COMMISSION
FOURTEENTH REGULAR SESSION
Manila, Philippines
3– 7 December 2017

REFERENCE DOCUMENT FOR REVIEW OF CMM 2016-04 AND FOR THE DEVELOPMENT OF HARVEST STRATEGIES UNDER CMM 2014-06
Pacific Bluefin Tuna (*Thunnus orientalis*)

WCPFC14-2017-15
15 November 2017

Paper prepared by the Secretariat

A. Introduction

1. The purpose of this paper is to provide a quick reference guide to the recommendations of the Scientific Committee (SC) and the Northern Committee (NC) of relevance to the discussions in support of the adoption of a revised CMM for Pacific bluefin tuna and the development of a harvest strategy for the fisheries. It lists the recommendations drawn from the summary reports of SC13 and NC13. The Summary Reports are part of the meeting documentation and are readily available for access; they provide the context and discussion in support of the recommendations.

B. Scientific Committee Recommendations

B1. Provision of scientific information from SC13 (*SC13 Paragraphs 346; 353 – 354*)

2. The last stock assessment was conducted in 2016. No updated information was presented on the status of Pacific bluefin tuna.

Stock status and trends

3. SC13 noted that no stock assessments were conducted for Pacific bluefin tuna in 2017. Therefore, the stock status descriptions from SC12 are still current.

Management advice and implications

4. SC13 noted that no management advice has been provided since SC12. Therefore, the advice from SC12 should be maintained, pending a new assessment or other new information.

B2. Provision of scientific information from SC12 (*SC13 Paragraphs 346; 353 – 354*)

Stock status and trends

5. SC12 noted that ISC provided the following conclusions on the stock status of Pacific bluefin tuna (PBF) in the Pacific Ocean in 2016 (SC12-SA-WP-07: *2016 Pacific Bluefin Tuna Stock Assessment*):

a) The PBF working group conducted a benchmark assessment (base-case model) using the best available fisheries and biological information, and the 2016 base-case model is a substantial improvement compared to the 2014 assessment and fits all reliable data well. The base-case model indicates: (1) spawning stock biomass (SSB) fluctuated throughout the assessment period (fishing years 1952-2014) and (2) the SSB steadily declined from 1996 to 2010; and (3) the decline appears to have ceased since 2010, although the stock remains near the historic low.

b) Using the base-case model, the 2014 (terminal year) SSB was estimated to be around 17,000 mt. Recruitment estimates fluctuate widely without an apparent trend. The 2014 recruitment was relatively low, and the average recruitment for the last five years may have been below the historical average level (Figure 1).

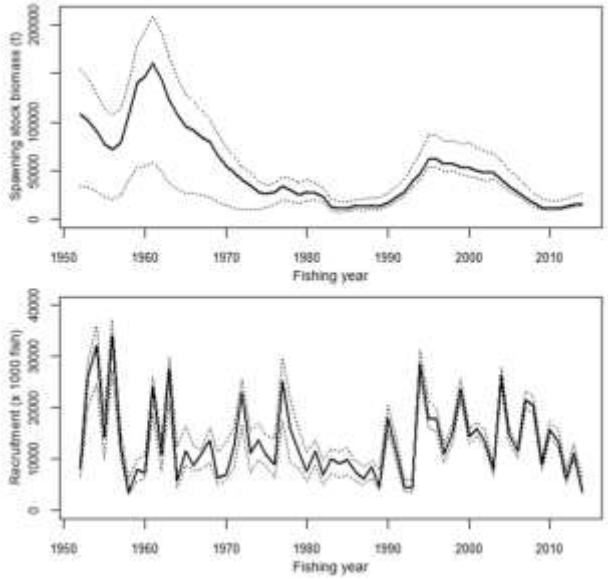

Figure 1. SSB (top) and recruitment (bottom) of PBF from the base-case model. The solid line indicates point estimate and dashed lines indicate the 90% confidence interval.

