

**JOINT IATTC AND WCPFC-NC WORKING GROUP MEETING ON THE  
MANAGEMENT OF PACIFIC BLUEFIN TUNA**

**EIGHTH SESSION (JWG-08)**

Fukuoka, Japan  
4 – 5 July 2023

---

**PROVISIONAL AGENDA**

---

IATTC-NC-JWG08-2023/02 [\(Rev.01\)](#)

**1. Opening of the meeting**

**2. Adoption of Agenda and Meeting Procedures**

**3. Scientific Information on Pacific Bluefin Tuna**

**3.1 Updates on the stock status of Pacific bluefin tuna**

Full stock assessment for Pacific bluefin tuna is scheduled in 2024. The JWG will review any updates on this stock if available.

**3.2 Reports from WCPFC-Scientific Committee (SC) and IATTC-Scientific Advisory Committee (SAC)**

The report of the 19<sup>th</sup> WCPFC-SC meeting will not be available as the meeting will be held during 16 – 24 August 2023.

**4. Reports on the implementation of Pacific bluefin tuna measures**

The JWG will review WCPFC and IATTC Member's implementation reports on [CMM 2021-02](#) and [C-21-05](#).

**5. Review of Conservation and Management Measures for Pacific Bluefin Tuna**

The JWG will review the current Pacific bluefin tuna measures, CMM 2021-02 and C-2021-05, and provide any recommendations to NC19.

**6. Catch Documentation Scheme**

The JWG will review the progress of the CDS Technical Meeting, including development of the draft CMM for the establishment of a Catch Documentation Scheme for Pacific Bluefin Tuna.

**7. Development of Long-Term Harvest Strategy**

**7.1 Progress and issues related to developing Management Strategy Evaluation**

The JWG will review the progress of MSE development and any associated issues to address for further MSE process.

**7.2 Operational management objectives and performance indicators**

The JWG will revisit and finalize the *Candidate Operational Management Objectives and Performance Indicators for Pacific Bluefin Tuna* in **Attachment A** (Annex E of JWG-07 Summary).

**7.3 [Review candidate reference points and harvest control rules \(HCRs\) adopted in 2019 and revise as appropriate](#)**

As requested by the ISC Chair, the JWG will also work to narrow down the list of reference points and harvest control rules to be tested under the MSE in **Attachment B** (*Candidate Reference Points and Harvest Control Rules for Pacific Bluefin Tuna*, Annex F of the JWG-04 Chairs' Summary for the list previously adopted).

**7.4 Development of Interim Harvest Strategy**

The JWG will revisit and finalize the *Pacific Bluefin Tuna Interim Harvest Strategy* in **Attachment C** (Annex F of JWG-07 Summary).

**7.5 Work Plan for Development of a Long-term Harvest Strategy for PBF (including MSE)**

The JWG will review and update as needed the *Work Plan for Development of a Long-term Harvest Strategy for PBF (including MSE)* in **Attachment D** (Annex G of JWG-07 Summary).

**8. Next JWG meeting**

**9. Other business**

**10. Adoption of Report**

**11. Close of meeting**

**JOINT IATTC AND WCPFC-NC WORKING GROUP MEETING ON THE MANAGEMENT  
OF PACIFIC BLUEFIN TUNA  
SEVENTH SESSION (JWG-07)**

ELECTRONIC MEETING  
09:00-13:00, Japan Standard Time  
12-14 July 2022

---

**CANDIDATE OPERATIONAL MANAGEMENT OBJECTIVES AND PERFORMANCE  
INDICATORS FOR PACIFIC BLUEFIN TUNA**

---

*Note: JWG07 reviewed JWG07-DP-12, produced this Annex, and agreed to revisit this at JWG08.*

