ANNEX 05a

25th Meeting of the
International Scientific Committee for Tuna
and Tuna-Like Species in the North Pacific Ocean
Busan, Republic of Korea
17-20 June 2025

REPORT OF THE PACIFIC BLUEFIN TUNA WORKING GROUP INTERSESSIONALWORKSHOP[1]

June 2025

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ANNEX 05a

REPORT OF THE PACIFIC BLUEFIN TUNA WORKING GROUP INTERSESSIONALWORKSHOP

International Scientific Committee for Tuna and Tuna-Like Species in the North Pacific Ocean (ISC)

10-13 December 2024
Webinar

1. OPENING AND INTRODUCTION

1.1. Welcome and Introduction

Shuya Nakatsuka, the Chair of the ISC Pacific Bluefin Tuna (PBF) Working Group (WG), opened the meeting. He noted that both the WCPFC and IATTC adopted revised conservation and management measures (CMMs) to increase the total allowable catch (TAC) this year based on the results of the latest stock assessment conducted by the ISC in 2024 and that this is a milestone in the management of PBF, recovering from a very low stock level to a healthy and normal management through the cooperation of stakeholders and scientists, notably the ISC. The focus of PBF management has now shifted to developing a management strategy evaluation (MSE), which is the main agenda item for the present meeting.

1.2. Adoption of Agenda

The adopted agenda is attached as Attachment 1. The list of participants is attached as Attachment 2, and the list of documents is attached as Attachment 3.

1.3. Appointment of Rapporteurs

Rapporteurs were assigned as follows; Agenda 2: H. Fukuda, Agenda 3: S. Teo and Y Tsukahara.

2. ASSUMPTION OF POPULATION DYNAMICS AND INPUT DATA FOR THE PBF MSE

2.1. Fishery Data for Input of the Operating Model and Management Procedure

Update of the Catch Time Series

H. Fukuda made an oral presentation about the updated catch time series submitted from the members. Catch data in 2023-1st and 2nd fishing quarters were updated by fleet and quarter, and the author confirmed that the updated catch were within the variation of the previous years. Those data will be used in the operating model of the PBF MSE. He also noted the important dates for the data submission deadline.

Discussion

It was clarified that the purpose of the data collection (updating 2023 fishing year data) is for the TAC calculations by a management procedure (MP-TAC), but the MSE analyses will be conducted using data up to FY2022, as agreed previously. Some members mentioned the difficulty in submitting the size data by the deadline, and the author commented that size data is a lower priority than catch data for the MP-TAC calculations since one-year of size data would not give a substantial difference in the estimated age structure. **It was confirmed that the FY2023 catch time series and size data (if possible) should be submitted to the Data Manager of the WG by the end of December 2024, and FY2023 CPUE should be submitted by the end of January 2025.**

3. MODEL SETTING AND RESULTS

3.1. Confirmation of Key Model Setting

Updates to the Management Strategy Evaluation Framework for Pacific Bluefin Tuna. Desiree Tommasi* and HuiHua Lee (ISC/24/PBFWG-2/02)

Here we summarize updates made to the Pacific Bluefin tuna (PBF) Management Strategy Evaluation code following input from the March 2024 ISC PBF Working group (WG) and the 9th Meeting of the Inter-American Tropical Tuna Commission (IATTC) and Western and Central Pacific Fisheries Commission of the Northern Committee (WCPFC NC) Joint Working Group (JWG) on PBF management. Main changes include the adoption of a new base case operating model (OM) based on the latest 2024 PBF stock assessment, implementation of the real-world lag between the availability of data for the simulated assessment and the simulated implementation of the catch advice, and generation of a separate total allowable catch (TAC) by size category for fleets operating in the Western and Central Pacific Ocean (WCPO) and Eastern Pacific Ocean (EPO).

Discussion

The WG requested that the base case OM be clearly labelled as such for ease of understanding. A WG member asked if all the OMs presented had passed the necessary number of diagnostics. The authors responded that yes, these OMs have passed three or more diagnostic tests.