c) Although no limit reference points have been established for the PBF stock under the auspices of the WCPFC and IATTC, the $F_{2011\text{-}2013}$ exceeds all calculated biological reference points except for F_{MED} and F_{LOSS}[1] despite slight reductions to F in recent years (Table 1). The ratio of SSB in 2014 relative to the theoretical unfished[2] SSB ($SSB_{2014}/SSB_{F=0}$, the depletion ratio) is 2.6%[3]. Note that potential effects on Fs as a result of the measures of the WCPFC and IATTC starting in 2015 or by other voluntary measures are not yet reflected in the data used in this assessment.

[1] F_{LOSS} is the F which produces spawning biomass per recruit at the historically lowest observed spawning stock biomass (S_{LOSS}) given the expected level of recruitment (R_{LOSS}) at S_{LOSS}. Hence, F_{LOSS} is an easy concept to understand as a limit reference point for avoiding recruitment overfishing.

[2] "Unfished" refers to what SSB would be had there been no fishing.

[3] The unfished SSB is estimated based upon equilibrium assumptions of no environmental or density-dependent effects.

Table 1. Ratios of the estimated fishing mortalities $F_{2002\text{-}2004}$, $F_{2009\text{-}2011}$ and $F_{2011\text{-}2013}$ relative to computed F-based biological reference points and SSB (t) and depletion ratio for the terminal year of the reference period for PBF.

	F_{max}	$F_{0.1}$	F_{med}	F_{loss}	$F_{10\%}$	$F_{20\%}$	$F_{30\%}$	$F_{40\%}$	Estimated SSB for terminal year of each reference period	Depletion ratio for terminal year of each reference period
2002-2004	1.86	2.59	1.09	0.80	1.31	1.89	2.54	3.34	41,069	0.064
2009-2011	1.99	2.78	1.17	0.85	1.41	2.03	2.72	3.58	11,860	0.018
2011-2013	1.63	2.28	0.96	0.70	1.15	1.66	2.23	2.94	15,703	0.024

d) Since reference points for PBF have yet to be identified, two examples of Kobe plots (Figure 2: plot A based on SSB_{MED} and F_{MED}, plot B based on $SSB_{20\%}$ and $SPR_{20\%}$) are presented. These versions of the Kobe plot represent two interpretations of stock status in an effort to prompt further discussion. In summary, if these were the reference points, overfishing would be occurring or just at the threshold in the case of F_{MED}; and the stock would be considered overfished. Plot B shows that the stock has remained in an overfished and overfishing status for the vast majority of the assessment period if $F_{20\%}$ and $SSB_{20\%}$ are the reference points.

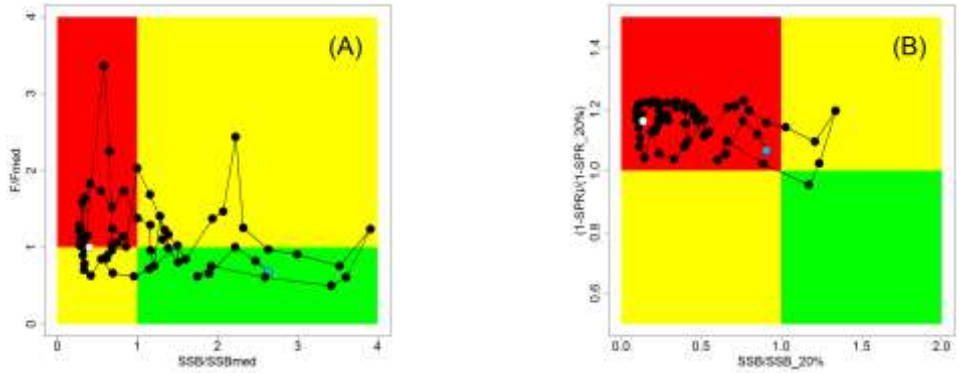

Figure 2. Kobe plots for PBF. (A) SSB_{MED} and F_{MED}; (B) $SSB_{20\%}$ and $SPR_{20\%}$ based. Note that SSB_{MED} is estimated as the median of estimated SSB over whole assessment period (40,944 t) and F_{MED} is calculated as an F to provide SSB_{MED} in long-term, while the plots are points of estimates. The blue and white points on the plot show the start (1952) and end (2014) year of the period modelled in the stock assessment, respectively.

