REVIEW OF CONSERVATION AND MANAGEMENT MEASURES RELATING TO TROPICAL TUNAS

PREPARED BY: IOTC SECRETARIAT[1], 4 OCTOBER 2016

PURPOSE

To encourage participants at the Working Party on Tropical Tunas (WPTT18) to review the existing Conservation and Management Measures (CMM) relevant to the three tropical tuna species, noting the new CMMs contained in document IOTC–2016–WPTT18–04; and as necessary to 1) provide recommendations to the Scientific Committee on whether modifications may be required; and 2) recommend whether other CMMs may be required.

BACKGROUND

In addition to the CMMs outlined in document IOTC–2016–WPTT18–04, tropical tunas in the Indian Ocean are currently subject to several other CMMs adopted by the Commission, including:

Resolution 14/02 *For the conservation and management of tropical tunas stocks in the IOTC area of competence***.** This Resolution removes obsolete and ineffective elements from the previous Resolution 12/13, in particular the month long closed area following advice from the Scientific Committee that the current closure is likely to be ineffective, as fishing effort will be redirected to other fishing grounds in the Indian Ocean. The positive impacts of the moratorium within the closed area would likely be offset by effort reallocation, as they will result in similar catch rates and total annual catches. In addition, the area closure includes not only the high seas but also part of the EEZ of Somalia, which may be detrimental to the aspirations of Somalia with respect to granting of fishing rights within its EEZ. The revised Resolution retains only those elements related to the already established process for an allocation system or any other relevant measures to be developed to manage tropical tuna stocks.

Resolution 05/01 *On Conservation and Management Measures for bigeye tuna*. This Resolution limits CPC catches of bigeye tuna to recent levels reported by the IOTC Scientific Committee. It also limits, by a non-binding request, Taiwan, Province of China to limit their annual bigeye tuna catch in the IOTC area of competence to 35,000 tonnes.

Resolution 03/01 *On the limitation of fishing capacity of Contracting Parties and Cooperating Non-Contracting Parties*. This Resolution requires Contracting Parties and Cooperating Non-Contracting Parties (CPCs) which have more than 50 vessels on the 2003 IOTC Record of Vessels, shall limit in 2004 and following years, the number of their fishing vessels larger than 24 meters length overall (hereafter LSFVs) to the number of its fishing vessels registered in 2003 in the IOTC Record of Vessels.

Resolution 16/01 *On an Interim Plan for Rebuilding the Indian Ocean Yellowfin Tuna Stock*. This Resolution introduces a scheme for reduction of catches of yellowfin (from 2014 levels), by fishery, for all fishing vessels targeting tuna and tuna like species in the Indian Ocean of 24 meters overall length and over, and those under 24 meters if they fish outside the EEZ of their flag State, within the IOTC area of competence. Paragraph 7 of Resolution 15/08 are now superseded by paragraph 3b of this resolution, which limits the number of Fish Aggregating Devices (FADs) at no more than 425 active instrumented buoys and that 850 instrumented buoys may be acquired annually per vessel.

Resolution 16/02 *On harvest control rules for skipjack tuna in the IOTC Area of Competence*. The Resolution implements a Harvest Control Rule (HCR) for Indian Ocean Skipjack tuna, based on SC recommendations, including the new guidance on reference points in cases where MSY-based reference points are difficult to estimate. The Resolution uses the biomass limit reference point of 20% of the unfished level (BLIM = 0.2B0) and the target biomass reference point of 40% of the unfished level (BTARG = 0.4B0), consistent with the SC advice that reference points based on depletion level should be used for stocks where MSY-based reference points cannot be robustly estimated and with international conventions and current practices followed in other tRFMOs.

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DISCUSSION

As part of best practice, the WPTT is obliged to review existing CMMs and consider whether their science-based components need to be updated. If this is the case, then the WPTT should provide clear, science-based recommendations for the Scientific Committee's consideration.

RECOMMENDATION

That the WPTT **NOTE** paper IOTC–2016–WPTT18–05 which aims to encourage the WPTT to review the existing Conservation and Management Measures (CMMs) relevant to tropical tunas, and as necessary to 1) provide recommendations to the Scientific Committee on whether modifications may be required; and 2) recommend whether other CMMs may be required.