The WG agreed to base the start year of the 25% limit on TAC changes on the 2025 TAC for the 1st EM cycle rather than the 2023 TAC.

The WG discussed OM8, which appeared to be unstable in simplified MSE projections. There may be a need to discard unstable OMs (e.g., OM3 and OM8) and hence reduce the number of OMs. The WG agreed that this was generally a good idea for those OMs with convergence and instability issues, but more time was needed to decide on if and which OMs to discard. **The WG decided to discuss the OM set more after the February JWG meeting.**

The WG also discussed how to treat the results from low-productivity OMs that start the simulations below the limit reference points (LRPs) and have qualitatively different trajectories from the base case OM.

The Chair reiterated that the purpose of the JWG inter-sessional meeting in February 2025 is to introduce MSE models and concepts to the JWG, allow the JWG to review preliminary MSE outputs, and obtain feedback from the JWG.

Given the limited time before the February JWG meeting, the WG discussed the necessary computational resources and the selection of a small subset of OMs and still capture the range of the uncertainty for the meeting. For the JWG meeting in February, **the WG agreed to focus on 2 OMs (OM1: base case that represent high productivity and OM3: low productivity) to demonstrate the preliminary MSE outputs.** Both OMs are currently expected to be run with all 12 HCRs, 2 impact ratios, and 100 iterations. The 25% limit on TAC changes will be applied to all runs as requested.

Final Considerations of the Use of SS3 ASPM-R as an Estimation Model in PBF MSE. Norio Takahashi*, Yohei Tsukahara, Desiree Tommasi and Hiromu Fukuda (ISC/24/PBFWG-2/03)

This document is a discussion paper that reports comparisons of performance between full Stock Synthesis (SS3) and SS3 ASPM-R (Age-Structured Production Model with Recruitment deviations) when using these models as the estimation model (EM) in PBF management strategy evaluation (MSE). Based on the previous examination (Takahashi et al. 2023b), we further explored to determine what composition data needs to be included and how the specifications of ASPM-R need to be improved. An ASPM-R specification with fixed selectivities for all fleets except the Japanese F1 and Taiwanese F3 fleets, and with log-likelihood functions of size frequency data included only for F1 and F3 (named 'ASPMR_F1F3') was mainly used in the analysis. The use of ASPMR_F1F3 as the EM was able to substantially reduce computation time (by approximately 58%) compared to the full SS3 EM. Among the EM options considered, ASPMR_F1F3 appeared to be the best choice with respect to both computation time saving and estimation performance. For the exploratory testing of candidate harvest control rules (HCRs), the use of ASPMR_F1F3 as a tentative EM merits computation time reduction without degrading the estimation performance, when conducting an enormous number of MSE simulation runs to test candidate HCRs.

Discussion

The WG inquired about the reasons why the SS estimation model had larger biases and errors compared to the ASPM-R models. The authors responded that further work would be needed to identify the causes. It was suggested that the authors check the performance of the EMs using bootstrapped historical data. It was also suggested that the authors calculate the relative error for the various EMs.

Given the time constraints for the simulations and the comparable estimation performance of the ASPM-R and full SS models, **the WG agreed to use the ASPMR-F1F3 as the EM** to conduct the entire MSE process, including the final evaluation/selection phase.

The WG discussed if the ASPMR-F1F3 or the full SS model should be used during the actual implementation/operation of the MP. During substantial discussions, some WG members supported using the same model for both the MSE and the actual implementation (i.e., ASPMR-F1F3), while others supported using the full SS model for the actual implementation of the MP, given its similar estimation performance to the ASPMR-F1F3. Some WG members expressed concern that the approximately 10% bias in the full SS estimates might be inherent to the SS assessment itself rather than being caused by the MSE simulation code. **The decision on which model to use for the MP remains pending. However, the WG tentatively agreed to proceed under the assumption that the EM (ASPMR) could form part of a future conservation and management measure (CMM) to implement the MP, while noting that the RFMOs may prefer to only adopt the HCR.**

The WG discussed whether the EM should assume the actual level of discards or use some fixed levels. The WG considered the current assumption is the best option at this stage. The scenario with 2 times higher discards will be examined in robustness test.