e) Historically, the WPO coastal fisheries group has had the greatest impact on the PBF stock, but since about the early 1990s the WPO purse seine fleets, in particular those targeting small fish[4] (age 0-1), have had a greater impact, and the effect of these fleets in 2014 was greater than any of the other fishery groups. This is because the impact of a fishery on a stock depends on both the number and size of the fish caught by each fleet; i.e., catching a high number of smaller juvenile fish can have a greater impact on future SSB than catching the same weight of larger mature fish.

6. In the absence of any agreed definition of a drastic drop in stock recruitment referred to in CMM 2015-04, SC12 notes with concern that the 2012 and 2014 recruitments are at the lowest levels observed since 1980, noting that ISC noted that recruitment in the terminal years of any assessment is highly uncertain. SC12 also noted a comment from Japan that some indices of 2015 recruitment are above the

[4] It was noted that the term small fish is not used in CMM 2015-04; however, the measure states "Further substantial reductions in fishing mortality and juvenile catch over the whole range of juvenile ages should be considered…"

2014 level and early anecdotal information regarding the 2016 recruitment suggests it is not particularly low.

7. The provisional total PBF catch in 2015 was 11,020 mt in the North Pacific Ocean, which was a 36% decrease over 2014 and a 30% decrease over the average for 2010-2014.

8. SC12 noted that, based on the latest stock assessment carried out by ISC in 2016, the PBF SSB is depleted to 2.6% of the estimated unfished SSB (SBF=0). SC12 emphasized that this depletion level is considerably below the biomass depletion-based limit reference point of 20% of SBF=0 set by the Commission for all other WCPFC key tuna stocks (skipjack, yellowfin, bigeye, south Pacific albacore and north Pacific albacore). However, SC12 also notes that the PBF stock remained below 20% of SBF=0 for most of the time of assessment. SC12 also noted that the initial rebuilding target currently defined by the CMM 2015-04, the median of the SSB of the stock assessment period (42,592 mt), corresponds to a spawning biomass of around 7% of estimated unfished SSB.

Management advice and implications (*SC12 Paras 397-399*)

9. SC12 noted the following conservation advice from ISC:
   a) The projection results based on the base-case model under several harvest and recruitment scenarios and time schedules showed that the initial goal of WCPFC, rebuilding to SSB_{MED} by 2024 with at least 60% probability, is reached and the risk of SSB falling below SSB_{LOSS} at least once in 10 years was low.
   b) The projection results based on the base-case model under several harvest and recruitment scenarios and time schedules indicate that:
      (1) the probability of SSB recovering to the initial WCPFC target ($SSB_{MED, 1952-2014}$) is 69% or above the level prescribed in the WCPFC CMM if a low recruitment scenario is assumed and WCPFC CMM 2015-04 and IATTC Resolution C-14-06 continue in force and are fully implemented.
      (2) a 10% reduction in the catch limit for fish smaller than the weight threshold in CMM 2015-04 would have a larger effect on recovery than a 10% reduction in the catch limit for fish larger than the weight threshold.
   c) The ISC therefore recommends defining SSB_{MED} as the median point estimate for a fixed period of time, either, 1952-2012 or 1952-2014. If 1952-2012 is chosen, then SSB_{MED} is estimated to be 41,069 mt, and if 1952-2014 is chosen, SSB_{MED} is 40,994 mt. The ISC recommends that in the future absolute values should not be used for the initial rebuilding target, as the calculated values of reference points would change from assessment to assessment.