APPENDICES

Appendix A: Resolution 14/02 *For the conservation and management of tropical tunas stocks in the IOTC area of competence.*

Appendix B: Resolution 05/01 *On Conservation and Management Measures for bigeye tuna.*

Appendix C: Resolution 03/01 *On the limitation of fishing capacity of Contracting Parties and Cooperating Non-Contracting Parties.*

Appendix D: Resolution 16/01 *On interim plan for rebuilding the Indian Ocean Yellowfin Tuna Stock in the IOTC Area of Competence.*

Appendix E: Resolution 16/02 *On harvest control rules for skipjack tuna in the IOTC Area of Competence.*

APPENDIX A

RESOLUTION 14/02
FOR THE CONSERVATION AND MANAGEMENT OF TROPICAL TUNAS STOCKS IN THE IOTC AREA OF COMPETENCE

The Indian Ocean Tuna Commission (IOTC),

RECOGNISING that based on past experience in the fishery, the potential production from the resource can be negatively impacted by excessive fishing effort;

TAKING INTO ACCOUNT the available scientific information and advice, in particular the IOTC Scientific Committee conclusions whereby the yellowfin tuna stock might have been over or fully exploited and the bigeye tuna stock may have been fully exploited in recent years; RECOGNISING that during the 12th IOTC scientific meeting held in Seychelles from 30 November to 04 December 2009, the IOTC Scientific Committee recommended that yellowfin tuna and bigeye tuna catches should not exceed the MSY levels which have been estimated at 300,000 tonnes for yellowfin tuna and at 110,000 tonnes for bigeye tuna;

ACKNOWLEDGING that the implementation of a TAC without a quota allocation would result in an inequitable distribution of the catches and fishing opportunities among the IOTC Members and Cooperating Non-Contracting Parties (CPCs) and non-CPCs;

FURTHER RECOGNISING that the tuna artisanal fisheries sector needs strengthening in terms of catch statistics reporting in order to more closely follow the catch situations and notwithstanding improvement in the industrial fishery catch statistics reporting requirements;

NOTING the importance of applying the precautionary approach for the management of the tropical tuna and swordfish stock, in particular yellowfin tuna and bigeye tuna in the Indian Ocean;

ADOPTS, in accordance with the provisions of Article IX, paragraph 1 of the IOTC Agreement, the following:

1. CPCs shall implement the following action plan:

    a) Establishment of an allocation system (Quota) or any other relevant measures based on the IOTC Scientific Committee recommendations for the main targeted species under the IOTC competence;

    b) Advise on the best reporting requirement of the artisanal tuna fisheries and implementation of an appropriate data collection system.

2. This Resolution supersedes Resolution 12/13 *For the conservation and management of tropical tunas stocks in the IOTC area of competence*.

APPENDIX B

RESOLUTION 05/01
ON CONSERVATION AND MANAGEMENT MEASURES FOR BIGEYE TUNA

The Indian Ocean Tuna Commission (IOTC),

RECOGNISING the need for action to ensure the achievement of the IOTC's objectives to conserve and manage tuna and tuna-like species in the IOTC area of competence;

RECALLING the adoption by IOTC of Resolution 01/04, [superseded by Resolution 14/01] in relation to the limitation of fishing capacity on bigeye tuna of Contracting Parties and Cooperating Non-Contracting Parties (CPC's);

ACKNOWLEDGING that the limitation of fishing capacity alone will not be sufficient to limit effort or total catch of tuna and tuna-like species, particularly bigeye tuna;

AWARE that due to illegal activity and underestimation of the total mortality of bigeye tuna the current assessment of the status of the stock is likely to be overly optimistic;

RECOGNISING that the IOTC Scientific Committee has recommended that a reduction in the catches of bigeye tuna from all fishing gears should be implemented as soon as possible;

ADOPTS, in accordance with paragraph 1 of Article IX of the IOTC Agreement, that:

1. Contracting and Cooperating Non-Contracting Parties (CPC's) shall limit their catch of bigeye tuna to their recent levels of catch reported by the IOTC Scientific Committee.

2. The Commission shall request Taiwan, Province of China to limit their annual bigeye tuna catch in the IOTC Area to 35,000 tonnes.

3. At the 10th Session of the Commission shall establish, for a three year period, interim catch levels for CPC's catching more than 1000t of bigeye tuna.

