



**WCPFC  
HARVEST STRATEGY WORKSHOP**

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**Proposal for a Conservation and Management Measure on a Target Reference Point for the  
WCPFC Skipjack Tuna Stock**

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**HSW-IP/04  
14 November 2015  
(WCPFC12-2015-DP06)**

**FFA Members<sup>1</sup>**

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<sup>1</sup> Pacific Islands Fisheries Forum Agency



**TWELFTH REGULAR SESSION**  
Bali, Indonesia  
3 - 8 December 2015

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**PROPOSAL FOR TARGET REFERENCE POINT FOR SKIPJACK TUNA**

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**WCPFC12-2015-DP06**  
**31 October 2015**

**Proposal by FFA Members**



**FFA**

31 October 2015

Feleti P. Teo OBE  
Executive Director  
Western and Central Pacific Fisheries Commission  
PO Box 2356, Kolonia  
Federated States of Micronesia

Dear Feleti,

**Target Reference Point for Skipjack Tuna**

I write on behalf of the 17 members of the Forum Fisheries Agency in my capacity as the Chair of the Forum Fisheries Committee. Please find attached a draft conservation and management measure for the establishment of a Target Reference Point for the skipjack tuna stock. Also included is a comprehensive explanatory paper.

We look forward to discussing this proposal with CCMs in Bali and would welcome any inquiries before then, which should be directed to the PNA Office or the FFA Secretariat ([les@rayfishresearch.com](mailto:les@rayfishresearch.com) or [wez.norris@ffa.int](mailto:wez.norris@ffa.int)).

Yours Sincerely

Samasoni Finikaso  
Chair  
Forum Fisheries Committee

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# PROPOSAL FOR A CONSERVATION AND MANAGEMENT MEASURE ON A TARGET REFERENCE POINT FOR THE WCPO SKIPJACK TUNA STOCK

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WCPFC11-2015-DPXX

## Paper by FFA Members

### Introduction

1. The WCPO skipjack tuna stock is a critically important stock for global tuna canning supplies, other commercial tuna products and small-scale, artisanal and subsistence fisheries. The effective management and sustainable use of this stock is important both to the peoples of the states in whose waters this stock occurs and to the fleets that harvest them. The stock is especially important for SIDS, for some of whom this stock is the natural resource on which their sustainable development most heavily depends.
2. Establishing a Target Reference Point (TRP) for this stock is an important step in the development of a harvest strategy to ensure the effective management and sustainable use of this stock. In this respect, the proposed CMM is also an important step in the implementation of CMM 2014-06 on establishing a harvest strategy for key fisheries and stocks in the WCPO.
3. The draft CMM responds to the decision of WCPFC10 to consider and adopt a TRP for skipjack tuna, and the advice from the Scientific Committee advocating for the adoption of a TRP and harvest control rule for skipjack tuna. The analytical basis for the proposal was presented to SC10 (SPC and PNA, 2014). The draft CMM was presented to WCPFC11 but was not adopted. The draft has been revised, as indicated, to take into account comments made by Commission members at WCPFC11, SC11 and TCC11.
4. PNA Members have adopted the TRP proposed in the draft CMM as an interim skipjack tuna TRP for the purpose of developing a harvest control rule.

### Background

5. In article 5 (c) of the Convention, members of the Commission have committed to apply the precautionary approach, in accordance with the Convention and all relevant internationally agreed standards and recommended practices and procedures.
6. Annex II 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) sets out guidelines for the application of precautionary reference points in the conservation and management of straddling fish stocks and highly migratory fish stocks.

7. Article 6 1. (a) of the Convention requires members of the Commission, in their application of the precautionary approach, to apply these guidelines and determine, on the basis of the best scientific information available, stock-specific reference points and the action to be taken if they are exceeded.
8. At its 8<sup>th</sup> Annual Session, the Commission adopted a hierarchical approach to identifying the Limit Reference Points for the key target species in the WCPFC as follows:

