the Commission increase the IOTC Capacity Building budget line so that capacity building workshops/training can be carried out in 2013 and 2014 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.

Funding for Chairs and Vice-Chairs to attend IOTC meetings

SC15.40 (para.178) The SC **RECOMMENDED** that the IOTC Secretariat include a proposed budget line in the IOTC budget for 2013 and all future years, that would cover the travel expenses of Chairs and Vice-Chairs from developing countries (and developed countries when they are not attached to any national institutions) who are otherwise unable to obtain funding to support their attendance at their respective working party meeting, and for a Chair or Vice-Chair to attend the SC meeting each year.

IOTC species identification cards

Tunas and mackerels

SC15.43 (para.183) The SC **RECOMMENDED** that the Commission allocate funds in the 2013 budget to develop and print sets of identification cards for the three tropical tuna, two temperate tuna, and six neritic tuna and seerfish species under the IOTC mandate, noting that the total estimated production and printing costs for the first 1000 sets of the identification cards is around a maximum of US$16,200 (Table 8). The IOTC Secretariat shall seek funds from potential donors to print additional sets of the identification cards at US$5,500 per 1000 sets of cards.

TABLE 8. Estimated production and printing costs for 1000 sets of tuna species identification cards (11 species of tropical, temperate and neritic tunas and mackerels)

Description	Unit price	Units required	Total
Purchase images	US$100	22 (2 per species, plus 2 covers)	2,200
Contract days	US$350	20	7,000
Printing plates / plate	US$100	15	1,500
Printing /1000 sets	US$5500	1	5,500
Total estimate (US$)			**16,200**

Fishing hook identification cards

SC15.44 (para.184) Noting the continued confusion in the terminology of various hook types being used in IOTC fisheries, (e.g. tuna hook vs. J-hook; definition of a circle hook), the SC **RECOMMENDED** that the IOTC Secretariat develop an identification guide for hooks and pelagic gears used in IOTC fisheries, as staffing and financial resources permit, and to distribute the guide to all CPCs once completed. The SC also **AGREED** that circle hooks are defined by hooks having their point turned at least 90° from their shank.

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.

Dedicated workshop on CPUE standardisation

SC15.46 (para.189) **NOTING** the combined recommendations from the WPB, WPTmT and WPTT to hold a dedicated workshop on CPUE standardisation, the SC **RECOMMENDED** that a dedicated, informal workshop on CPUE standardisation, including issues of interest for other IOTC species, should be carried out before the next round of stock assessments in 2013. The terms of reference (TORs) for the workshop are provided in Appendix VII. Where possible it should include a range of invited experts, including those working on CPUE standardisation in other ocean/RFMOs, in conjunction with scientists from main tuna fishing countries, and supported by the IOTC Secretariat. The IOTC Secretariat shall include a budget item for this workshop, for the consideration of the Commission.

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.

Chairs and Vice-Chairs of the Working Parties

SC15.49 (para.196) The SC **RECOMMENDED** that the Commission note and endorse the Chairs and Vice-Chairs for each of the IOTC Working Parties, as provided in Appendix VIII.

Examination of the Effect of Piracy on Fleet Operations and Subsequent Catch and Effort Trends

SC15.50 (para.204) The SC **RECOMMENDED** that given the lack of quantitative analysis of the effects of piracy on fleet operations and subsequent catch and effort trends, and the potential impacts of piracy on fisheries in other areas of the Indian Ocean through the relocation of longliners to other fishing grounds, specific analysis should be carried out and presented at the next WPTT meeting by the CPCs most affected by these activities, including Japan, Republic of Korea and Taiwan,China. The Chair of the WPTT shall facilitate the analysis and report back to the SC in 2013.

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 Second Session of the Working Party on Neritic Tunas (WPNT02)

SC15.87 (para.166) **NOTING** that monofilament gillnets are recognised to have highly detrimental impacts on fishery 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 the IOTC Secretariat facilitate a review of the use of monofilament gillnets by IOTC CPCs to i) determine the number of CPCs using then, ii) estimate total catch and bycatch, etc., taken by monofilament gillnets in comparison to other net material, and iii) to report the findings at the next WPNT meeting.

IOTC database for neritic tunas

SC15.88 (para.167) The SC **NOTED** the main data issues that are considered to negatively affect the quality of the statistics for neritic tunas available at the IOTC Secretariat, by type of dataset and fishery, which are provided in Appendix VI of the WPNT02 report, and **RECOMMENDED** that the CPCs listed in the appendix, make efforts to remedy the data issues identified and to report back to the WPNT at its next meeting.

SC15.89 (para.169) The SC **RECOMMENDED** that the IOTC Secretariat request that any datasets for neritic tuna species held by SWIOFP, or any other parties, be provided to the IOTC Secretariat before the next meeting of the WPNT.