10. SC12 advised WCPFC13 that FFA members expressed concern that the substantial depletion of the Pacific bluefin stock due to excess fishing in the northern WCPFC region has probably resulted in range contraction, thus greatly reducing the availability of bluefin tuna (*Thunnus orientalis*) in the south Pacific. This is of particular significance to Pacific island CCMs because it limits their future opportunities for the participation in fisheries for this stock. SC12 also noted that no statistical demonstration is provided to support the range contraction of PBF. SC12 noted the need for additional information.

11. In view of the upcoming IATTC-WCPFC joint meeting on PBF management, SC12 expressed the need of urgent coordinated actions between WCPFC and IATTC in reviewing the current rebuilding plan, establishing the emergency rule as well as considering and developing reference points and HCRs for the long term management of PBF.

C. Northern Committee Recommendations (NC13)

12. The second joint IATTC-WCPFC NC working group meeting on the management of PBF was held in Busan, Korea from August 28 - 31, 2017 as an informal meeting. NC13 received the report of Joint Working Group Meeting between NC and IATTC (*see* **Attachment 1**). NC13 endorsed the conclusions of the joint working group meeting and agreed to incorporate them into relevant recommendations to the Commission.

13. NC13 recommends that the Commission adopt the Harvest Strategy for Pacific Bluefin Tuna Fisheries (*see* **Attachment 2**), and recommends that the Commission direct the Secretariat to make this harvest strategy available, as a stand-alone harvest strategy document, on a web page dedicated to this and other harvest strategies, including interim harvest strategies, adopted by the Commission.

14. NC13 revised the existing CMM to incorporate the adoption of Harvest Strategy. NC13 recommended a draft CMM for the management of PBF (*see* **Attachment 3**) to WCPFC14 for its adoption. NC13 also requested the Secretariat to summarize PBF catch reported by all CCMs.

Attachment 1
(NC13 Summary Report, Attachment E)

The Commission for the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific Ocean

Northern Committee
Thirteenth Regular Session

August 28 – September 1, 2017
Busan, Korea

Results of the 2nd Joint IATTC-WCPFC NC working group meeting on the management of Pacific bluefin tuna

The second joint IATTC-WCPFC NC working group meeting on the management of PBF was held in Busan, Korea from August 28 - 31, 2017 as an informal meeting. WCPFC NC members, some IATTC members, and observers participated in the meeting. The main results and conclusions of the meeting are as follows. Participants supported this report to be forwarded to NC13 and IATTC for further discussion.

1) Designation of Co-chairs

M. Miyahara (Japan) and D. Lowman (USA) were elected co-chairs of the meeting.

2) Adoption of agenda

Adopted agenda is attached (Annex 1).

3) Consideration and development of rebuilding strategy and long-term precautionary management framework, including Emergency Rule (Item 7) and CDS (Item 8)

The Joint WG discussed the rebuilding strategy and long-term precautionary management framework based on proposals from Japan (NC13-DP-11) and the USA (NC13-DP-13). The Joint WG revised the Japanese proposal and agreed to support it as a conclusion of the meeting (Outcomes of the meeting: Annex 2). The Joint WG requested co-chairs to forward it to NC13 and IATTC for further consideration.

4) Review of current management measures in both IATTC and WCPFC

The Joint WG reviewed the existing management measures and concluded that no revision is necessary except for those to incorporate the establishment of possible harvest strategy mentioned 3) above.

5) Next meeting

The Joint WG confirmed the usefulness of the Join Working Group between WCPFC NC and IATTC for the discussion on the management of PBF and supported its continuation. In order to enhance the effectiveness, it was suggested to hold the Joint Working Group meeting in conjunction with IATTC annual meeting as well.

The Joint WG agreed to hold the 3rd meeting of Joint WG in conjunction with NC14. Current co-chairs were requested to continue and to construct draft agenda for the next meeting. The Joint WG further agreed to request co-chairs to evaluate feasibility to hold the future Joint WG meeting in conjunction with IATTC annual meeting.