Level	Condition	LRPs
Level 1	A reliable estimate of steepness is available	$F_{MSY}$ and $B_{MSY}$
Level 2	Steepness is not known well, if at all, but the key biological (natural mortality, maturity) and fishery (selectivity) variables are reasonably well estimated.	$F_{X\%SPR_0}$ and either $20\%SB_0$ or $20\%SB_{current, F=0}$
Level 3	The key biological and fishery variables are not well estimated or understood.	$20\%SB_0$ or $20\%SB_{current, F=0}$

9. At its 9<sup>th</sup> Annual Session, the Commission decided that Limit Reference Points for bigeye, yellowfin and South Pacific albacore tunas shall be set at Level 2 with regard to the biomass-based LRP of 20% of recent spawning biomass in the absence of fishing averaged over a recent time window ( $SB_{recent, F=0}$ ), with further work to be undertaken on fishing mortality-based LRPs for these stocks. The Commission also decided to set the LRP for skipjack tuna at Level 3,  $20\%SB_{recent, F=0}$ .
10. At its 10<sup>th</sup> Annual Session, the Commission decided that the time window for estimation of the spawning biomass in the absence of fishing should have a length of 10 years, and be based on the last ten years excluding the final year of the assessment. WCPFC10 also agreed on a programme of work to be undertaken to inform the Commission's consideration and adoption of a TRP and harvest control rule for skipjack tuna at its session in 2014, including evaluating skipjack tuna stock status against candidate TRPs of 40%, 50% and 60% of spawning stock size in the absence of fishing.
11. In response, SC10 advised that the spawning biomass of WCPO skipjack tuna is now around the mid-point of the range of candidate TRPs of 40%, 50%, and 60% of estimated recent average spawning biomass in the absence of fishing that WCPFC10 had asked the Committee to consider as candidate TRPs for skipjack tuna.
12. Analyses of the implications of the proposed skipjack tuna TRP were presented to SC10 using stochastic stock projections for 30 years and the 2011 skipjack assessment of WCPO skipjack tuna, and the base case from the 2014 assessment (with 20 year projections). Subsequently, additional analyses have been undertaken using the axes of uncertainties and associated weighting included in the structural grid of assessment runs recommended by SC10. This includes the work requested by the Commission to inform consideration of a skipjack tuna TRP by WCPFC11. Key results include that a TRP of 50% of estimated average spawning biomass in the absence of fishing over the years 2002 to 2011 ( $SB_{F=0, 2002-2011}$ ):

- a) is sufficiently distant from the LRP to ensure the population does not fall below the LRP with a high degree of certainty;
- b) is consistent with broadly maintaining the recent patterns of fishing, including effort levels;
- c) is projected to result in spawning biomass increasing slightly from 2012 levels;
- d) suggests purse seine catch rates are likely to remain at around current levels; and
- e) is projected to provide a “pretty good yield” of around 90% of that at MSY.

13. The earlier analysis also indicated that, with the proposed TRP, both the estimated catch value per day and catch value per tonne in 30 years were projected to be comparable to recent levels.

14. By comparison, as shown in the table below, to achieve a target of 60% of estimated recent average spawning biomass in the absence of fishing ( $60\%SB_{F=0}$ ), effort would need to be reduced by 33% from 2012 levels, spawning biomass would increase by 22% and equilibrium yield would be 76% of MSY. On a similar basis, to achieve the lower target of  $40\%SB_{F=0}$ , effort would need to be increased by 50% from 2012 levels, spawning biomass would fall by 18%, and equilibrium yield would be very close to MSY. However, these results are subject to a large degree of uncertainty because the relationship between CPUE and abundance in the purse seine fishery is poorly understood. Further work on this issue is being undertaken for WCPFC12.

Depletion level (%SBF=0)		Change in spawning biomass from 2012 levels	Change in effort from 2012 levels	Equilibrium yield (%MSY)		Mean size of fish (cm)*	F/FMSY	
Median	Range (10-90 <sup>th</sup> %ile)			Median	Range (10-90 <sup>th</sup> %ile)		Median	Range (10-90 <sup>th</sup> %ile)
60%	0.53-0.69%	+22%	-33%	76%	68%-87%	54	0.40	0.29-0.56
50%	0.42-0.58%	+2%	0	90%	81%-98%	53	0.57	0.41-0.80
40%	0.32-0.47%	-18%	+50%	98%	92%-100%	52	0.79	0.57-1.10

- In the free school fishery in the Western Equatorial region

15. At its 11<sup>th</sup> Annual Session, the Commission adopted CMM 2014-06, establishing a harvest strategy for key fisheries and stocks in the WCPO.

