REVIEW OF CONSERVATION AND MANAGEMENT MEASURES RELATING TO TROPICAL TUNAS

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PURPOSE

To encourage participants at the Working Party on Tropical Tunas (WPTT20) to review the existing Conservation and Management Measures (CMM) relevant to the three tropical tuna species, noting the new CMMs contained in document IOTC–2018–WPTT20–04; 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–2018–WPTT20–04, tropical tunas in the Indian Ocean are currently subject to several other CMMs adopted by the Commission, including:

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 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 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 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.

Resolution 17/01 *On an interim plan for rebuilding the Indian Ocean yellowfin tuna stock in the IOTC Area of Competence.* 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. This Resolution supersedes IOTC Resolution 16/01 *On an interim plan for rebuilding the Indian Ocean yellowfin tuna stock.*

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Resolution 18/01 *On an Interim Plan for Rebuilding the Indian Ocean Yellowfin Tuna Stock in the IOTC Area of Competence*. This Resolution requires CPCs to reduce their catch of yellowfin tuna. For Purse seine vessels this signifies that (i) 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, (ii) The number of Fish Aggregating Devices (FADs) will be no more than 350 active instrumented buoys and 700 acquired annually instrumented buoys per purse seine vessel per year (iii) Supply vessels shall be gradually reduced by 31st December 2022 and a single purse seine vessel shall not be supported by more than one single supply vessel of the same flag State at any point in time. For gillnet fisheries, 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 while for 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. Lastly for all 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. The Resolution further stipulates monitoring of the catch of yellowfin and requires the Scientific Committee via its Working Party on Tropical Tunas to 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.

Resolution 18/08 *Procedures on a Fish Aggregating Devices (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.* This Resolution applies to CPCs having purse seine vessels and fishing on Drifting Fish Aggregating Devices (DFADs), equipped with instrumented buoys for the purpose of aggregating tuna target species, in the IOTC area of competence. It further provides guidelines for preparation of drifting fish aggregating device (DFAD) management plans, guidelines for preparation of anchored fish aggregating device (AFAD) management plans and principles for design and deployment of FADs.

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–2018–WPTT20–05 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 03/01 *On the limitation of fishing capacity of Contracting Parties and Cooperating Non-Contracting Parties.*

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

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

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

Appendix E: Resolution 18/01 *On an Interim Plan for Rebuilding the Indian Ocean Yellowfin Tuna Stock in the IOTC Area of Competence.*

Appendix F: Resolution 18/08 *Procedures on a Fish Aggregating Devices (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.*

APPENDIX A

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.

[2] Including authorisations currently foreseen under administrative process

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.

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 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 D

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);

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.

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.

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.

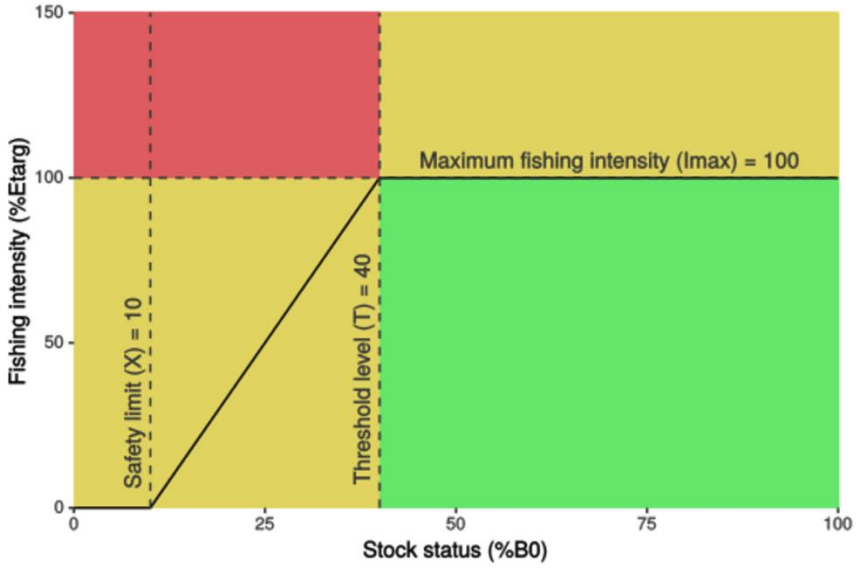
c)If the spawning biomass is estimated to be at, or below, the safety level, i.e. B_{curr} <= 0.1B_0 then the catch limit shall be at 0 for all fisheries other than subsistence fisheries.