(NC13 Summary Report, Attachment E, Annex 1)

Joint IATTC-WCPFC NC Working Group Meeting on the Management of Pacific Bluefin Tuna

AGENDA

1. Opening of the Meeting
2. Designation of Co-chair
3. Adoption of Agenda
4. Review of updated information on Pacific bluefin tuna provided by the ISC17 and recommendations from IATTC
5. Consideration and development of rebuilding strategy (second rebuilding target and timeline, etc.) and long-term precautionary management framework (management objectives, limit and target reference points, harvest control rules, etc.)
6. Review of current management measures in both IATTC and WCPFC
7. Emergency rule
8. Catch document scheme
9. Next meeting
10. Other business
11. Close of Meeting

Joint IATTC-WCPFC NC Working Group Meeting on the Management of Pacific Bluefin Tuna

Outcomes of the 2nd Joint IATTC-WCPFC NC working group on the management of PBF

The Joint IATTC-WCPFC NC Working Group on the Management of PBF recommends that the IATTC and WCPFC NC consider incorporating the following provisions in their decisions:

1. Recruitment scenario used in Spawning Stock Biomass (SSB) projection

(1) The low recruitment scenario (resampling from the relatively low recruitment period (1980-1989)) or the recent recruitment scenario (resampling from the last 10 years), whichever is lower, should be used for the ISC's SSB projections until 2024 or the SSB reaches the historical median (the median point estimate for 1952-2014 as specified by ISC), whichever is earlier.

(2) The recruitment scenario to be used for the SSB projections after 2024 or the SSB has reached the historical median should be tentatively the average recruitment scenario (resampling from the entire recruitment period).

(3) ISC will be requested to periodically evaluate whether the scenarios in paragraph (1) and (2) are reasonable given current conditions and make recommendation on whether a different scenario should be used. If ISC recommends a different scenario, this should be considered.

2. Management until reaching the historical median

(1) The management objective is to rebuild the SSB to the historical median by 2024 with at least 60% probability.

(2) For this purpose, interim harvest control rules below should be applied based on the results of stock assessments and SSB projections to be conducted by ISC.

(a) If the SSB projection indicates that the probability of achieving the historical median by 2024 is less than 60%, management measures should be modified to increase it to at least 60%. Modification of management measures may be (i) a reduction (in %) in the catch limit for fish smaller than 30 kg (hereinafter called "small fish") or (ii) a transfer of part of the catch limit for small fish to the catch limit for fish 30 kg or larger (hereinafter called "large fish"). For this purpose, ISC will be requested, if necessary, to provide different combinations of these two measures so as to achieve 60% probability.

(b) If the SSB projection indicates that the probability of achieving the historical median by 2024 is at 75% or larger, the IATTC and WCPFC may increase their catch limits as long as the probability is maintained at 70% or larger, and the probability of reaching the second rebuilding target by the agreed deadline

remains at least 60%. For this purpose, ISC will be requested, if necessary, to provide relevant information on potential catch limit increases.

3. Management after reaching the historical median

(1) The management objective after reaching the historical median should be to rebuild the SSB to 20%$SSB_{F=0}$[5] within 10 years of reaching the historical median or by 2034, whichever is earlier, with at least 60% probability. However, if (i) the SSB reaches the historical median earlier than 2024; (ii) ISC recommends a recruitment scenario lower than the average recruitment scenario; and (iii) the SSB projections indicate that the next rebuilding target will not be achieved within 10 years with at least 60% probability under the rebuilding plan in place at that time, the deadline for rebuilding to 20%$SSB_{F=0}$ may be extended to 2034 at the latest. Also, if the joint working group recommends that 20%$SSB_{F=0}$ is not appropriate as the second rebuilding target, taking into account scientific advice from ISC, IATTC or WCPFC SC and socioeconomic factors, another objective may be established.