3.2. Review of the Harvest Control Rules

Based on the discussions in Section 3.1, the WG agreed that the OMs presented at the February JWG meeting will include 12 candidate HCRs. The WG also agreed to explain in detail the mechanics of how the HCRs operate, including the 25% limit on the TAC.

3.3. Preliminary Results of the PBF MSE

Tuning the proportional fishery impact ratio across three different operating models. D. Tommasi.

The PBF Joint Working Group (JWG) identified one of the management objectives of the MSE as maintaining an equitable balance between WCPO and EPO proportional fishery impacts and requested that the HCRs be evaluated in the PBF MSE with WCPO:EPO allocations tuned to reach a WCPO:EPO fishery impact ratio of 70:30 in the terminal year of the evaluation period of the MSE. Tommasi and Lee (2024) illustrated a method to find the relative exploitation pattern across fleets to be input into the PBF MSE that leads to the Ftarget and EPO/WCPO relative fishing impact specified by managers. We apply the method to the newly developed MSE base case operating model (OM) based on the 2024 stock assessment, OM2, an OM with average productivity, and OM3, the OM with the lowest productivity in our reference set. The method was calibrated for HCR1 for each of the three different OMs in an MSE loop with no estimation error, and was able to result in a 70:30 impact ratio in the terminal year of the MSE. We show that there were almost no changes in performance metrics between runs with a 70:30 impact ratio and runs with the 2015-2022 baseline allocation except for yield metrics.

Discussion

The WG discussed how to statistically summarize the relative F values (multipliers to F2015-2022) estimated in multiple OMs for the actual MP calculations. In this presentation, relative F values were calculated for each OM and each HCR to achieve the target ratio, i.e., 70:30 in the terminal year of the projection period. While using statistics such as the average or median were suggested, it was pointed out that the real impact ratio for the MP will be calculated based on the results of the base case assessment model. Therefore, it was suggested to use the relative F estimated from OM1, which has the same productivity assumption as the assessment model, for all OMs and MP calculation.

The relative F from OM1 might result in overshoot of the target for other OMs because OM1 had the lowest impact ratio for the EPO. On the other hand, using the average or median of relative F across OMs would not align well with the MP calculation based on the actual assessment model. Whichever option the WG selects, some level of inconsistency would arise - either within the MSE simulation or between the MSE simulation and the actual MP calculation. Also, because the results in this presentation were based on calculations without any estimation errors, the results might change when the EM operates in the simulation loop. **At this stage, the WG agreed to use the relative F estimated in OM1.** The results of F multipliers to achieve each target ratio, including estimation errors, will be prepared for the February JWG meeting.

A member expressed concern regarding the variability of the impact ratio across OMs. The author responded that the changes in selectivity due to different productivity assumptions might explain this variability. However, it was noted that OMs with different selectivity patterns did not correspond to those with different impact ratios. Another possibility discussed by the WG was that the combination of the initial drastic drop of TAC due to being below the LRP for some OMs and the 25% TAC change cap might affect the pattern of catch-at-age in the simulations. However, it was also observed that OMs with such TAC patterns did not correspond to those with different impact ratios. **The WG will continue exploring the reasons behind the variability in impact ratios across OMs.**

Example Performance Metrics and Associated Plots for the Pacific Bluefin Tuna Management Strategy Evaluation. Desiree Tommasi* and HuiHua Lee (ISC/24/PBFWG-2/04).

We present potential plots that could be used to summarize the performance metrics agreed upon by the Inter-American Tropical Tuna Commission (IATTC) and Western and Central Pacific Fisheries Commission of the Northern Committee (WCPFC NC) Joint Working Group (JWG) on Pacific Bluefin tuna (PBF) management for the PBF Management Strategy Evaluation (MSE).

Discussion

Several suggestions on the plots of performance metrics were made during the discussion. For example, it was suggested to add the warm plot for biomass and TAC by fishery, use the violin plots instead of medians with error bars, and show the HCR ID in the trade-off plot. It was also proposed that the plot showing the variation rate for both upward and downward changes in TAC in a single plot would be useful to understand the tendency of changes in each HCR. The presenter diligently addressed most of the additions and modifications during the meeting.