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):

[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.



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%			

APPENDIX E

RESOLUTION 18/01
ON AN INTERIM PLAN FOR REBUILDING THE INDIAN OCEAN YELLOWFIN TUNA STOCK IN THE IOTC AREA OF COMPETENCE

Keywords: Yellowfin tuna, Kobe Process, MSY, Precautionary Approach

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 III, held in La Jolla, California, 12-14 July 2011; considering the status of the stocks, each RFMO should consider a scheme for reduction of overcapacity 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 the new yellowfin tuna stock assessment produced at the 19th Scientific Committee held in Seychelles mentions: “The stock status determination did not change in 2016, but does give a somewhat more optimistic estimate of stock status than the 2015 assessment, as a direct result of the use of more reliable information on catch rates of longline fisheries and updated catch up to 2015” and that “**Maximum Sustainable Yield (MSY)**: estimate for the whole Indian Ocean is estimated at 422,000 t with a range

between 406,000-444,000 t" and "the 2011-2015 average catches (390,185 t) were below the estimated MSY level;"

FURTHER NOTING that the estimated probability of the Indian Ocean yellowfin tuna stock to be in the red zone of the Kobe plot has decreased from 94% based on 2015 stock assessment to 67.6% based on the 2016 stock assessment and considering other applicable measures within Resolution 16/01 [superseded by Resolution 17/01, then by Resolution 18/01], particularly the 23% reduction in the limit on the number of FADs deployed by tuna purse seiners from 550 to 425 per vessel per year, effective from 1st January 2017, and the supply vessel limitation could help this progressive improvement of the yellowfin tuna stock status;

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;

NOTING THAT Article V (2)(b) of the Agreement for the Establishment of the Indian Ocean Tuna Commission give full recognition to the special interests and needs of Members in the region that are developing countries, in relation to the conservation and management and optimum utilization of stocks covered by this Agreement and encouraging development of fisheries based on such stocks;

FURTHER NOTING THAT Article V(2)(d) requires the Commission to keep under review the economic and social aspects of the fisheries based on the stocks covered by this Agreement bearing in mind, in particular, the interests of developing coastal States. This includes ensuring that conservation and management measures adopted by it do not result in transferring, directly or indirectly, a disproportionate burden of conservation action onto developing States, especially Small Island Developing States;

RECOGNIZING FURTHER the interactions that occur between the fisheries for yellowfin, skipjack and bigeye tuna;

CONSIDERING paragraph 12 of Resolution 16/01 [superseded by Resolution 17/01, then by Resolution 18/01] that allows the Commission to review this Interim Plan before 2019;

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 [superseded by Resolution 17/08, then by Resolution 18/08], paragraph 7 will be no more than 350

active instrumented buoys and 700 acquired annually instrumented buoys per purse seine vessel per year.

c)Supply vessels[9]: Supply vessels shall be gradually reduced by 31st December 2022 as specified below in (i), (ii), (iii) and (iv). Flag States shall submit plans for reducing the use of supply vessel to the Scientific Committee no later than 31st December 2017.

i.From 1st of January 2018 to 31st December 2019: 1 supply vessel in support of not less than 2 purse seiners, all of the same flag State. [10]

ii.From 1st of January 2020 to 31st December 2022: 2 supply vessels in support of not less than 5 purse seiners, all of the same flag State.[2]

iii.No CPC is allowed to register any new or additional supply vessel on the IOTC Record of Authorized Vessels after 31st December 2017.

iv.Any further reduction as from 2022 shall be determined by the Commission in light of the advice of the Scientific Committee.

d)A single purse seine vessel shall not be supported by more than one single supply vessel of the same flag State at any point in time.

e)Complementary to Resolution 15/08 [superseded by Resolution 17/08, then by Resolution 18/08] 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/flag States shall report annually before the 1st of January for the coming year of operations which Purse seiners are served by each supply vessel. This information will be published on IOTC website so as to be accessible to all CPCs and is mandatory. In the light of assessments made available by the Working Group (WG) on dFADs 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.