Category	Operational Management Objective	Performance Indicator
<b>Safety</b>	There should be a less than [5-20%] <sup>1</sup> probability of the stock falling below the LRP	<ul style="list-style-type: none"> <li>• Probability that <math>SSB &lt; LRP</math> in any given year of the evaluation period (<u>[10-30] years subject to the number of scenarios; NPA use 30 years; can be confirmed in 2023</u>)</li> </ul>
<b>Status</b>	To maintain fishing mortality at or below $F_{Target}$ with at least <u>[50-75]</u> % probability	<ul style="list-style-type: none"> <li>• Probability that <math>F \leq F_{TARGET}</math> in any given year of the evaluation period</li> </ul>
<b>Stability</b>	To limit changes in overall catch limits between management periods to no more than <u>[15%]</u> downwards[, unless the ISC has assessed that there is a greater than 50% chance the stock is below the LRP]	<ul style="list-style-type: none"> <li>• Percent change upwards in catches between management periods excluding periods when <math>SSB &lt; LRP</math></li> <li>• Percent change downwards in catches between management periods excluding periods when <math>SSB &lt; LRP</math></li> </ul>
<b>Yield</b>	<p>[Maintain a proportional fishery impact between the WCPO and EPO [similar to the average proportional fishery impact from 1971-1994]]</p> <p>To maximize yield over the medium (5-10 years) and long (10-30 years) terms, as well as average annual <u>catch yield</u> from the fishery.</p> <p><u>[To increase average annual catch in all fisheries across WCPO and EPO]</u></p>	<ul style="list-style-type: none"> <li>• Median fishery impact (in %) on SSB in any given year of the evaluation period by fishery and by WCPO fisheries and EPO fisheries</li> <li>• The probability that the proportional EPO fishery impact is at least the 1971-1994 average in any given year</li> <li>• Expected annual yield over years 5-10 of the evaluation period, by fishery.</li> <li>• Expected annual yield over years 10-30 of the evaluation period, by fishery.</li> <li>• Expected annual <u>catch yield</u> in any given year of the evaluation period, by fishery.</li> </ul>

---

<sup>1</sup> The acceptable levels of risk may vary depending on the LRP selected, but should be no greater than 20%.

JOINT IATTC AND WCPFC-NC WORKING GROUP MEETING ON THE  
MANAGEMENT OF PACIFIC BLUEFIN TUNA  
FOURTH SESSION

Portland, Oregon, United States of America  
3 – 5 September 2019

---

CANDIDATE REFERENCE POINTS AND HARVEST CONTROL RULES FOR  
PACIFIC BLUEFIN TUNA

---

The Western and Central Pacific Fisheries Commission (WCPFC) harvest strategy for Pacific bluefin tuna fisheries states that “The Joint WG will start to discuss in 2018, and aim to finalize no later than 2019, guidelines for the MSE, including at least one candidate long-term target reference point (TRP), two candidate limit reference points (LRPs) and candidate harvest control rules (HCRs), which will be provided to the ISC.”

The following candidate HCRs and reference points will be considered in the management strategy evaluation (MSE) for Pacific bluefin tuna fisheries. Additional HCRs and reference points may be submitted and considered.

### Harvest Control Rules

**Candidate HCRs 1a** and **1b** are illustrated in Figure 1 where fishing mortality is controlled depending on stock status relative to the defined reference points. The  $F_{target}$  rate applies when the stock is larger than  $SSB_{threshold}$ , while  $F_{min}$  rate applies when the stock is smaller than  $SSB_{limit}$ , and there is either a linear or sigmoidal transition in  $F$  for stock sizes between  $SSB_{limit}$  and  $SSB_{threshold}$ .  $F_{min}$  would be defined as an  $F$  rate that is less than the  $F$  rate corresponding to the  $SSB_{limit}$ . **Candidate HCR 1a** has a linear transition between  $SSB_{limit}$  and  $SSB_{threshold}$  whereas **Candidate HCR 1b** has a sigmoidal transition between  $SSB_{limit}$  and  $SSB_{threshold}$  and could be viewed as more conservative with respect to uncertainty in underlying biomass/abundance estimates when approaching  $SSB_{limit}$ , as well as avoiding abrupt management breakpoints.

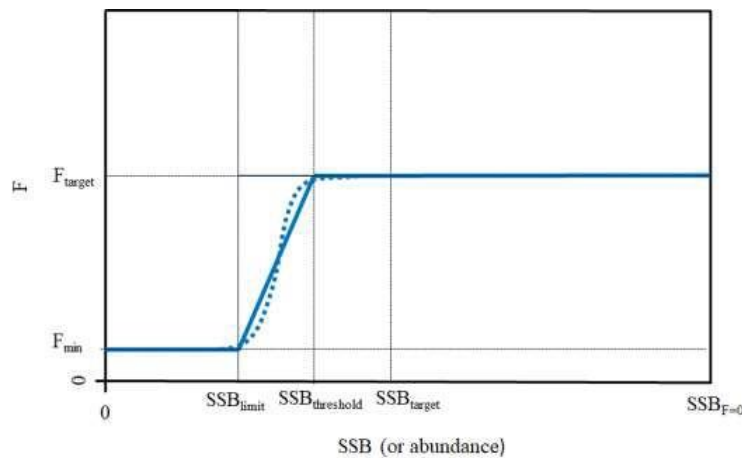
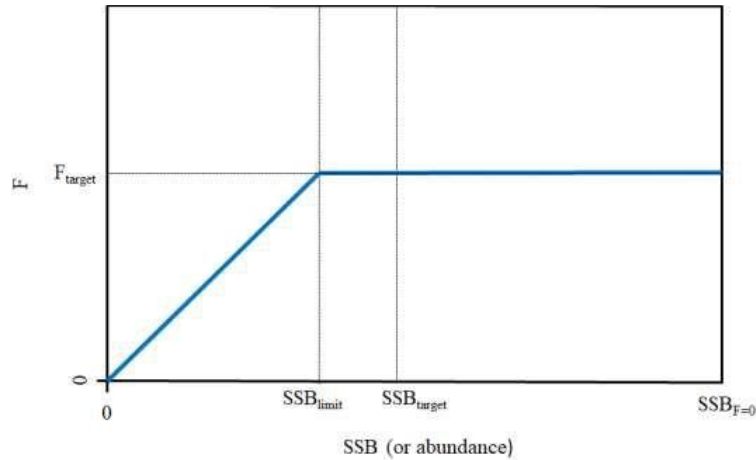