(2) Harvest control rules to be applied during this period should be decided, taking into account the implementation of the interim harvest control rules referred to in paragraph 2. (2).

4. Management after reaching 20%$SSB_{F=0}$

(1) ISC is requested to start the work to develop MSE for Pacific Bluefin Tuna from 2019 and finalize it with a goal of completing by 2024. During this MSE development period until 2024, ISC will conduct assessments in 2018, 2020 and 2022.

(2) The joint working group will start to discuss in 2018 and aim to finalize no later than 2019 a guideline for MSE including at least one candidate Target Reference Point (TRP), two candidate Limit Reference Points (LRPs) and candidate harvest control rules (HCRs) to be provided to ISC. Those candidate TRP, LRPs and HCRs will be tested and changed if appropriate during the MSE development process.

(3) For preparation of the joint working group meeting in 2019, ISC will be requested to organize workshops in early 2018 and 2019 to support the identification of specific management objectives including level of risks and timelines. The workshops will consist of managers, scientists and stakeholders, taking into account any recommendation of the joint working group, which should be a relatively small number of representatives as was in the albacore WS.

(4) At least two experts will be identified and additional funds are encouraged to be provided for ISC MSE work for Pacific Bluefin Tuna.

5. Emergency Rule

In order to cope with the adverse effects on the rebuilding of the stock due to drastic drops of recruitment:

(1) The joint working group will annually review all the available data and information including recruitment data provided by ISC and National Reports.

[5] $SSB_{F=0}$ is the expected spawning stock biomass under average recruitment conditions without fishing.

(2) ISC will be requested to conduct in 2019, and periodically thereafter as resources permit and if drops in recruitment are detected, projections to see if any additional measure is necessary to achieve the initial rebuilding target by 2024 with at least 60% probability.

6. Catch Documentation Scheme

Joint WG agreed the draft concept of Catch Documentation Scheme (CDS, Appendix A) to be forwarded to WCPFC and IATTC for further consideration.

Development of a Catch Document Scheme for Pacific Bluefin Tuna

Background

At the 1st joint working group meeting between NC and IATTC, held in Fukuoka, Japan from August 29 to September 1, 2016, participants supported to advance the work on the Catch Documentation Scheme (CDS) in the next joint working group meeting, in line with the development of overarching CDS framework by WCPFC and taking into account of the existing CDS by other RFMOs.

1. Objective of the Catch Document Scheme

The objective of CDS is to combat IUU fishing for Pacific Bluefin Tuna (PBF) by providing a means of preventing PBF and its products identified as caught by or originating from IUU fishing activities from moving through the commodity chain and ultimately entering markets.

2. Use of electronic scheme

Whether CDS will be a paper based scheme, an electronic scheme or a gradual transition from a paper based one to an electronic one should be first decided since the requirement of each scheme would be quite different.

3. Basic elements to be included in the draft conservation and management measure (CMM)

It is considered that at least the following elements should be considered in drafting CMM.

(1) Objective
(2) General provision
(3) Definition of terms
(4) Validation authorities and validating process of catch documents and re-export certificates
(5) Verification authorities and verifying process for import and re-import
(6) How to handle PBF caught by artisanal fisheries
(7) How to handle PBF caught by recreational or sport fisheries
(8) Use of tagging as a condition for exemption of validation
(9) Communication between exporting members and importing members
(10) Communication between members and the Secretariat
(11) Role of the Secretariat
(12) Relationship with non-members
(13) Relationship with other CDSs and similar programs
(14) Consideration to developing members
(15) Schedule for introduction
(16) Attachment
(i) Catch document forms
(ii) Re-export certificate forms
(iii) Instruction sheets for how to fill out forms
(iv) List of data to be extracted and compiled by the Secretariat

4. Work plan

The following schedule may need to be modified, depending on the progress on the WCPFC CDS for tropical tunas.

2017 The joint working group will submit this concept paper to the NC and IATTC for endorsement. NC will send the WCPFC annual meeting the recommendation to endorse the paper.