4. CPC's, including developing coastal states, in particular small island developing states and territories, with catches under 1000 tonnes who intend to substantially increase these catches will be allowed to submit 'Fleet Development Plans' during the 3 year interim period referred to in paragraph 3 above.

5. During this three year period the Commission shall develop a mechanism to allocate, for specific time periods, bigeye tuna quotas for all CPC's.

6. Future access to the tuna and tuna-like resources found within the area of competence of the IOTC will, in part, be determined on the level of responsibility shown by CPC's in relation to this measure.

7. The IOTC Scientific Committee be tasked to provide advice, including advice on;

   - the effects of different levels of catch on the SSB (in relation to MSY or other appropriate reference point);
   - the impact of misreported and illegal catch of bigeye tuna on the stock assessment and required levels of catch reduction; and
   - valuation of the impact of different levels of catch reduction by main gear types.

8. In relation to the foregoing, the Commission took note of the developing coastal states, in particular small island developing states and territories within the IOTC convention area [area of competence] whose economies depend largely on fisheries.

APPENDIX C

RESOLUTION 03/01
ON THE LIMITATION OF FISHING CAPACITY OF CONTRACTING PARTIES AND COOPERATING NON-CONTRACTING PARTIES

The Indian Ocean Tuna Commission (IOTC),

RECALLING the adoption of FAO Agreement to Promote Compliance with International Conservation and Management Measures by Fishing Vessels on the High Seas;

RECOGNISING that paragraph 1 of the Resolution 99/1: 'On the Management of Fishing Capacity and on the Reduction of the Catch of Juvenile Bigeye Tuna by Vessels, including Flag of Convenience Vessels, Fishing for Tropical Tunas in the IOTC area of competence', adopted at the 4th Session of the Commission, stipulate that the 2000 IOTC Session would consider the limitation of the capacity of the fleet of large-scale tuna vessels (greater than 24 m LOA) to the appropriate level;

RECALLING the adoption by IOTC in 2001 of the Resolution 01/04 [superseded by Resolution 14/01] on limitation of fishing effort of non-Members of IOTC whose vessels fish bigeye tuna;

RECOGNISING that the IOTC Scientific Committee recommended that a reduction in catches of bigeye tuna from all gears should be implemented as soon as possible; that the stock of yellowfin tuna is being exploited close to, or possibly above MSY; and that the level of fishing effort of swordfish should not be increased;

RECOGNISING that FAO International Plan of Action for the Management of the Fishing Capacity (IPOA) provides, in its Objectives and Principles that "States and Regional Fisheries Organisations confronted with an overcapacity problem, where capacity is undermining achievement of long-term sustainability outcomes, should endeavour initially to limit at present level and progressively reduce the fishing capacity applied to affected fisheries";

TAKING INTO ACCOUNT the need to have due regard for the interests of all Members concerned, in conformity with the rights and obligations of those Members under international law and in particular, to the rights and obligations of developing countries of the Indian Ocean rim with respect to entry into the high-seas fisheries in the IOTC area of competence;

ADOPTS, in accordance with the provisions of Article IX, paragraph 1 of the Agreement establishing the IOTC, that:

1. Contracting Parties and Cooperating Non-Contracting Parties (CPCs) which have more than 50 vessels on the 2003 IOTC Record of Vessels, shall limit in 2004 and following years, the number of their fishing vessels larger than 24 meters length overall (hereafter LSFVs) to the number of its fishing vessels registered in 2003 in the IOTC Record of Vessels[2].

2. This limitation of number of vessels shall be commensurate with the corresponding overall tonnage expressed in GRT (Gross Registered Tonnage) or in GT (Gross Tonnage) and, where vessels are replaced, the overall tonnage shall not be exceeded.

3. Other CPCs which have the objective of developing their fleets above those authorisations currently foreseen under administrative processes, will draw up, a fleet development plan in accordance with the provisions of Resolution 02/05 [superseded by Resolution 05/02, then Resolution 07/02, then Resolution 13/02, then Resolution 14/04, then by Resolution 15/04]. This Plan shall be submitted to the Commission for information and record at the 2004/05 Sessions and should define, *inter alia*, the type, size and origin of the vessels and the programming of their introduction into the fisheries.

4. In relation to the foregoing, the Commission took note of the interests of the developing coastal States, in particular small island developing States and territories within the IOTC Convention Area [area of competence] whose economies depend largely on fisheries.