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[9] For the purpose of this Resolution, the term "supply vessel" includes "support vessel".

10 The subparagraphs (i) and (ii) shall not apply to flag States which use only one supply vessel.

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 2018, 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 be considered as interim measure and will be reviewed by the Commission no later than at its annual Session in 2019.

13.The provisions of paragraphs 3, 4, 5 and 6 shall be applicable to Small Island Developing States, Least Developed Countries and Small Vulnerable Economies on catches of yellowfin reported for 2014 or 2015.

14.Nothing in this resolution shall pre-empt or prejudice future allocation.

This Resolution supersedes IOTC Resolution 17/01 *On an interim plan for rebuilding the Indian Ocean yellowfin tuna stock.*

APPENDIX F

RESOLUTION 18/08
PROCEDURES ON A FISH AGGREGATING DEVICES (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

Keywords: FAD, active instrumented buoy.

The Indian Ocean Tuna Commission (IOTC),

BEARING IN MIND that the Agreement for the implementation of the Provisions of the United Nations Convention on the Law of the Sea relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks (UNFSA) encourages coastal States and fishing States on the high seas to collect and share, in a timely manner, complete and accurate data concerning fishing activities on, *inter alia*, vessel position, catch of target and non-target species and fishing effort;

MINDFUL of the call upon States, either individually, collectively or through regional fisheries management organisations and arrangements in the United Nations General Assembly Resolution 67/79 on Sustainable fisheries to collect the necessary data in order to evaluate and closely monitor the use of large-scale fish aggregating devices and others, as appropriate, and their effects on tuna resources and tuna behaviour and associated and dependent species, to improve management procedures to monitor the number, type and use of such devices and to mitigate possible negative effects on the ecosystem, including on juveniles and the incidental bycatch of non-target species, particularly sharks and marine turtles;

NOTING that the United Nations Food and Agricultural Organization (FAO) Code of Conduct for Responsible Fishing provides that States should compile fishery-related and other supporting scientific data relating to fish stocks covered by sub-regional or regional fisheries management organisations and provide them in a timely manner to the organisation;

RECOGNISING that all gears deployed to target resources under the competence of IOTC should be managed to ensure the sustainability of fishing operations;

GIVEN that the activities of supply vessels and the use of Fish Aggregating Devices (FAD) are an integral part of the fishing effort exerted by the purse seine fleet;

AWARE that the Commission is committed to adopt Conservation and Management Measures to reduce juvenile Bigeye tuna and Yellowfin tuna mortalities from fishing effort on Fish Aggregating Devices (FADs);

RECALLING that Resolution 12/04 established that the Commission at its annual session in 2013 should consider the recommendations of the IOTC Scientific Committee as regards the development of improved FAD designs to reduce the incidence of entanglement of marine turtles, including the use of biodegradable materials, together with socio-economic considerations, with a view to adopting further measures to mitigate interactions with marine turtles in fisheries covered by the IOTC Agreement;

RECALLING that Resolution 13/08 [superseded by Resolution 15/08, then by Resolution 17/08, then by Resolution 18/08] established procedures on a fish aggregating device (FAD) management plan, including 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;

NOTING that the IOTC Scientific Committee advised the Commission that only non-entangling FADs, both drifting and anchored, should be designed and deployed to prevent the entanglement of sharks, marine turtles and other species;
NOTING that the IOTC Scientific Committee advised the Commission to conduct an investigation of the feasibility and impacts of a temporary FAD closure as well as other measures in the context of Indian Ocean fisheries and stocks;

RECALLING that the objective of the IOTC Agreement is to ensure, through appropriate management, the conservation and optimum utilisation of stocks covered by the mentioned Agreement and encouraging sustainable development of fisheries based on such stocks and minimising the level of bycatch;

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

1. This Resolution shall apply to CPCs having purse seine vessels and fishing on Drifting Fish Aggregating Devices (DFADs), equipped with instrumented buoys for the purpose of aggregating tuna target species, in the IOTC area of competence.