**Approach**

16. The draft CMM proposes 50 per cent of the estimated recent average spawning biomass in the absence of fishing,  $SB_{F=0,t1-t2}$ , as a TRP for WCPO skipjack tuna, where the recent average spawning biomass in the absence of fishing is to be estimated in the same manner as decided by the Commission for the LRP for skipjack tuna, i.e.

- a) have a length of 10 years, based on the last ten years used in the most recent assessment, i.e.  $t1=y_{last}-10$  to  $t2=y_{last}-1$  where  $y_{last}$  is the last year used in the assessment; and
- b) be based on the most recent skipjack assessment model estimates of recruitment that have been adjusted to reflect conditions without fishing according to the stock recruitment relationship.

17. This proposed TRP fits with the adoption of:
  - i) the hierarchical approach to the identification of limit reference points adopted by WCPFC8;
  - ii) the adoption by WCPFC9 of a biomass-based LRP for skipjack tuna of 20% of estimated recent average spawning biomass in the absence of fishing; and
  - iii) the results of the analyses called for by WCPFC10 to inform the Commission's consideration and adoption of a TRP for skipjack tuna at WCPFC11.
18. It is consistent with SC10 advice, maintained by SC11, for the Commission to take action to avoid further increases in skipjack tuna fishing mortality, including tighter purse seine effort limits, and to keep the WCPO skipjack tuna stock around the current levels.
19. The proposed TRP also meets a range of objectives identified for the management of the WCPO skipjack tuna stock and fisheries upon it, including:
  - a) resource sustainability, noting that this TRP is sufficiently distant from the LRP to ensure the population does not fall below the LRP and is well above  $SB_{MSY}$ , with  $SB_{MSY}$  estimated at  $0.26SB_{F=0,2002-2011}$ ;
  - b) economic goals, noting the current profitable performance of the major fisheries for WCPO skipjack tuna, and that this TRP is designed to maintain the volume, size composition and value of catches in real terms at around the current levels;
  - c) promoting stable conditions in the fisheries for WCPO skipjack tuna by maintaining the volume, size composition and value of catches at around the current levels;
  - d) being risk adverse, noting the substantial uncertainty about projected outcomes from changes in effort levels significantly distant from current effort levels, because of the poor understanding of the relationship between CPUE and abundance in the purse seine fishery;
  - e) avoiding additional impacts on artisanal fisheries for WCPO skipjack tuna, and additional spatial impacts, including on fisheries for skipjack tuna at higher latitudes; and
  - f) avoiding additional impacts on other target stocks and non-target species, noting in particular that the proposed TRP is fully consistent with the Commission's strategy for removing overfishing of bigeye tuna as set out in CMM 2014-01 from balanced reductions in fishing mortality from the longline and purse seine fisheries, including by limiting overall purse seine effort to recent levels, and reducing FAD fishery effort appropriately. In addition, yellowfin tuna spawning biomass under a harvest strategy consistent with the proposed skipjack tuna TRP, is projected to increase slightly from the 2012 level, and would be expected to remain well above the LRP with high certainty (SPC, 2014).
20. The proposed TRP is expected to require moderate reductions in purse seine effort over time to adjust for effort creep.
21. The adoption of the proposed TRP will also provide a basis, with the adopted LRP for WCPO skipjack tuna, for the Commission to proceed with the development of a harvest control rule related to skipjack tuna.
22. The proposed TRP compares responsibly with the decisions of other tuna RFMOs, including

- a) the Indian Ocean Tuna Commission, which has adopted  $B_{MSY}$  as an interim TRP for skipjack tuna and other key tuna species;
- b) the Inter-American Tropical Tuna Commission, which implicitly uses  $B_{MSY}$  as a TRP for skipjack tuna; and
- c) the International Commission for the Conservation of Atlantic Tunas, which has not yet adopted a TRP for skipjack tuna.

In this respect, the adoption of the proposed TRP for WCPO skipjack tuna will set a new global standard for responsible management of sustainable tuna fisheries in a way that adds economic value to the WCPO skipjack tuna stock.