[2] Including authorisations currently foreseen under administrative process

APPENDIX D

RESOLUTION 16/01
ON INTERIM PLAN FOR REBUILDING THE INDIAN OCEAN YELLOWFIN TUNA STOCK IN THE IOTC AREA OF COMPETENCE

Keywords: Yellowfin tuna, Kobe Process, MSY, Precautionary Approach, Time-area-closures

The Indian Ocean Tuna Commission (IOTC),

CONSIDERING the objectives of the Commission to maintain stocks in perpetuity and with high probability, at levels not less than those capable of producing their maximum sustainable yield as qualified by relevant environmental and economic factors including the special requirements of developing States in the IOTC area of competence;

BEING MINDFUL of Article XVI of the IOTC Agreement regarding the rights of Coastal States and of Article 87 and 116 of the UN Convention of the Law of the Sea regarding the right to fish on the high seas;

RECOGNISING the special requirements of the developing states, particularly Small Island developing states in Article 24, of the Agreement for the Implementation of the Provisions of the United Nations Convention of the Law of the Sea of December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks (UNFSA);

RECALLING that Article 5, of UNFSA entitles the conservation and management of highly migratory fish stocks are based on best scientific evidence available and with special reference to Resolution 15/10 for a stock where the assessed status places it within the red quadrant, and with an aim to end overfishing with a high probability and to rebuild the biomass of the stock in as short time as possible.

FURTHER RECALLING that Article 6, of UNFSA, requires the states to be cautious during the application of precautionary approach when information is uncertain, unreliable or inadequate and this should not be a reason for postponing or failing to take conservation and management measures;

CONSIDERING the recommendations adopted by the KOBE II, held in San Sebastian, Spain, June 23 – July 3 2009; implementing where appropriate a freeze on fishing capacity on a fishery by fishery basis and such a freeze should not constrain the access to, development of, and benefit from sustainable tuna fisheries by developing coastal States.

FURTHER CONSIDERING the recommendations adopted by the KOBE IIII, held in La Jolla, California, 11- 15 July 2011; considering the status of the stocks, each RFMO should consider a scheme for reduction of over capacity in a way that does not constrain the access to, development of, and benefit from sustainable tuna fisheries, including on the high seas, by developing coastal States, in particular small island developing States, territories, and States with small and vulnerable economies; and Transfer of capacity from developed fishing members to developing coastal fishing members within its area of competence where appropriate.

FURTHER CONSIDERING the report by International Council for the Exploration of Sea and FAO Working Group on Fishing Technology and Fish Behaviour (2006), Gillnets are considered to be one of the least catch controllable and least environmentally sustainable gears;

FURTHER CONSIDERING the recommendations of the 18th Scientific Committee held in Bali, Indonesia, 23 – 27 November 2015 that the catches of yellowfin tuna have to be reduced by 20% of the 2014 levels to recover the stocks to levels above the interim target reference points with 50% probability by 2024.

NOTING THAT supply vessels contribute to the increase in effort and capacity of purse seiners and that the number of supply vessels has increased significantly over the years.

FURTHER CONSIDERING the discussions of the Working Party on Tropical Tuna held in Montpellier, France, 23 – 28 October 2015 on the limitations and the uncertainties in the stock assessment models due to the unavailability of standardized yellowfin tuna CPUE data;

FURTHER CONSIDERING the call by the United Nations General Assembly Resolution 70/75 upon the states to increase the reliance on scientific advice in developing, adopting and implementing conservation and management measures and to take into account the special requirements of developing states, including Small Island Developing States (SIDS) as highlighted in the SIDS Accelerated Modalities of Action (SAMOA) Pathway;

ADOPTS, in accordance with the provisions of Article IX, paragraph 1 of the IOTC Agreement, the following:

1. This resolution shall apply to all fishing vessels targeting tuna and tuna like species in the Indian Ocean of 24 meters overall length and over, and those under 24 meters if they fish outside the EEZ of their flag State, within the IOTC area of competence.