Figure 1. Candidate HCRs 1a (solid line) and 1b (dashed line)

**Candidate HCR 2** is illustrated in Figure 2 and is similar to Candidate HCRs 1a and 1b in that  $F$  declines once the  $SSB_{limit}$  is breached, but unlike Candidate HCRs 1a and 1b, there is no  $SSB_{threshold}$  between  $SSB_{limit}$  and  $SSB_{target}$ .



**Figure 2.** Candidate HCR 2

**Candidate HCR 3** specifies two HCRs, one for old-fish fisheries and one for young-fish fisheries. For fisheries that harvest primarily mature Pacific bluefin tuna (e.g., longline fisheries), the HCR could be either Candidate HCRs 1a, 1b or 2 (i.e., fishing mortality is controlled as a function of the size of the spawning stock), and for fisheries harvest primarily immature Pacific bluefin tuna, the HCR would control fishing mortality as a function of recruitment, such as using an index of recruitment based on CPUE in age 0 or 1 fisheries. This approach is similar to that used in Maunder 2014<sup>1</sup>.

All of the above candidate HCRs are general in concept and require further work to address issues such as regional distribution, fishery selectivity and fleet allocation.

### Candidate Reference Points

The following candidate reference points for the Pacific bluefin tuna MSE are based in part on the hierarchical approach that the WCPFC adopted for identifying limit reference points for key target species as well as the approach taken by the IATTC in identifying interim LRPs for tropical tunas. Under the hierarchical approach adopted by the WCPFC, and as indicated in the harvest strategy for Pacific bluefin tuna fisheries, Pacific bluefin tuna is a Level 2 stock, as the stock recruitment relationship for Pacific bluefin tuna is not well known, but key biological and fishery variables are reasonably well estimated. LRPs for Level 2 stocks are identified as either  $F_{X\%SPR_0}$  and either  $X\%SB_0$  or  $X\%SB_{current, F=0}$ . In the IATTC, the interim LRP for tropical tuna stocks is the SSB associated with 50% of the unfished recruitment with assuming a stock-recruitment relationship steepness of 0.75. In addition to an LRP and a TRP, each of Candidate HCRs 1a and 1b require identification of a threshold reference point ( $SSB_{threshold}$ ) and an  $F_{min}$ . The combinations of LRPs, threshold reference points and TRPs will depend on which of the Candidate HCRs are evaluated. Further consideration is needed for the reference points associated with the recruitment-based HCR in HCR 3.

<sup>1</sup> Maunder, Mark. (2014). Management Strategy Evaluation (MSE) Implementation in Stock Synthesis: Application to Pacific Bluefin Tuna. IATTC Stock Assessment Report. 15. 100-117.

Candidate Limit Reference Points:  $5\%SSB_{F=0}$ ,  $7.7\%SSB_{F=0}$ ,  $15\%SSB_{F=0}$ ,  $20\%SSB_{F=0}$

Candidate Threshold Reference Points (for candidate HCRs 1a and 1b):  $15\%SSB_{F=0}$ ,  $20\%SSB_{F=0}$ ,  $25\%SSB_{F=0}$

Candidate Target Reference Points:  $FSPR10\%$ ,  $FSPR15\%$ ,  $FSPR20\%$ ,  $FSPR30\%$ ,  $FSPR40\%$

Candidate  $F_{min}$ :  $5\% F_{target}$ ,  $10\%F_{target}$

JOINT IATTC AND WCPFC-NC WORKING GROUP MEETING ON THE MANAGEMENT  
OF PACIFIC BLUEFIN TUNA  
SEVENTH SESSION (JWG-07)

ELECTRONIC MEETING  
09:00-13:00, Japan Standard Time  
12-14 July 2022

---

PACIFIC BLUEFIN TUNA INTERIM HARVEST STRATEGY

---

*Note: JWG07 reviewed JWG07-DP-13, produced this Annex, and agreed to revisit this at JWG08.*

The following harvest control rules shall be applied based on the results of stock assessments and SSB projections to be conducted by the ISC during the period from the year in which the stock is projected to achieve the second rebuilding target of 20%SSB0 to 2029 or the year ~~when~~ a long-term harvest strategy based on an MSE process is implemented.