2018 The joint working group will hold a technical meeting, preferably around its meeting, to materialize the concept paper into a draft CMM. The joint working group will report the progress to the WCPFC via NC and the IATTC, respectively.

2019 The joint working group will hold a second technical meeting to improve the draft CMM. The joint working group will report the progress to the WCPFC via NC and the IATTC, respectively.

2020 The joint working group will hold a third technical meeting to finalize the draft CMM. Once it is finalized, the joint working group will submit it to the NC and the IATTC for adoption. The NC will send the WCPFC the recommendation to adopt it.

Attachment 2
(NC13 Summary Report, Attachment F)

The Commission for the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific Ocean

Northern Committee
Thirteenth Regular Session

August 28 – September 1, 2017
Busan, Korea

Harvest Strategy for Pacific Bluefin Tuna Fisheries

Harvest Strategy 2017-XX

Introduction and scope

This harvest strategy has been prepared in accordance with the Commission's Conservation and Management Measure on Establishing a Harvest Strategy for Key Fisheries and Stocks in the Western and Central Pacific Ocean.

Although the provisions of this harvest strategy are expressed in terms of a single stock, they may be applied to multiple stocks as appropriate and as determined by the Northern Committee.

1. Management objectives

The management objectives are, first, to support thriving Pacific bluefin tuna fisheries across the Pacific Ocean while recognizing that the management objectives of the WCPFC are to maintain or restore the stock at levels capable of producing maximum sustainable yield, second, to maintain an equitable balance of fishing privileges among CCMs and, third, to seek cooperation with IATTC to find an equitable balance between the fisheries in the western and central Pacific Ocean (WCPO) and those in the eastern Pacific Ocean (EPO).

2. Reference points

Because steepness in the stock-recruitment relationship is not well known but the key biological and fishery variables are reasonably well estimated,[6] the stock of PBF is to be treated as a Level 2 stock under the Commission's hierarchical approach for setting biological limit reference points.

2.1 Rebuilding targets

Initial rebuilding target: The initial rebuilding target for the PBF stock size is the median SSB estimated for the period 1952 through 2014, to be reached by 2024 with at least 60% probability.

Recruitment scenario during initial rebuilding period: The low recruitment scenario (resampling from the relatively low recruitment period (1980-1989)) or the recent recruitment scenario (resampling

[6] See the information provided by the International Scientific Committee for Tuna and Tuna-like Species in the North Pacific Ocean (WCPFC-NC9-2013/IP-03) in response to a request made by the Northern Committee at its Eighth Regular Session (Attachment F of the report of NC8).

from the last 10 years), whichever is lower, will be used for the ISC's SSB projections until 2024 or until the SSB reaches the initial rebuilding target, whichever is earlier.
The ISC is requested to periodically evaluate whether the recruitment scenario used during the initial rebuilding period is reasonable given current conditions, and to make recommendations on whether a different scenario should be used. If ISC recommends a different scenario, this will be considered by the NC.
Second rebuilding target: The second rebuilding target for the PBF stock size is $20\%SSB_{F=0}$[7], to be reached by 2034, or 10 years after reaching the initial rebuilding target, whichever is earlier, with at least 60% probability.

However, if: (1) the SSB reaches the initial rebuilding target earlier than 2024; (2) ISC recommends a recruitment scenario lower than the average recruitment scenario; and (3) the SSB projections indicate that the second rebuilding target will not be achieved on this schedule, the deadline for rebuilding may be extended to 2034 at the latest.

Also, if there is a recommendation from the Northern Committee that $20\%SSB_{F=0}$ is not appropriate as the second rebuilding target, taking into account consideration from IATTC, scientific advice from ISC, IATTC or WCPFC SC, and socioeconomic factors, another objective may be established.