Some members had concern about extreme changes of TAC in some OMs due to being below the LRP at the start of the simulation, leading to possibly unintended behavior of HCRs. The chair explained that because the current set of OMs was evaluated as plausible with respect to productivity uncertainty by the WG, and HCRs were provided by the Commission, such results should not be excluded. Instead, they should be presented as they are for the next February meeting, while caution need to be explained. These results will encourage managers and stakeholders to consider further the acceptability of each HCR. On the other hand, the WG may suggest reducing the number of candidate HCRs with conservative LRP or target reference point (TRP), based on poor performance in terms of the performance metrics on yield.

A member asked if there is an HCR similar to the rebuilding plan that was implemented. It was responded that under HCR 8, TAC would be set at a catch limit specified in measures in 2020 when the biomass level is below the LRP. In this case, the catch of the US recreational fishery is assumed to be the same as the 2022 actual catch. The chair explained that a plot of HCRs overlaid on the Kobe plot from the assessment results was introduced to the JWG last year, to explain that many candidate HCRs would provide Fmin catch at the beginning of the projection, as the current biomass may be below the LRP level.

Regarding the performance metrics on status and safety, all HCRs satisfied the criteria with substantial margins. It was noted that this is because capping TAC changes at 25% made TACs underrepresented compared to the TAC according to each target. Consequently, every trajectory of SSB showed an overshoot of the target in the projection period. The WG confirmed that the simulation tests without capping TAC changes can achieve the target appropriately, as desired. It was agreed that this impact of capping TAC changes should be clearly communicated to managers.

A table to consolidate the performance metrics was also discussed. It was proposed to use a table with gradated colors by column according to each performance metric, referred to as a “Quilt plot” in ICCAT MSE output. The WG generally agreed to use the quilt plot in the same manner. However, it was noted that values from all OMs and the first TAC using real data will not be available by February. **It was agreed to provide a provisional Quilt plot using provisional results, with empty cells for the first TAC, as an introduction to the concept at the February JWG meeting.**

The author will recalculate every run using the estimation model decided in this meeting and set the 2025 TAC as a starting value of TAC for the projection. All outputs will be presented to help managers and stakeholders foresee the final outputs. The chair noted that it is important to emphasize that all results in the February meeting are still preliminary and subject to change during the finalization process.

3.4. Robustness Test

Sensitivity analysis with different unseen mortality assumptions based on the 2024 stock assessment model. Kirara Nishikawa* and Hiromu Fukuda (ISC/24/PBFWG-2/05).

In the stock assessment, the WG assumed "unaccounted mortality" fleets since the 2020 stock assessment. In this document, the authors provided comparisons among the models with different unseen mortality settings. There was no strong impact on the estimates of population scale and SSB by changing the unseen mortality assumptions. About recruitment estimates, recruitments during 1998 to 2015 were slightly affected by the unseen mortality levels. The SPR timeseries estimated by the models with each unseen mortality scenario had some differences in particular after 2010. In the 2000s, because the fishing mortality was extremely high, the model couldn't explain the unseen mortality by increasing the fishing mortality, but created the recruitment as compensation. The number of fish caught decreased after the 2010s when the strict management measures were implemented, and the model explained the unseen mortality as the increase of fishing mortality. Overall, because the population dynamics estimated by different unseen mortality scenarios were basically robust, the authors do not recommend conditioning the OM for different unseen mortality levels. Instead, the WG can assume a higher unseen mortality level for the future period as one of the robustness tests. Because of the nature of the fishery, 100% of the unseen mortality was assumed for the troll for penning. If it is assumed to be 3 times higher than the current base-case, 300% of the reported catch was assumed for the troll for penning and this could be somewhat extreme level. The authors recommend assuming 2 times higher unseen mortality for the robustness test.