SC15.90 (para.170) **NOTING** that the nominal catch data (NC) for India, Indonesia and Thailand provided at the WPNT02 meeting were found to conflict with the NC data history provided by these countries in recent years, and for catch-and-effort data for most of the history of the gillnet fleet, the SC

RECOMMENDED that India, Indonesia and Thailand liaise with the IOTC Secretariat to provide a fully justified revised catch history which will replace the data currently held by the IOTC Secretariat before the next WPNT meeting.

Data set availability

SC15.91 (para.171) **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 **RECOMMENDED** that this data, as well as data for 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.

Priorities for an Invited Expert at the next WPNT meeting

SC15.92 (para.174) The SC **RECOMMENDED** the following core areas of expertise and priority areas for contribution that need to be enhanced for the next meeting of the WPNT in 2013, by an Invited Expert:

- Expertise: stock structure/connectivity; including from regions other than the Indian Ocean; data poor assessment approaches.
- Priority areas for contribution: kawakawa, longtail tuna and narrow-barred Spanish mackerel biology, ecology and fisheries.

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.

Revised 'Guidelines for the Presentation of Stock assessment Models'

SC15.96 (para.247) **NOTING** the conclusions and recommendation from the KOBE 3 meeting held in 2011,

> "*Kobe III participants **agreed** that the K2SM is a useful tool for evaluating management strategies or options, **provided that the uncertainties in assessments can be adequately quantified**. Participants acknowledged that **considerable work remains to be done** both to reduce uncertainty in stock assessments, and to develop common standards or guidelines for how uncertainty is reflected. Kobe III participants recommended that the scientific committees and bodies of the tRFMOs jointly develop methods to **better quantify the uncertainty** and understand how this uncertainty is reflected in the risk assessment inherent in the K2SM.*"

the SC **RECOMMENDED** that in 2013, collaborative efforts be developed among tRFMO on this matter, by targeting the development of how to build K2SM with well estimated levels of uncertainty.

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 Neritic Tunas (WPNT)

Priority projects for 2013 and 2014

The SC **ENDORSED** the list of priority research topics for neritic tunas as provided in Table 1, and those CPCs and others, who have committed to undertake / commence the projects in 2013.

Table 3. Priority research projects for obtaining the information necessary to develop stock status indicators for neritic tuna species in the Indian Ocean

Research project	Sub-projects	Priority	Interested parties
Stock structure (connectivity)	Genetic research to determine the connectivity of neritic tunas throughout their distributions	High	Bay of Bengal countries (proposal to be initiated by Malaysia); QUT (Australia); Maldives; Iran, Pakistan, Oman, U.A.E.
	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	Maldives, Malaysia, Indonesia
	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	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	IOTC Secretariat

Stock structure

The SC **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 defensible management units.

The SC **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 SC **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 SC **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 SC **NOTED** the range of tagging projects which have been carried out on neritic tunas in the Indian Ocean and **REQUESTED** that Malaysia/SEAFDEC provide the results of the studies at the next WPNT meeting.

The SC **NOTED** that the Maldives has prepared a project proposal to undertake tagging studies in its waters, and **ENCOURAGED** other countries to develop similar proposals, with the assistance of the IOTC Secretariat if required.

The SC **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, ototliths, 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.

The SC **NOTED** the offer by the Invited Experts to assist in developing stock structure studies at the Queensland University of Technology (QUT), Australia and in developing genetic studies with collaboration from CSIRO and welcomed students from coastal CPCs to undertake such analysis at QUT. As the first step, QUT offered to facilitate workshops and training for IOTC CPCs to encourage technology transfer with partial funding from QUT and other sources to be identified.

Biological information

The SC **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.

The SC **NOTED** that I.R. Iran, U.A.E., Oman and Australia all have laboratories equipped with otolith and/or genetic processing facilities and associated expertise. CPCs interested in undertaking biological research should make contact with the relevant agencies to make use of this regional expertise/facilities.

The SC **AGREED** that in situations where direct ageing has not been undertaken, age composition could be derived from a well designed length frequency analysis.

CPUE standardisation

The SC **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.

The SC **AGREED** that where feasible, support should be provided by the IOTC Secretariat and other CPCs, to aid in the development of standardised CPUE series for each neritic tuna species.

The SC **RECOMMENDED** that the IOTC Secretariat undertake a series of initial training workshops/capacity building exercises on CPUE standardisation, stock assessments and other data analysis in 2013 and 2014, and for the SC to request that the Commission allocate additional funds for this purpose in the IOTC budget.

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 considered 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.

Priority species for research in 2013

The SC **AGREED** that as regionally appropriate, kawakawa, longtail tuna and narrow-barred Spanish mackerel, should be the priority species for research in 2013, although research should also continue on other neritic tuna species. Capacity building activities by the IOTC Secretariat should focus on using a single species as an example.

Table 2. Neritic tunas and tuna-like species under the IOTC mandate with potential sub-regions/stock identified

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

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.