2. The CPCs will reduce their catch of yellowfin as follows:

3. Purse seine:
   a. CPCs whose Purse seine catches of yellowfin reported for 2014 were above 5000 MT to reduce their Purse seine catches of yellowfin by 15 % from the 2014 levels.
   b. The number of Fish Aggregating Devices (FADs) as defined in Resolution 15/08, paragraph 7, will be no more than 425 active instrumented buoys and 850 acquired annually instrumented buoys per purse seine vessel.
   c. Supply vessels: The total number of supply vessels by CPC on the IOTC active list shall not exceed half of the number of Purse seine vessels reported per CPC on the IOTC active list for the same year. Complementary to Resolution 15/08 on "*Procedures on FADs Management Plan including a limitation on the number of FADs, more detailed specifications of catch reporting from FAD sets, and the development of improved FAD designs to reduce the incidence of entanglement of non-target species*" and to Resolution 15/02 *"Mandatory statistical reporting requirements for IOTC Contracting Parties and Cooperating Non-Contracting Parties (CPCs)"*, CPC shall report annually which Purse seiners are served by each Supply vessel.

      In the light of assessments made available by the Working Group (WG) on FADs and the Scientific Committee, the Commission shall update, if necessary the above limits in point b) and c).

4. Gillnet: CPCs whose Gillnet catches of yellowfin reported for 2014 were above 2000 MT to reduce their Gillnet catches of yellowfin by 10 % from the 2014 levels.

5. Longline: CPCs whose Longline catches of yellowfin reported for 2014 were above 5000 MT to reduce their Longline catches of yellowfin by 10 % from the 2014 levels

6. CPCs' other gears: CPCs whose catches of yellowfin from other gears reported for 2014 were above 5000 MT to reduce their other gear catches of yellowfin by 5 % from the 2014 levels.

7. Flag States will determine appropriate methods for achieving these catch reductions, which could include capacity reductions, effort limits, *etc.*., and will report to the IOTC Secretariat in their Implementation Report, the measures they have taken ,

8. CPCs shall monitor the yellowfin tuna catches from their vessels in conformity with Resolution 15/01 *"On the recording of catch and effort data by fishing vessels in the IOTC area of competence"* and Resolution 15/02 *"Mandatory statistical reporting requirements for IOTC Contracting Parties and Cooperating Non-Contracting Parties (CPCs)"* and will provide a summary of most-recent yellowfin catches for the consideration of the IOTC Compliance Committee.

9. Each year, the Compliance Committee shall evaluate the level of compliance with the catch limits deriving from this Resolution and shall make recommendations to the Commission accordingly. The Scientific Committee via its Working Party on Tropical Tunas, shall in 2016, conduct a new assessment of the status of the Yellowfin stock using all available data.

10. The Scientific Committee via its Working Party on Tropical Tunas shall in 2018 undertake an evaluation of the effectiveness of the measures detailed in this Resolution, taking into account all sources of fishing mortality and possible alternatives aiming at returning and maintaining biomass levels at the Commission's target level. After consideration of the results of this evaluation, the Commission shall take corrective measures accordingly.
11. The Commission shall, based on the improved artisanal fishery data and the assessment of the state and impact of the artisanal fishery on the yellowfin stocks, take appropriate measures on the management of the artisanal yellowfin tuna fishery, at its Commission meeting in 2018.
12. The measures contained within this Resolution shall come into force from 1st January 2017; it shall be considered as interim measure and will be reviewed by the Commission no later than at its annual Session in 2019.
13. Nothing in this resolution shall pre-empt or prejudice future allocation mechanisms.

APPENDIX E

RESOLUTION 16/02

ON HARVEST CONTROL RULES FOR SKIPJACK TUNA IN THE IOTC AREA OF COMPETENCE

Keywords: Skipjack tuna; Reference Points; Harvest Control Rules; Precautionary Approach; Management Strategy Evaluation.

The Indian Ocean Tuna Commission (IOTC),

NOTING Article V, paragraph 2(c), of the IOTC Agreement is to adopt, in accordance with Article IX and on the basis of scientific evidence, Conservation and Management Measures to ensure the conservation of the stocks covered by the Agreement;

BEING MINDFUL of Article XVI of the IOTC Agreement regarding the rights of Coastal States, Article 87 and 116 of the UN Convention of the Law of the Sea regarding the right to fish on the high seas and of Article 24 of the Agreement for the Implementation of the Provisions of the United Nations Convention of the Law of the Sea of December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks (UNFSA) regarding recognition of the special requirements of developing states;