Discussion

The WG confirmed that the additional conditioning for this scenario is not necessary based on the results. Also, the procedure to implement this scenario in the presentation was considered acceptable for the current MSE loops. **The WG agreed to apply two times higher unseen catch for the projection period as the robustness test. The future process of OM will operate under this assumption, while the EM continues to assume the current unseen mortality level.**

Consideration about a possible unseen change in catchability in the standardized CPUE for the robustness test of the PBF MSE. Hiromu Fukuda (ISC/24/PBFWG-2/06)

This document provided the population dynamics model assuming unseen catchability (q) changes in the adult abundance indices as an alternative scenario for the robustness test of the PBF MSE. Several scenarios of q change were prepared, and the results of the Age Structured Production Model with Recruitment deviation (ASPM-R) diagnostics were compared. Among the scenarios assuming increasing trends in the unseen catchability for the adult CPUE, a 2% increase per year in the catchability of the Taiwanese longline (TLL) CPUE showed a slightly better fit to that index. Although a 2% decrease per year in the catchability of the Japanese longline CPUE had better prediction skill than any other scenarios, the author recommended the 2% increase scenario for the TLL index, following the context of the robustness test, which is the risk analysis.

Discussion

A question was raised about how to implement the changes of catchability in this test. The author responded that the value at the initial year of each index was not changed, and then the index values in the following years were adjusted according to the percentages of catchability change, powered by the number of elapsed years. The q value itself was not modified, because changing q parameter would require considerable changes in the model setting.

A member asked why the 2% annual increase for the Taiwanese longline index was selected through this investigation. The author responded that it was based on the best fit in the ASPM-R test. Although the plausibility of this scenario requires further investigation particularly during the period of low stock abundance, as fishers might be reluctant to invest in fishing gear improvements, it is considered worthwhile to include this scenario as a robustness test. The author clarified that the scenario for a downward catchability change for Japanese longline, which also showed a better fit in the ASPM-R test, was excluded from the robustness test because this assumption will produce more optimistic results, and it was out of the scope of the robustness test.

It was clarified that when this scenario is implemented as a robustness test, the OM will be conditioned using recalculated CPUE assuming effort creep, and the performance of MPs that do not assume effort creep will be tested.

Comparison between catch limits and actual catch amount in Pacific Bluefin Tuna. Kirara Nishikawa* and Hiromu Fukuda (ISC/24/PBFWG-2/07)

Since 2014, the IATTC and WCPFC have introduced management measures to limit the PBF catch, and members have generally complied with these catch limits. The difference between the TAC and observed catch represent a form of the implementation error in the context of the stock assessment or MSE. To consider the possibility, magnitude, and direction (overage or underage) of the implementation error, the authors summarized the observed catch amounts and the catch upper limits for the main PBF fishing nations since 2015. There were some excesses in some countries, but these excesses were cancelled out by releasing the fish from the aquaculture cages or by reimbursing overage in the following years. After the WCPFC adopted a management rule allowing the transfer of a portion of the TAC from the small fish category to the large fish category using a conversion factor, some countries in the WPO reduced their TAC consumption in the small fish category and increased it in the large fish category. Since 2020, the TAC consumption ratio in the large fish category in the WPO has increased as the stock recovery and exceeded their original TAC. On the other hand, the TAC consumption ratio in the WPO small fish category remained at a maximum of 86.7% during the same period. With the transfer rule in place, the TAC consumption ratios in both the WPO small and large fish categories have remained within, but very close to, 100%, particularly in recent years. EPO commercial fisheries have generally shown a high consumption ratio (averaging 99.9%) since 2015. Based on these recent observations, the future reported catch is also expected to be close to the catch limit if the stock were maintained in good stock condition.

Discussion

The WG agreed with the authors that, in recent years, the consumption ratios for the WPO and EPO are essentially 100%. Therefore, the WG agreed that the OM can assume negligible implementation error due to underage or overage. The WG noted that the OM currently includes implementation error due to discards.

