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

SUBMITTED BY: EUROPEAN UNION

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### Explanatory Memorandum

#### About this revision 2:

This revised version introduces several important changes, including in the general approach adopted to calculate catch reduction.

As in the initial proposal, only CPCs whose catches in 2020 represented over 1% will be requested to decrease their catches in 2023 compared to their level of catches in 2020:

- CPCs whose reported catches of skipjack tuna in 2020 were above 80,000 t shall reduce their catches of skipjack tuna by 9 % of the catch in 2020.
- CPCs whose reported catches of skipjack tuna in 2020 were between 30,000 t and 80,000 t shall reduce their catches of skipjack tuna by 6 % of the catch in 2020.
- CPCs whose reported catches of skipjack tuna in 2020 were below 30,000 t shall reduce their catches of skipjack tuna by 4 % of the catch in 2020.

Following the request of many CPCs, the limitation on the increase for CPCs whose catches in 2020 represented less than 1% were removed and those CPCs shall endeavor to maintain their annual catches of skipjack to a sustainable level.

In order to take into account any updated catch data provided after the adoption of this resolution, the table outlining the catch limit for 2023 was removed.

All changes have been highlighted in blue.

#### About this revision:

This proposal drafted by the European Union was based on the IOTC nominal catch dataset available to the Scientific Committee (SC) in December 2021. In its report, the SC indicated that the total catch of skipjack for the year 2020 was 555 211 t. In an updated dataset published on 22 February 2022 produced a total catches for 2020 around 547 309 t. This updated version of this proposal aimed to correct the total catch data for 2020, level of reduction needed for 2023 and the catch limit for 2023 in annex II to this new total. All changes have been highlighted in yellow.

Resolution 21/03 on harvest control rules for skipjack tuna in the IOTC area of competence contains a pre-agreed harvest control rule (HCR) aiming to maintain the skipjack tuna stock at, or above, the target reference point (TRP) and the limit reference point (LRP).

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A stock assessment was carried out for skipjack tuna in 2020 with data up to 2019. While the stock is not overfished nor subject to overfishing, the catches of skipjack tuna in 2020 reached over 547 000 t, exceeding the annual catch limit calculated applying the HCR for the period 2021-2023 of 513,572 t by more than 33 000 t.

At its 25th session, the Commission adopted a rendezvous clause for 2022 to develop a measure to ensure that catches of skipjack tuna are within the catch limit established by the HCR. This proposal seeks to amend Resolution 21/03 by allocating the needed catch reduction of 33 000 t among the CPCs harvesting the highest quantities of skipjack, on the basis of their respective level of catches.

For the year 2023, with a view to counteract the likely risk of overshooting the catch limit of 513,572 MT, a specific mechanism shall be implemented to reduce catches of skipjack tuna in 2023. In order to limit the socio-economic impact of catch reductions for Developing Coastal States and Small Island Developing States, those may implement their catch reduction in 2023 and 2024.

**RESOLUTION 22/XX****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 17<sup>th</sup> 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 diagnoses that the stock status is not overfished nor subject to overfishing and that the application of the adopted Harvesting Control Rule provides a catch limit, for the period 2021-2023, of 513,572 tonnes;

NOTING the advice of the IOTC Scientific Committee that the Commission needs to ensure that catches of skipjack tuna do not exceed the agreed limit of 513,572t;

RECOGNISING that the increasing trend in catches has reached levels, in the period 2017-2020, beyond the new agreed limit of 513,572t and that such levels might put in question the sustainability over time of Skipjack fishery in the Indian Ocean;

NOTING that paragraph 128 of the report of the 21st IOTC Scientific Committee in 2018 indicates that the Harvesting Control Rule has been MSE tested with an implementation error of 15%;

RECOGNIZING that the objectives of Resolution 16/02 is to maintain the IOTC Skipjack tuna stock in perpetuity, at levels not less than those capable of producing maximum sustainable yield (MSY) and that the biomass target reference point, corresponding to the 40% of unfished spawning biomass (i.e.  $0.4B_0$ ), is substantially higher than the Bmsy level (corresponding to  $0.22B_0$ );

CONSIDERING THAT highly migratory tropical tunas live in all regions of the Indian Ocean, from the coastal areas to the high sea, and are harvested by all kind of fishing vessels, from the subsistence and coastal artisanal fisheries to industrial fisheries, a sound management for the sustainable harvesting of this stock shall involve all the different components in an equitable manner;

CONSIDERING the multispecies nature of tropical tuna fisheries and variability between gears, regions and period of the year, it is advisable to task the IOTC scientific committee to identify a specific coefficient(s) expressing the minimum ratio of skipjack tuna annual catches to the total volume in metric tons of tropical tuna catches by fishery with the aim to provide some quantitative guidance helping the CPCs in their internal validation of tropical tuna catches by species recorded by their fishing fleets thus improving the reliability of data reported to the IOTC;

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<sup>[1]</sup>, 15/01<sup>[2]</sup>, 15/02<sup>[3]</sup>, and 15/10<sup>[4]</sup>;

RECALLING that the 2020 skipjack catch from the Indian Ocean was 547 309 and the maximum catch limit calculated applying the HCR specified in Resolution 16/02 is 513,572t for the period 2021-2023;

FURTHER RECOGNIZING that reaching the management objectives defined in Resolution 16/02 requires that the catch limits adopted by the skipjack HCR are implemented effectively and the need for the Commission to ensure that catches of skipjack tuna during this period do not exceed the agreed limit.