RECOGNISING Resolution 12/01 *On the implementation of the precautionary approach* calls on the Indian Ocean Tuna Commission to implement and apply the precautionary approach, in accordance Article 6 of the Agreement for the Implementation of the Provisions of the United Nations Convention of the Law of the Sea of December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks (UNFSA);

RECOGNISING the ongoing discussions on allocation and the need to avoid prejudicing future decision of the Commission;

FURTHER CONSIDERING the call by the United Nations General Assembly Resolution 70/75 upon the states to increase the reliance on scientific advice in developing, adopting and implementing conservation and management measures and to take into account the special requirements of developing states, including Small Island developing States as highlighted in the SIDS Accelerated Modalities of Action (SAMOA) Pathway;

CONSIDERING the recommendations adopted by the KOBE II, held in San Sebastian, Spain, June 23 – July 3 2009; implementing where appropriate a freeze on fishing capacity on a fishery by fishery basis and such a freeze should not constrain the access to, development of, and benefit from sustainable tuna fisheries by developing coastal States;

TAKING INTO ACCOUNT the need to have due regard for the interests of all Members concerned, in conformity with the rights and obligations of those Members under international law and in particular, to the rights and obligations for developing countries;

RECALLING Article 6, paragraph 3(b) of UNFSA that calls on States to implement the precautionary approach using the best scientific information available, using stock-specific reference points and outlining the action to be taken if they are exceeded;

FURTHER RECALLING that Article 7.5.3 of the FAO Code of Conduct for Responsible Fisheries also recommends the implementation of stock specific target and limit reference points, inter alia, on the basis of the precautionary approach;

ACKNOWLEDGING that implementing pre-agreed harvest strategies including harvest control rules is considered a critical component of modern fisheries management and international best practices for fisheries management;

FURTHER NOTING that a harvest control rule encompasses a set of well-defined, pre-agreed rules or actions used for determining a management action in response to changes in indicators of stock status with respect to reference points;

NOTING that the Scientific Committee at its 17th Session, recommended the Commission consider an alternative approach to identify biomass limit reference points, such as those based on biomass depletion levels, when the MSY-based reference points are difficult to estimate. In cases where MSY-based reference points can be robustly estimated, limit reference points may be based around MSY;

FURTHER NOTING that the Scientific Committee also recommended that in cases where MSY-based reference points cannot be robustly estimated, biomass limit reference points be set at 20% of unfished levels ($B_{LIM} = 0.2B_0$);

ACKNOWLEDGING that the IOTC Scientific Committee has initiated a Commission requested process leading to a management strategy evaluation (MSE) process to improve upon the provision of scientific advice on HCRs;

RECALLING obligations and agreements under Resolutions 12/02[3], 15/01[4], 15/02[5], and 15/10[6];

ADOPTS in accordance with paragraph 1 of Article IX of the IOTC Agreement, that:

Objectives

1.To maintain the Indian Ocean Tuna Commission skipjack tuna stock in perpetuity, at levels not less than those capable of producing maximum sustainable yield (MSY) as qualified by relevant environmental and economic factors including the special requirements of Developing Coastal States and Small Island Developing States in the IOTC area of competence and considering the general objectives identified in Resolution 15/10 (or any subsequent revision).

2.To use a pre-agreed harvest control rule (HCR) to maintain the skipjack tuna stock at, or above, the target reference point (TRP) and well above the limit reference point (LRP), specified in Resolution 15/10 (or any subsequent revision).

Reference Points

3.Consistent with paragraph 2 of Resolution 15/10, the biomass limit reference point, B_{lim}, shall be 20% of unfished spawning biomass[7] (i.e. $0.2B_0$).

4.Consistent with paragraph 3 of Resolution 15/10, the biomass target reference point, B_{targ}, shall be 40% of unfished spawning biomass (i.e. $0.4B_0$).

5.The HCR described in paragraphs 6–12 seeks to maintain the skipjack tuna stock biomass at, or above, the target reference point while avoiding the limit reference point.

Harvest Control Rule (HCR)

6.The skipjack tuna stock assessment shall be conducted every three (3) years, with the next stock assessment to occur in 2017. Estimates of 7(a–c) shall be taken from a model-based stock assessment that has been reviewed by the Working Party on Tropical Tunas and endorsed by the Scientific Committee via its advice to the Commission.