Overall Discussion on the Robustness Test

The WG discussed if the estimation model without any abundance indices was appropriate for the robustness test. This scenario seems to represent an exceptional circumstance, rather than a robustness test. **The WG decided to exclude this assumption from the previously agreed set of robustness tests. The WG agreed on the following robustness tests: catchability change in TWLL (2% annual increase), the effect of climate change (a 10-year recruitment drop like during the 1980s), and a doubling of discard level.**

The WG also discussed which OMs will be used for the robustness tests, because applying all scenarios of robustness test to all OMs is time intensive. Generally, the WG members considered that using a few OMs would be sufficient to evaluate the robustness test. The candidate OMs proposed for robustness test were OM1 (a basecase-like model) and OM3 (the putatively most pessimistic model). T**he WG agreed to start testing with OM1 for robustness test.** After reviewing the behavior of the robustness test in OM1, the WG may apply the scenario of robustness test to OM3.

The WG members shared a general understanding of the purpose of the robustness test. It is a kind of risk evaluation for the scenarios which are less likely to happen, compared to the scenarios in the reference set. The WG will continue to consider how to incorporate the results of the robustness test into the PBF MSE.

3.5. Exceptional Circumstances

No detailed discussion took place but the following were identified as general candidates for exceptional circumstances. The detail, possibly including numerical thresholds, will be further developed in the future.

- Stock is out of the range evaluated in the MSE
- No adult longline index available
- Huge implementation error

4. DRAFTING PRESENTATION FOR THE INTERSESSIONAL JOINT IATTC WCPFC-NC WG MEETING

The WG reviewed the provisional draft agenda for the intersessional Joint IATTC WCPFC-NC WG meeting in February 2025 and discussed how to prepare presentations according to the agenda. Generally, the following presentations will need to be prepared, mainly based on the work already done.

- ○ History of PBF stock and management (Nakatsuka)
- ✔ Stock structure, Biology, Fishery
- ✔ Assessment and Management
- ○ Uncertainty considered (Lee)
- ✔ Operating Model (Structural uncertainty)
- ✔ Process error for recruitment
- ✔ Observation error
- ✔ Implementation error
- ✔ Robustness set
- ○ PBF Management Strategy Evaluation (Tommasi)
- ✔ MSE loop

- ✔ Estimation model and TAC calculation
- ✔ 25% TAC change limitation
- ✔ Impact ratio tweaks
- ✔ Performance indicators
- ○ Results (Tommasi)
- ○ Summary (Nakatsuka)

Presentations should be shared among WG members by January 10 and be submitted to WCPFC Secretariat by January 23.

Work Plan and Recommendations

The WG confirmed the workplan of MSE for next year as follows;

Feb: Intersessional JWG - to present preliminary results and obtain feedback from stakeholders
Apr: PBFWG- to finalize MSE results
June: IATTC SAC- to present Executive Summary of PBF MSE (Exec summary needs to be approved by ISC)
June: ISC Plenary- to have MSE results approved
July: JWG- to adopt MP based on MSE results

The WG also discussed how to prepare an "MSE Report", including the Executive Summary. The MSE report was generally considered a compilation of various aspects of the MSE work completed so far. Although most elements of the MSE have been submitted as working papers, the information contained in the MSE Report must reflect the decisions of the WG. While it only needs to be finalized after the April meeting, it was encouraged that each section should better be start to be prepared if time permits. The structure of the North Pacific Albacore MSE Report is useful as a reference.

5. OTHER MATTERS

5.1. New Scientific Information Relevant to PBF

Updated recruitment abundance index of Pacific bluefin tuna based on real-time troll monitoring (RTM) data. Ifue Fukuchi*, Yohei Tsukahara, Hiromu Fukuda, Shuya Nakatsuka (ISC/24/PBFWG-2/01).

In this study, we provide an updated real-time monitoring (RTM) recruitment index for Pacific bluefin tuna. We reanalyzed the RTM data from Fujioka et al. (2024) by adding the February 2024 data, which was still being collected at the time of the PBFWG meeting in March 2024. This reanalysis covered two periods: the entire data collection period from the 2011 to 2023 fishing year, and the period of tightened fishing regulations (i.e., 2017 to the 2023 fishing year). The estimated indices for the most recent year (2023 fishing year) were slightly lower than the previous ones, but the overall trend remained consistent. Additionally, the indices showed a similar trend to those based on traditional sales slip data for the overlapping period (2011 to 2016 fishing years). A key future task is to investigate in detail the factors contributing to the differences in CPUE between chartered RTM vessels and conventional RTM vessels.