### **Application of CMM 2013-06**

23. The following information is offered to assist the Commission to meet the requirements of CMM 2013-06 in respect of this draft CMM.

**a. Who is required to implement the proposal?**

All CCMs will be required to implement this proposal in their cooperation to establish a harvest strategy for WCPO skipjack tuna. However it should be noted that those CCMs who are Parties to the Palau Arrangement bear a large proportion of the effort of implementation through the setting of the Total Allowable Effort under the Vessel Day Scheme.

**b. Which CCMs would this proposal impact and in what way(s) and what proportion?**

This proposal will have an impact on all CCMs involved in fisheries for WCPO skipjack tuna, and all CCMs participating in the Commission's cooperative effort to establish a harvest strategy for skipjack tuna. The impact will be greatest on SIDS in whose waters fishing for skipjack tuna largely takes place, and who are, in many cases, substantially dependent on fisheries targeting skipjack for their sustainable development. The impact on SIDS will depend on how the Commission applies the TRP, noting the importance of the Commission giving full recognition to the special requirements of SIDS, in the application of the TRP.

**c. Are there linkages with other proposals or instruments in other regional fisheries management organizations or international organizations that reduce the burden of implementation?**

Yes, there are linkages to the process of setting of the TAE for the purse seine VDS under the Palau Arrangement implemented by the PNA, which is a measure applied by a subregional fisheries management organization under Article 8 of the Convention.

**d. Does the proposal affect development opportunities for SIDS?**

The proposal should not adversely affect SIDS domestic access to resources and development aspirations. The proposal will contribute to effective management and conservation of the WCPO skipjack tuna stock which should promote development of sustainable domestic fisheries for skipjack tuna to the benefit of SIDS.

**e. Does the proposal affect SIDS domestic access to resources and development aspirations?**

Yes, in some respects, because the proposal may limit yields of WCPO skipjack tuna below the optimum level of utilization, but, in general, it will enhance development opportunities for SIDS through the application of the precautionary approach, including the adoption of limit and target reference points, to improve the effectiveness of decision-making on the management and conservation of the WCPO skipjack tuna stock. Properly applied, the proposed skipjack tuna TRP will contribute to maintaining and increasing the value of fisheries for WCPO skipjack tuna, including the artisanal and purse seine fisheries. In particular, a substantial part of the increased value of the purse seine fishery is expected to be captured by the Vessel Day Scheme, which provides substantial benefits to many SIDS. It is expected that SIDS will benefit from this measure and there will be no disproportionate burden of conservation action transferred on to SIDS.

**f. What resources, including financial and human capacity, are needed by SIDS to implement the proposal?**

SIDS will need assistance in the further development and application of the precautionary approach to the conservation and management of WCPO skipjack tuna, including the application of the TRP that is adopted. This is a recognised priority, with assistance already being provided by the SPC, FFA, the PNAO and the WCPFC, through a range of workshops and technical advisory activities, including the WCPFC Management Objectives Workshops, supported also by Australia, GEF, New Zealand, Pew, WWF and the World Bank. Work in this area will need to continue to be recognised as a priority.

**g. What mitigation measures are included in the proposal?**

Not applicable

**h. What assistance mechanisms and associated timeframe, including training and financial support, are included in the proposal to avoid a disproportionate burden on SIDS?**

Current and projected programmes of assistance are expected to meet the needs for training and technical assistance, provided the current priority is maintained.

## References

SPC, Oceanic Fisheries Programme (OFF) and the Parties to the Nauru Agreement (PNA) 2014. Assessing a candidate target reference point for skipjack tuna consistent with PNA management Objectives.

WCPFC-SC10-2014/MI-WP-09, Majuro, Republic of the Marshall Islands, 6–14 August 2014.

SPC, Oceanic Fisheries Programme (OFF) 2014. Multi-Species Implications of Reference Points: What Might a Target Reference Point of 50%SB<sub>F=0</sub> for Skipjack Tuna Mean for Bigeye and Yellowfin Tuna.

WCPFC-MOW3-WP/05, Apia, Samoa, 28 November 2014.