2. This Resolution defines an instrumented buoy as a buoy with a clearly marked reference number allowing its identification and equipped with a satellite tracking system to monitor its position. Other buoys, such as radio buoys used on DFADs, not meeting this definition, shall be gradually phased out by the 1st January 2017.

3. This Resolution sets the maximum number of instrumented buoys active and followed by any purse seine vessels at 350 instrumented buoys at any one time, the active number being calculated as the number of active buoys operated by a purse seine vessel. The number of instrumented buoys that shall be acquired annually for each purse seine vessel is set at no more than 700. An instrumented buoy is considered active when it has been switched on and then deployed. Activation of an instrumented buoy results in an entry in the logbook or the FAD logbook, which specifies the buoy number and the geographical coordinates of its activation. An instrumented buoy may be activated only when physically present on board the purse-seine vessel to which it belongs or its supply or support vessel.

4. A CPC may adopt a lower limit than the one set out in paragraph 3 for vessels flying its flag. Further, any CPC may adopt a lower limit for DFADs deployed in its EEZ than that stated in paragraph 3. The CPC shall review the adopted limit to ensure that such limit is not more than the limit fixed by the Commission.
5. CPCs shall ensure that as from the effective date of this Resolution, each of its purse seiners already in operation does not exceed the maximum number of instrumented buoys set in paragraph 3.

6. Notwithstanding the completion of any study undertaken at the request of the Commission including the study to be undertaken by the Working Group adopted at Resolution 15/09 in relation to FADs, the Commission may review the maximum number of instrumented buoys set out in paragraph 3.

7. The flag State shall ensure that no more than:

   a) 350 instrumented buoys are active at sea at any one time in relation to each of its vessels through such measures as for example the verification of telecommunication bills; and
   b) 700 instrumented buoys may be acquired annually by each of its fishing vessel.

8. CPCs shall require vessels flying their flag and fishing on DFADs to submit by 1 January 2016, the provisional purchase order for 2016 of instrumented buoys for their purse seine vessels under the confidentiality rules set by Resolution 12/02 (or any subsequent superseding Resolution).

9. CPCs shall require vessels flying their flag and fishing on DFADs to submit, by the end of 2016 the number of instrumented buoys activated, deactivated and active on each quarter during 2016 its purse seine vessel under the confidentiality rules set by Resolution 12/02 (or any subsequent superseding Resolution).

10. All CPCs shall ensure that all fishing vessels as referred to in paragraph 1 shall record fishing activities in association with FADs using the specific data elements found in **Annex I** (DFAD) and **Annex II** (AFAD) in the section of the "FAD-logbook".

11. CPCs having vessels fishing on FADs shall submit, to the Commission, on an annual basis, Management Plans for the use of FADs by each of their purse seine vessels covered at paragraph 1. Due to their specificity in terms of users, number deployed, type of boat/vessel involved, fishing method and gear used and materials used in their construction, the Management Plans and Reporting Requirements for Drifting FADs (DFAD) and Anchored FADs (AFAD) shall be addressed separately for the purposes of this Resolution. The Plans shall at a minimum meet the Suggested Guidelines for Preparation for FAD Management Plans by each CPC as provided for DFADs in **Annex I** and AFADs in **Annex II**. For the purpose of this Resolution, the term Fish Aggregating Device means drifting (DFAD) or anchored floating or submerged objects (AFAD) deployed for the purpose of aggregating target tuna species.