Discussion

A member asked whether the two updated indices used the same data-set in different time periods. The authors answered that these indices used the same data-set, but one of them was truncated because of the possible catchability change after the introduction of the strict management measures in this fishery from 2017. It was also confirmed that the data from the chartered operations were included in this analysis, but it's premature to adjust for catchability differences between the conventional troll monitoring and the chartered troll monitoring. The authors listed this issue as unresolved for future study.

5.2. Requests from the 9th Joint IATTC WCPFC-NC WG Meeting

5.2.1. Additional Projection

Requested Future projection based on a new CMMs proposed in 2024. Kirara Nishikawa*, Hiromu Fukuda and Shuya Nakatsuka (ISC/24/PBFWG-2/08).

Based on the 2024 stock assessment model, the authors provided the future projection results of the CMMs adopted by the IATTC and WCPFC commissions and a future harvesting scenario requested by the IATTC-WCPFC NC JWG. Two additional projection results (new management measures and maximum conversion from small fish quota to large fish quota) were shown, and these results will be provided to the IATTC-WCPFC NC JWG. It was also found that the expected number of age-0 fish (less than 2 kg) caught by Japan under the new CMMs would be about half of the base line (50% of 2002-2004).

Discussion

The WG found that the 2 projection results (new CMM and total conversion) are as expected. The impact of a slight increase in the catch of large fish under the new CMMs has a minor impact on the projections, and the small fish-to-large fish conversion under the current assumptions in the projections will only have positive impacts, except for the beginning of the projection. The WG also noted the results on the expected catch level of age-0 fish (less than 2 kg) by Japan. The WG agreed to provide these results to the JWG in July 2025.

5.2.2. Research Plan to Collect Reliable Indices of Abundance

An idea to reconstruct JLL index using research quota. Yohei Tsukahara

Y. Tsukahara presented an idea to reconstruct the Japanese longline (JLL) index for the future assessments using a research quota. The operation and catch data for the JLL index were considered to be implausible for standardization in 2021 due to the changes of fishing strategies by introducing the individual quota system. To be an unbiased index, it is necessary to obtain catch records that include both retained and released PBFs in an operation. Also, some amount of operational data is required to produce a more reliable index. The presenter introduced the results of bootstrapping tests using historical data to show the relationship between the number of trips and the associated uncertainty for further consideration on the possibility of this survey.

Discussion

It was noted that the exercise assumes random selection of fishing trips, but this may need to be further considered when vessel selection process becomes clearer. It was also asked why April-June is assumed to be for the research season. It was clarified that historically, the JPLL CPUE used catch data from operations targeting spawning large adults during this period. Selection

process of fishing vessel is unclear at this stage. It may be led by fishermen or their association. It was also pointed out that it is important to improve data collection for discarded amounts in addition to CPUE. The authors noted that estimation of discard amounts may be improved through this type of research. It was asked if giving large quotas might incentivize fishermen to stay in fishing grounds longer thus change catchability. It was responded that trip lengths tend to be limited by the storage capacity, and it is planned to restrict the lengths of trip.

It was noted that as the new CMM allows for research quotas, the WG will need to evaluate research plans and provide advice in the April meeting if submitted by members. In doing so, it will be important to consider if the proposed methods, including catch amounts, justify the purpose.

5.3. Others

The Chair introduced the "climate effects knowledge vulnerability matrix" which was forwarded to each WGs by the ISC Chair. The ISC Chair seeks feedback on its usability. The WG reviewed the matrix and noted that, while the information collected through the matrix could be useful, its purpose and usage of the matrix is unclear. Furthermore, completing the matrix would require substantial effort. The WG requested that the Chair contact the ISC Chair to clarify these points to facilitate further inputs from the WG.