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**DRAFT CONSERVATION AND MANAGEMENT MEASURE ON  
A TARGET REFERENCE POINT FOR WCPO SKIPJACK TUNA<sup>1</sup>**

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*The Western and Central Pacific Fisheries Commission (WCPFC):*

**Recalling** that the objective of the Convention on the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific Ocean (the Convention) is to ensure through effective management, the long-term conservation and sustainable use of the highly migratory fish stocks of the Western and Central Pacific Ocean in accordance with the 1982 Convention and the Agreement;

**Recalling** that Annex II 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) sets out guidelines for the application of precautionary reference points in conservation and management of straddling fish stocks and highly migratory fish stocks

**Recalling also** that in article 5 (c) of the Convention, members of the Commission have committed to apply the precautionary approach in accordance with the Convention and all relevant internationally agreed standards and recommended practices and procedures,

**Further recalling** that Article 6 1 (a) requires members of the Commission in their application of the precautionary approach to apply the guidelines set out in Annex II of the Agreement and determine, on the basis of the best scientific information available, stock-specific reference points and the action to be taken if they are exceeded;

~~**Noting** the importance of the adoption of Limit Reference Points and Target Reference Points for certification of WCPO tuna fisheries as sustainable;~~

**Noting that the Commission has adopted a Conservation and Management Measure on Establishing a Harvest Strategy for Key Fisheries and Stocks in The Western and Central Pacific Ocean;**

**Desiring** to make progress on the development of a harvest strategy for fisheries for WCPO skipjack tuna through the adoption of a Target Reference Point for this stock;

**Adopts**, in accordance with Article 10 of the Convention, the following conservation and management measure on a target reference point for WCPO skipjack tuna.

1. The target reference point for the WCPO skipjack tuna stock shall ***initially*** be 50 per cent of the estimated recent average spawning biomass in the absence of fishing, ( $SB_{F=0,t1-t2}$ ).

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<sup>1</sup> The revisions in the text take into account comments made by Commission members at WCPFC11, by Scientific Committee members at SC11, and by TCC Members at TCC11.

2. **This target reference point shall be an interim target reference point until it is reviewed in accordance with paragraph 7 below.**
3. The ~~time window~~**method** to be used in estimating the recent average spawning biomass in the absence of fishing shall be the same as that adopted by the Commission for the limit reference point for WCPO skipjack tuna, i.e.
  - a) **The time window shall** have a length of ten years **and be** based on the last ten years used in the most recent skipjack stock assessment, i.e.  $t1=y_{last}-10$  to  $t2=y_{last}-1$  where  $y_{last}$  is the last year used in the assessment; and
  - b) **The estimation shall** be based on the most recent WCPO skipjack stock assessment model estimates of recruitment that have been adjusted to reflect conditions without fishing according to the stock recruitment relationship.

~~Until the next skipjack stock assessment, the target reference point value shall be 50% of estimated average spawning biomass in the absence of fishing over the years 2002 to 2011 ( $SB_{F=0,2002-2011}$ ).~~

4. Conservation and management measures adopted by the Commission shall aim at maintaining the WCPO skipjack tuna stock at the target reference point level on average.
5. The Scientific Committee shall ~~apply~~**refer to** the target reference point in its assessment of the status of the WCPO skipjack tuna stock and in reporting to the Commission on management advice and implications for this stock.
6. ~~At its 12<sup>th</sup> annual session, the Commission shall consider advice from the Scientific Committee and the Technical and Compliance Committee on~~**The Commission shall use the target reference point in** the formulation of a harvest control rule and a harvest strategy for fisheries targeting WCPO skipjack tuna in accordance with CMM 2014-06. **The harvest control rule shall be designed such that the management control to be implemented would result in the biomass-based target reference point being achieved on average in the long term, taking account of uncertainty.**
7. **The target reference point may be reviewed by the Commission any time relevant new information is made available, such as any time a new stock assessment is prepared, and no later than 2019. The Commission shall pay particular attention to any future recommendations of the Scientific Committee relating to the target reference point, including any recommendations with respect to spatial impacts of fishing on the stock.** ~~The Target Reference point may be reviewed by the Commission, if appropriate, following the next full assessment of the skipjack stock.~~