7.The skipjack tuna HCR shall recommend a total annual catch limit using the following three (3) values estimated from each skipjack stock assessment. For each value, the reported median from the reference case adopted by the Scientific Committee for advising the Commission shall be used.

a)The estimate of current spawning stock biomass (B_{curr});

b)The estimate of the unfished spawning stock biomass (B_0);

c)The estimate of the equilibrium exploitation rate (E_{targ}) associated with sustaining the stock at B_{targ}.

8.The HCR shall have five control parameters set as follows:

a)Threshold level, the percentage of B_0 below which reductions in fishing mortality are required, B_{thresh} = $40\%B_0$. If biomass is estimated to be below the threshold level, then fishing mortality reductions, as output by the HCR, will occur.

b)Maximum fishing intensity, the percentage of E_{targ} that will be applied when the stock status is at, or above, the threshold level I_{max} = 100%. When the stock is at or above the threshold level, then fishing intensity (I) = I_{max}

c)Safety level, the percentage of B_0 below which non-subsistence catches are set to zero i.e. the non-subsistence[8] fishery is closed B_{saftey}= $10\%B_0$.

3: 12/02: Data Confidentiality, policy and procedures
4: 15/01: On the recording of catch and effort data by fishing vessels in the IOTC Area of competence
5: 15/02: Mandatory statistical reporting requirements for IOTC Contracting Parties and Cooperating Non- Contracting Parties (CPCs)
6: 15/10: On Target and Limit Reference Points and a decision framework
7: The symbol B is used to refer to spawning biomass, the total mass of mature fish, i.e. B_0, B_{lim}, B_{targ} and B_{curr} all refer to different levels of spawning biomass.

[8] A subsistence fishery is a fishery where the fish caught are consumed directly by the families of the fishers rather than being bought by middle-(wo)men and sold at the next larger market, per the FAO Guidelines for the routine collection of capture fishery data. FAO Fisheries Technical Paper. No. 382. Rome, FAO. 1999. 113p.

d)Maximum catch limit (C_{max}), the maximum recommended catch limit = 900,000t. To avoid adverse effects of potentially inaccurate stock assessments, the HCR shall not recommend a catch limit greater than C_{max}. This value is based upon the estimated upper limit of the MSY range in the 2014 skipjack stock assessment.

e)Maximum change in catch limit (D_{max}), the maximum percentage change in the catch limit = 30%. To enhance the stability of management measures the HCR shall not recommend a catch limit that is 30% higher, or 30% lower, than the previous recommended catch limit.

9.The recommended total annual catch limit shall be set as follows:

a)If the current spawning biomass (B_{curr}) is estimated to be at or above the threshold spawning biomass i.e., $B_{curr} >= 0.4B_0$, then the catch limit shall be set at [I_{max} x E_{targ} x B_{curr}]

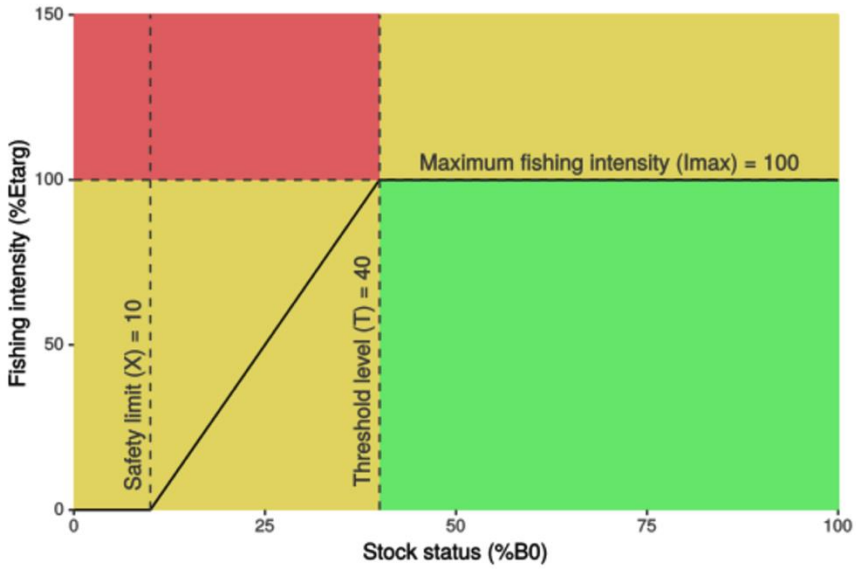
b)If the current spawning biomass (B_{curr}) is estimated to be below the threshold biomass i.e, $B_{curr} < 0.4B_0$, but greater than the safety level i.e.,$B_{curr} > 0.1B_0$, then the catch limit shall be set at [I x E_{targ} x B_{curr}]. See Table 1 in Appendix 1 for values of fishing intensity (I) for specific B_{curr}/B_0.