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<sup>[5]</sup> (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 ( $E_{\text{targ}}$ ) associated with sustaining the stock at  $B_{\text{targ}}$ .

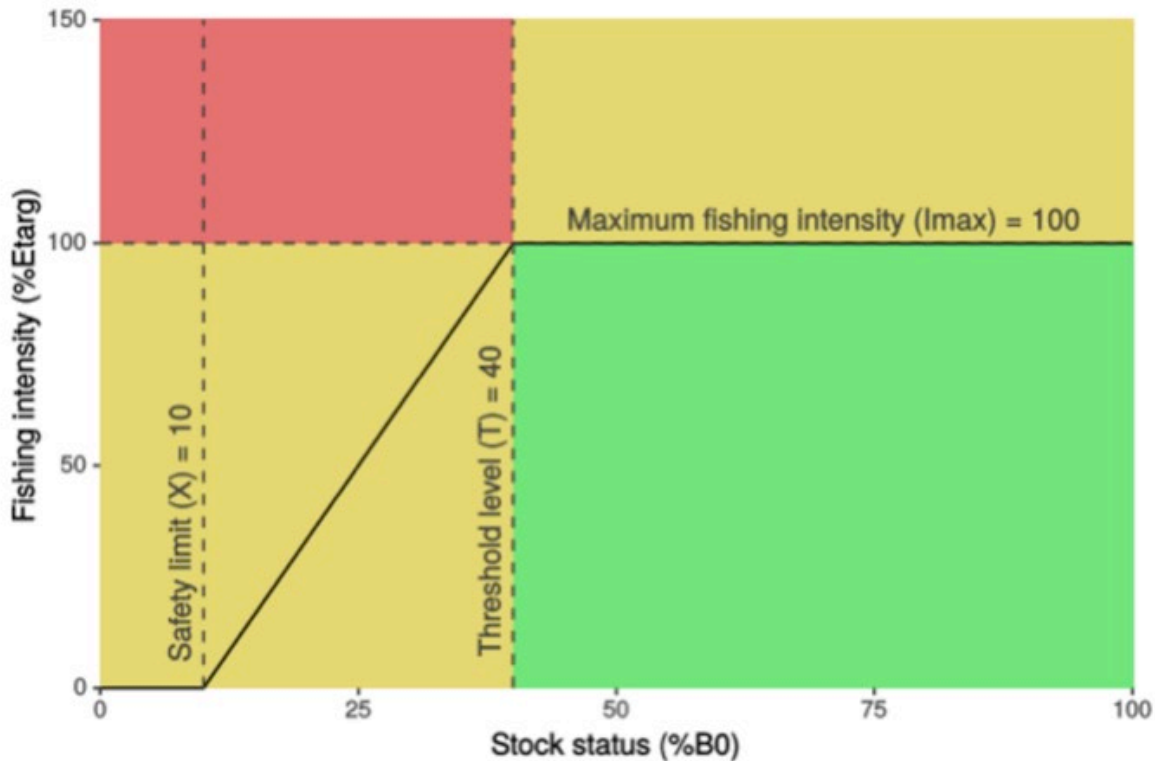
**8.** The HCR shall have five control parameters set as follows:

- a) Threshold level, the percentage of  $B_0$  below which reductions in fishing mortality are required,  $B_{\text{thresh}} = 40\%B_0$ . 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  $E_{\text{targ}}$  that will be applied when the stock status is at, or above, the threshold level  $I_{\text{max}} = 100\%$ . When the stock is at or above the threshold level, then fishing intensity ( $I$ ) =  $I_{\text{max}}$
- c) Safety level, the percentage of  $B_0$  below which non-subsistence catches are set to zero i.e. the non-subsistence fishery is closed  $B_{\text{safety}} = 10\%B_0$ .
- d) Maximum catch limit ( $C_{\text{max}}$ ), 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  $C_{\text{max}}$ . 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 ( $D_{\text{max}}$ ), 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 ( $B_{\text{curr}}$ ) is estimated to be at or above the threshold spawning biomass i.e.,  $B_{\text{curr}} \geq 0.4B_0$ , then the catch limit shall be set at  $[I_{\text{max}} \times E_{\text{targ}} \times B_{\text{curr}}]$ .
- b) If the current spawning biomass ( $B_{\text{curr}}$ ) is estimated to be below the threshold biomass i.e,  $B_{\text{curr}} < 0.4B_0$ , but greater than the safety level i.e.,  $B_{\text{curr}} > 0.1B_0$ , then the catch limit shall be set at  $[I \times E_{\text{targ}} \times B_{\text{curr}}]$ . See Table 1 in Annex 1 for values of fishing intensity ( $I$ ) for specific  $B_{\text{curr}}/B_0$ .
- c) If the spawning biomass is estimated to be at, or below, the safety level, i.e.  $B_{\text{curr}} \leq 0.1B_0$  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 ( $C_{\text{max}}$ ) 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 Annex 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.,  $B_{curr} \geq 0.4B_0$ ), then the HCR shall establish an overall catch limit and catches of skipjack tuna for any given year shall be maintained at or below the overall catch limit established by the HCR.
- 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) The Commission may consider to develop and adopt Conservation and Management Measure(s) to ensure catches of skipjack tuna are maintained at or below the overall catch limit established by the HCR and to apply fishing mortality reductions if the stock falls below the Threshold level (i.e.  $B_{curr} > 0.4B_0$ ), with due consideration to the aspirations and special requirements of Developing Coastal States and Small Island Developing States, no later than the annual session of the IOTC in 2022.
- d) 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 both relative to the unexploited biomass ( $B_0$ ) and biomass at the Maximum Sustainable Yield ( $B_{msy}$ ) 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 2023.
- c) Continue to establish the scientific basis, through MSE testing, to advise the Commission on advanced candidate management procedures integrating input control, output control, and current catch limitation measures, to restore or maintain tropical tuna stocks at or above the adopted TRP levels able to deliver maximum sustainable yields. In particular, 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. Evaluation of Alternative management procedures (empirical and model based), also including input measures for purse seine fisheries,
  - iii. Exploring alternative options for TRP and LRP relative to  $B_0$  and  $B_{msy}$
  - iv. Refining performance statistics.
- d) Develop criteria and process for the identification of exceptional circumstances to ensure that exceptional circumstances are triggered only when necessary.

16. The IOTC Scientific Committee shall advise, at latest by its 2022 session, on the minimum ratios, including their variability, expressing the relative importance of skipjack tuna annual catches to the total volume in metric tons of tropical tuna catches by fishery on the basis of the data provided for the time period 2014 - 2021. The IOTC Scientific Committee shall advise on the soundness and relevance of such minimum ratios to be used as a tool to manage tropical tuna catches, notably as a minimum value when reporting skipjack tuna catches.

### Implementation of catch reduction

17. CPC whose catches of skipjack reported for 2020 represented over 1 percent of the catch limit established by the HCR shall reduce their catches in 2023 following the method in paragraphs 18 to 20.

18. CPCs whose reported catches of skipjack tuna in 2020 were above 80,000 t shall reduce their catches of skipjack tuna by 9 % of the catch in 2020.<sup>1</sup>

<sup>1</sup> Catch limits for Indonesia will be calculated based on the catches presented in the National Report of Indonesia, until the best scientific estimates of national catches are revised and endorsed by the Scientific Committee following the ongoing exercise to



19. CPCs whose reported catches of skipjack tuna in 2020 were between 30,000 t and 80,000 t shall reduce their catches of skipjack tuna by 6 % of the catch in 2020.
20. CPCs whose reported catches of skipjack tuna in 2020 were below 30,000 t shall reduce their catches of skipjack tuna by 4 % of the catch in 2020.
21. In consideration of their special requirements, CPCs that are Least Developed Countries shall not be subject to the catch limitation referred in paragraphs 18 to 20 but to paragraph 23 instead.
22. In consideration of their aspirations, Developing Coastal States and Small Island Developing States subject to paragraphs 18 to 20 may decide to implement the required catch reduction progressively in 2023 and 2024.
23. CPCs not subject to catch reduction under paragraphs 18 to 20 shall endeavor to maintain their annual catches of skipjack to a sustainable level. Possible increases of catches under this paragraph shall be allocated only to the vessels flagged to the concerned CPCs and cannot be transferred to fishing vessels of other CPCs or under chartering agreement. The Commission shall reassess the need to define catch limit for those CPCs subject to paragraph 23.

#### **Final Clause**

24. The Commission shall review this measure at its annual session in 2024, or before if there is reason and/or evidence to suggest that the Skipjack tuna stock is at risk of breaching the LRP.
25. This resolution supersedes Resolution 21/03 *On harvest control rules for skipjack tuna in the IOTC area of competence* and it enters into force only provided that there is no objection from any of the CPC subject to catch limit under paragraph 18 to 20.

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revise the catch data. Indonesia will consistently work to revise the catch estimates and should provide evidence in this regard to the Commission.

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

<b>Stock status (<math>B_{curr}/B_0</math>)</b>	<b>Fishing Intensity (I)</b>	<b>Stock status (<math>B_{curr}/B_0</math>)</b>	<b>Fishing Intensity (I)</b>
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%		