12. The Management Plans shall be analysed by the IOTC Compliance Committee.

13. The Management Plans shall include initiatives or surveys to investigate, and to the extent possible minimise the capture of small Bigeye tuna and Yellowfin tuna and non-target species associated with fishing on FADs. Management Plans shall also include guidelines to prevent, to the extent possible, the loss or abandonment of FADs. To reduce the entanglement of sharks, marine turtles or any other species, the design and deployment of FADs shall be based on the principles set out in **Annex III**, which will be applied gradually from 2014. From 2015 on, CPCs shall submit to the Commission, 60 days before the Annual Meeting, a report on the progress of the management plans of FADs, including reviews of the initially submitted Management Plans, and including reviews of the application of the principles set out in **Annex III**.

14. Starting in 2016, CPCs shall submit the data elements prescribed in **Annex I** and **Annex II** to the Commission, consistent with the IOTC standards for the provision of catch and effort data, and these data shall be made available for analysis to the IOTC Scientific Committee on the aggregation level set by Resolution 15/02 (or any subsequent superseding Resolution), and under the confidentiality rules set by Resolution 12/02 (or any subsequent superseding Resolution). The IOTC Scientific Committee will analyse the information, when available, and provide scientific advice on additional FAD management options for consideration by the Commission in 2016, including recommendations on the number of FADs to be operated, the use of biodegradable materials in new and improved FADs and the phasing out of FAD designs that do not prevent the entanglement of sharks, marine turtles and other species. When assessing the impact of FADs on the dynamic and distribution of targeted fish stocks and associated species and on the ecosystem, the IOTC Scientific Committee will, where relevant, use all available data on abandoned FADs (i.e. FADs without a beacon or which have drifted outside the fishing zone).

15. From January 2016, CPCs shall require all artificial FADs deployed or modified by their flagged fishing vessels in the IOTC area of competence to be marked in accordance with a detailed marking scheme, e.g. including FAD marking or beacon ID. The marking scheme shall be developed and considered for adoption by the Commission at its regular annual session in 2016, based on recommendations from the IOTC Scientific Committee as requested by the Commission. The marking scheme should take into account, as a minimum, the following:

    1. All artificial FADs shall be marked with a unique identification number, based on a specific numbering system and format to be adopted by the Commission;

    2. The marking should be easy to read before the vessel operator engages in any artificial FAD related activity (e.g. setting on the artificial FAD, retrieving the artificial FAD, servicing the artificial FAD, fishing on the artificial FAD), but if not visible for any reason, (time of day, weather, etc.), the vessel operator shall ensure to obtain the unique artificial FAD identifier

as soon as feasible;

3. The marking should be easy to apply to the artificial FAD, but should be applied in such a manner that it will not become unreadable or disassociated with the artificial FAD.

16. Resolution 17/08 *Procedures on a fish aggregating devices (FADs) management plan, including more detailed specification of catch reporting from FAD sets, and the development of improved FAD designs to reduce the incidence of entanglement of non-target species* is superseded by this Resolution.

ANNEX I

GUIDELINES FOR PREPARATION OF DRIFTING FISH AGGREGATING DEVICE (DFAD) MANAGEMENT PLANS

To support obligations in respect of the DFAD Management Plan (DFAD–MP) to be submitted to the IOTC Secretariat by CPCs with fleets fishing in the IOTC area of competence, associated to DFADs, DFAD–MP should include:

1. An objective

2. Scope:

   Description of its application with respect to:

   - vessel-types and support and tender vessels
   - DFAD numbers and DFADs beacon numbers to be deployed
   - reporting procedures for DFAD deployment
   - incidental bycatch reduction and utilisation policy
   - consideration of interaction with other gear types
   - plans for monitoring and retrieval of lost DFADs
   - statement or policy on "DFAD ownership"

3. Institutional arrangements for management of the DFAD Management Plans:

   - Institutional responsibilities
   - application processes for DFAD and /or DFAD beacons deployment approval
   - Obligations of vessel owners and masters in respect of DFAD and /or DFAD beacons deployment and use
   - DFAD and/or DFADs beacons replacement policy
   - reporting obligations

4. DFAD construction specifications and requirements

   - DFAD design characteristics (a description)
   - DFAD markings and identifiers, including DFADs beacons
   - Lighting requirements
   - radar reflectors
   - visible distance
   - radio buoys (requirement for serial numbers)
   - satellite transceivers (requirement for serial numbers)

5.Applicable areas

- Details of any closed areas or periods e.g. territorial waters, shipping lanes, proximity to artisanal fisheries, etc.