c)If the spawning biomass is estimated to be at, or below, the safety level, i.e. $B_{curr} <= 0.1B_0$ then the catch limit shall be at 0 for all fisheries other than subsistence fisheries.

d)In the case of (a) or (b), the recommended catch limit shall not exceed the maximum catch limit (C_{max}) and shall not increase by more than 30% or decrease by more than 30% from the previous catch limit.

e)In the case of (c) the recommended catch limit shall always be 0 regardless of the previous catch limit.

10.The HCR described in 8(a-e) produces a relationship between stock status (spawning biomass relative to unfished levels) and fishing intensity (exploitation rate relative to target exploitation rate) as shown below (See Table 1 in **Appendix 1** for specific values):



11.The catch limit shall by default, be implemented in accordance with the allocation scheme agreed for skipjack tuna by the Commission. In the absence of an allocation scheme, the HCR shall be applied as follows:

a)If the stock is at or above the Threshold level (i.e., $B_{curr} >= 0.4B_0$), then the HCR shall establish an overall catch limit.

b)If the stock falls below the Threshold level (i.e., $B_{curr} < 0.4B_0$), the fishing mortality reductions shall be implemented proportionally by CPCs for catches over 1 percent of the catch limit established by the HCR with due consideration to the aspirations and special requirements of Developing Coastal States and Small Island Developing States.

c)This paragraph shall not pre-empt or prejudice future allocation negotiations.

Review and exceptional circumstances

12.The HCR, including the control parameters, will be reviewed through further Management Strategy Evaluation (MSE), but no later than 2021 (i.e. five years from its implementation). Subject to the result of that review the current HCR may be refined or replaced with an alternative HCR.

13.In the case that the estimated spawning biomass falls below the limit reference point, the HCR will be reviewed, and consideration given to replacing it with an alternative HCR specifically designed to meet a rebuilding plan as advised by the Commission.

14.The recommended total annual catch produced by the HCR will be applied continuously as set forth in paragraph 11 above, except in case of exceptional circumstances, such as caused by severe environmental perturbations. In such circumstances, the Scientific Committee shall advise on appropriate measures.

Scientific Advice

15.The IOTC Scientific Committee shall:

a)Include the LRP and TRP as part of any analysis when undertaking all future assessments of the status of the IOTC skipjack tuna stock.

b)Undertake and report to the Commission a model-based skipjack tuna stock assessment every three (3) years, commencing with the next stock assessment in 2017.

c)Undertake a programme of work to further refine Management Strategy Evaluation (MSE) for the IOTC skipjack tuna fishery as required in paragraph 12 including, but not limited to,

i.Refinement of operating model(s)/ used,

ii.Alternative management procedures,

iii.Refining performance statistics.

Final Clause

16.The Commission shall review this measure at its annual session in 2019, or before if there is reason and/or evidence to suggest that the skipjack tuna stock is at risk of breaching the LRP.

Appendix 1

Table 1. Values of fishing intensity for alternative levels of estimated stock status ($\mathbf{B_{curr}/B_0}$) produced by the HCR

Stock status (B_{curr}/B_0)	**Fishing Intensity (I)**		**Stock status (B_{curr}/B_0)**	**Fishing Intensity (I)**
At or above 0.40	100%		0.24	46.7%
0.39	96.7%		0.23	43.3%
0.38	93.3%		0.22	40.0%
0.37	90.0%		0.21	36.7%
0.36	86.7%		0.20	33.3%
0.35	83.3%		0.19	30.0%
0.34	80.0%		0.18	26.7%
0.33	76.7%		0.17	23.3%
0.32	73.3%		0.16	20.0%
0.31	70.0%		0.15	16.7%
0.30	66.7%		0.14	13.3%
0.29	63.3%		0.13	10.0%
0.28	60.0%		0.12	6.7%
0.27	56.7%		0.11	3.3%
0.26	53.3%		0.10 or below	0%
0.25	50.0%			