5.4. Future Meeting

It was confirmed that the next WG meeting, focused on finalizing MSE results, will be held from 14-18 April, 2025 in La Jolla, CA, USA.

The WG also discussed the schedule for the external peer review of the PBF assessment, which the ISC Plenary suggested to conduct before the next stock assessment in 2027. Considering the work schedule, the WG tentatively agreed to hold the peer review meeting in early 2026, assuming the MSE is completed in 2025. The terms of reference (TOR) for the review needs to be developed during the April meeting, and the nomination of reviewers should start after the July JWG meeting. Japan offered to host the meeting.

6. ADOPTION OF THE WORKSHOP REPORT

The WG reviewed the draft report and made revisions. The report was adopted by the consensus.

7. ADJOURNMENT

The meeting was adjourned at 12PM on 13 December, 2024.

ATTACHMENT 1: AGENDA

PACIFIC BLUEFIN TUNA WORKING GROUP
INTERSESSIONAL WORKSHOP

December 10- 13, 2024 (in WPO time)
Webinar

AGENDA

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1.3 Appointment of rapporteurs
2 Assumption of population dynamics and input data for the PBF MSE (Fukuda)
2.1 Fishery data for input of the Operating model and Management Procedure
2.1.1 Catch and unseen mortality time series
2.1.2 Abundance index
3 Model setting and results
3.1 Confirmation of key model setting
3.1.1 Estimation model
3.1.2 Review of Productivity assumption for the operating model
3.2 Review of the Harvest Control rules
3.3 Preliminary results of the PBF MSE
3.4 Robustness test
3.5 Exceptional circumstances
4 Drafting Presentation for the intersessional Joint IATTC WCPFC-NC WG meeting
5 Work plan and recommendations
6 Other matters
6.1 New scientific information relevant to PBF
6.2 Requests from the 9th Joint IATTC WCPFC-NC WG meeting
6.2.1 Additional projection
6.2.2 Research plan to collect reliable indices of abundance
6.3 Others
6.4 Future meeting
7 Adoption of the workshop report
8 Adjournment

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ATTACHMENT 3. LIST OF DOCUMENTS

Working Papers

Index	Related Agenda	Title	Author
ISC/24/PBFWG-2/01	2.1.2	Updated recruitment abundance index of Pacific bluefin tuna based on real-time troll monitoring (RTM) data	Ifue Fukuchi, Yohei Tsukahara, Hiromu Fukuda, Shuya Nakatsuka
ISC/24/PBFWG-2/02	3.1	Updates to the Management Strategy Evaluation Framework for Pacific Bluefin Tuna	Desiree Tommasi and HuiHua Lee
ISC/24/PBFWG-2/03	3.1.1	Final Considerations of the Use of SS3 ASPM-R as an Estimation Model in PBF MSE	Norio Takahashi, Yohei Tsukahara, Desiree Tommasi and Hiromu Fukuda
ISC/24/PBFWG-2/04	3.3	Example Performance Metrics and Associated Plots for the Pacific Bluefin Tuna Management Strategy Evaluation	Desiree Tommasi and HuiHua Lee
ISC/24/PBFWG-2/05	3.4	Sensitivity analysis with different unseen mortality assumptions based on the 2024 stock assessment model	Kirara Nishikawa, Hiromu Fukuda
ISC/24/PBFWG-2/06	3.4	Consideration about a possible unseen change in catchability in the standardized CPUE for the robustness test of the PBF MSE	Hiromu Fukuda
ISC/24/PBFWG-2/07	3.4	Comparison between catch limits and actual catch amount in Pacific Bluefin Tuna.	Kirara Nishikawa, Hiromu Fukuda
ISC/24/PBFWG-2/08	6.2.1	Requested Future projection based on a new CMMs proposed in 2024	Kirara Nishikawa, Hiromu Fukuda and Shuya Nakatsuka

Oral Presentations

Related Agenda	Title	Author
3.3	Tuning the proportional fishery impact ratio across three different operating models	Desiree Tommasi
6.2.2	An idea to reconstruct JLL index using research quota.	Yohei Tsukahara