6.Applicable period for the DFAD–MP

7.Means for monitoring and reviewing implementation of the DFAD–MP

8. DFAD logbook
   - catch reporting from DFAD sets (consistent with the Standards for the provision of Catch and Effort Data) set out in Resolution 15/02), including:

a) Any visit on a DFAD*

b) For each visit on a DFAD, whether followed or not by a set
   i. position,
   ii. date,
   iii. DFAD identifier (i.e., D FAD Marking or beacon ID or any information allowing to identify the owner),
   iv. DFAD type (drifting natural FAD, drifting artificial FAD),
   v. DFAD design characteristics (dimension and material of the floating part and of the underwater hanging structure),
   vi. type of the visit (deployment, hauling, retrieving, loss, intervention on electronic equipment).

c) If the visit is followed by a set, the results of the set in terms of catch and bycatch.

* Other FADs encountered at–sea should be monitored in accordance with each CPCs' domestic regulations.

ANNEX II
GUIDELINES FOR PREPARATION OF ANCHORED FISH AGGREGATING DEVICE (AFAD) MANAGEMENT PLANS

To support obligations in respect of the AFAD Management Plan (AFAD–MP) to be submitted to the IOTC Secretariat by CPCs with fleets fishing in the IOTC area of competence, associated to AFADs, AFAD– MP should include:

1. An objective
2. Scope:
   Description of its application with respect to:

   a) Vessel types

   b) AFAD numbers and/or AFADs beacons numbers to be deployed (per AFAD type)

   c) reporting procedures for AFAD deployment

   d) distances between AFADs

   e) incidental bycatch reduction and utilisation policy

   f) consideration of interaction with other gear types

   g) the establishment of inventories of the AFADs deployed, detailing AFAD identifiers, characteristics and equipment of each AFAD as laid down in point 4 of the present Annex, coordinates of the AFAD's mooring sites, date of set, lost and reset

   h) plans for monitoring and retrieval of lost AFADs

   i) statement or policy on "AFAD ownership"

3. Institutional arrangements for management of the AFAD Management Plans:
   a) Institutional responsibilities

   b) Regulations applicable to the setting and use of AFADs

   c) AFAD repairs, maintenance rules and replacement policy

   d) Data collection system

   e) reporting obligations

4. AFAD construction specifications and requirements:
   a) AFAD design characteristics (a description of both the floating structure and the underwater structure, with special emphasis on any netting materials used)

   b) Anchorage used for mooring

   c) AFAD markings and identifiers, including AFAD beacons if any

   d) Lighting requirements if any

   e) radar reflectors

   f) visible distance

   g) radio buoys if any (requirement for serial numbers)

h) satellite transceivers (requirement for serial numbers)

i) echo sounder

5. Applicable areas

a) Coordinates of mooring sites, if applicable

b) Details of any closed areas e.g., shipping lanes, Marine Protected Areas, reserves etc.

6. Means for monitoring and reviewing implementation of the AFAD–MP
AFAD logbook

–Catch reporting from AFAD sets (consistent with the Standards for the provision of Catch and Effort Data) set out in Resolution 15/02), including:

a) Any visit in a AFAD.

b) For each visit on a AFAD, whether followed or not by a set or other fishing activities, the,

i. position;

ii. date;

iii. AFAD identifier (i.e., FAD Marking or beacon ID or any information allowing to identify the owner).

c) If the visit is followed by a set or other fishing activities, the results of the set in terms of catch and bycatch.

ANNEX III
PRINCIPLES FOR DESIGN AND DEPLOYMENT OF FADS

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.