- a. If the SSB projection indicates that SSB will be below 20%SSB0 with a probability of 60%, management measures shall be modified to increase the SSB to at least 20%SSB0 with 60% probability. For this purpose, the ISC ~~will be~~ is requested, ~~if necessary,~~ to provide information on possible management measures to achieve 60% that the stock is above 20%SSB0 after 10 years of the latest stock assessment.
- b. If the SSB projection indicates that SSB will be greater than 20%SSB0 with a probability of 60%, modifications to management measures may be considered so long as any changes maintain SSB greater than 20%SSB0 with a probability of 60%.

[Maintain a and replace b with:

If the SSB projection indicates that SSB will be greater than 20%SSB0 with a probability of 60%, management measures shall be modified to the extent that the stock is maintained above 20%SSB0 with a probability of 60%. For this purpose, the ISC is requested to provide information on possible management measures to achieve 60% that the stock is maintained above 20%SSB0.]

[Replace both a and b with:

Management measures shall be taken to ensure the stock is maintained at or above 20%SSB0 in 2029 with a probability of 60%, before 2029 or the year when harvest strategy based on MSE process is initiated whichever earlier. For this purpose, the ISC is requested to provide information on possible management measures to achieve 60% that the stock is maintained at or above 20%SSB0 in 2029.]

- c. Any adjustments to management measures shall be considered in cooperation between the two RFMOs taking into account historical and future projected proportional fishery impacts on SSB between fisheries in the EPO and fisheries in the WCPO. For this purpose, ISC is requested, to provide relevant information, including projected proportional fishery impact of potential management measures changes.
- d. This harvest control rule will be reviewed and modified, as necessary, if depletion estimates across the time-series have been adjusted due to changes in assumptions and/or settings of the stock assessment model.

**JOINT IATTC AND WCPFC-NC WORKING GROUP MEETING ON THE  
MANAGEMENT OF PACIFIC BLUEFIN TUNA  
SEVENTH SESSION (JWG-07)**

ELECTRONIC MEETING  
09:00-13:00, Japan Standard Time  
12-14 July 2022

---

**WORK PLAN FOR DEVELOPMENT OF A LONG-TERM HARVEST STRATEGY  
FOR PBF (INCLUDING MSE)**

---

The following is a proposed work plan for developing a long-term Harvest Strategy (including MSE) for Pacific bluefin tuna:

2022 (JWG7):

- JWG recommends that the ISC develop a technical work plan for the MSE process before JWG8 in 2023. This could include development of a set of MSE operating models differing in their structural uncertainty.
- JWG requests the ISC to provide feedback on the proposed objectives and indicators as discussed at JWG7.
- The JWG requests its members to solicit input from its stakeholders and task itself to address this at JWG8, as appropriate.

2023 (JWG8):

- JWG recommends a set of operational management objectives and performance indicators for use in an MSE process and considers refining candidate HCRs and RPs.
- ISC to provide an overview of their technical workplan and any progress on the MSE, including but not limited to clarifications needed, to JWG8 in 2023.
- If additional information is requested by the ISC from the JWG relevant to the MSE, the JWG should task its members to solicit input from its stakeholders and task itself to address this at JWG9 in 2024, as appropriate.
- JWG recommends an Interim Harvest Strategy to be applied during the period from the year in which the stock is projected to achieve the second rebuilding target of 20%SSB0 to when a long-term harvest strategy based on MSE process is implemented.

2024 (JWG9):

- ISC to complete a benchmark assessment for PBF and JWG may expect an update on progress of MSE.
- If additional information is requested by the ISC from the JWG relevant to the MSE, the JWG should task its members to solicit input from its stakeholders and task itself to address this at JWG10 in 2025, as appropriate.
- JWG recommends new management measures based on Interim Harvest Strategy.

2025 (JWG10):

- ISC presents results from the MSE to JWG10 in 2025
- JWG recommends a final HS to the WCPFC and IATTC for adoption.