Recruitment scenario during second rebuilding period: After the initial rebuilding target is reached and until the second rebuilding target is reached, the recruitment scenario to be used for the SSB projections will tentatively be the average recruitment scenario (resampling from the entire recruitment period).

The ISC is requested to periodically evaluate whether the recruitment scenario used during the second rebuilding period is reasonable given current conditions, and to make recommendations on whether a different scenario should be used. If ISC recommends a different scenario, this will be considered by the NC.

2.2 Development of reference points

The Northern Committee will develop more refined management objectives as well as limit reference point(s) and target reference point(s) through MSE process specified in Section 6.

3. Acceptable levels of risk

Until the stock is rebuilt, the Northern Committee will recommend conservation and management measures as needed to ensure rebuilding in accordance with the probabilities specified in sections 2.1 and 5 for each of the two rebuilding targets.

Once the stock is rebuilt, in accordance with Article 6.1(a) of the Convention, the Northern Committee will recommend conservation and management measures as needed to ensure that any target reference point(s) (once adopted) are achieved on average in the long term, and ensure that the risk of the stock size declining below the B-limit (once adopted) is very low.[8]

4. Monitoring strategy

[7] $SSB_{F=0}$ is the expected spawning stock biomass under average recruitment conditions without fishing.
[8] WCPFC13 agreed that any risk level greater than 20 percent to be inconsistent with the limit reference point related principles in UNFSA (as references in Article 6 of the Convention) including that the risk of breaching limit reference points be very low.

The ISC will periodically evaluate the stock size and exploitation rate with respect to the established reference points and the report will be presented to the Scientific Committee. Until 2024, while the MSE is being developed (see section 6), the ISC is requested to conduct stock assessments in 2018, 2020 and 2022.

In order to cope with the adverse effects on the rebuilding of the stock due to drastic drops of recruitment: (1) all the available data and information will be reviewed annually, including recruitment data provided by the ISC and in National Reports; and (2) the ISC is requested to conduct in 2019, and periodically thereafter as resources permit and if drops in recruitment are detected, projections to see if any additional measure is necessary to achieve the initial rebuilding target by 2024 with at least 60% probability.

5. Decision rules

Harvest controls rules during initial rebuilding period: The interim harvest control rules below will be applied based on the results of stock assessments and SSB projections to be conducted by ISC.
(a) If the SSB projection indicates that the probability of achieving the initial rebuilding target by 2024 is less than 60%, management measures will be modified to increase it to at least 60%. Modification of management measures may be (1) a reduction (in %) in the catch limit for fish smaller than 30 kg (hereinafter called "small fish") or (2) a transfer of part of the catch limit for small fish to the catch limit for fish 30 kg or larger (hereinafter called "large fish"). For this purpose, ISC will be requested, if necessary, to provide different combinations of these two measures so as to achieve 60% probability.
(b) If the SSB projection indicates that the probability of achieving the initial rebuilding target by 2024 is at 75% or larger, the WCPFC may increase their catch limits as long as the probability is maintained at 70% or larger, and the probability of reaching the second rebuilding target by the agreed deadline remains at least 60%. For this purpose, ISC will be requested, if necessary, to provide relevant information on potential catch limit increases.
Harvest controls rules during second rebuilding period: Harvest control rules to be applied during the second rebuilding period will be decided, taking into account the implementation of the interim harvest control rules applied during the initial rebuilding period.

The Northern Committee will, through MSE development process, develop decision rules related to the limit reference points once adopted including for the case of their being breached.

6. Performance evaluation

Until the stock is rebuilt, the Northern Committee will work with the ISC and the Scientific Committee and consult with the IATTC to identify and evaluate the performance of candidate rebuilding strategies with respect to the rebuilding targets, schedules, and probabilities.

The ISC is requested to start the work to develop a management strategy evaluation (MSE) for Pacific bluefin tuna fisheries in 2019 and have a goal of completing it by 2024.

To support development of the MSE, ISC is encouraged to identify at least two experts and NC members are encouraged to provide additional funds for the ISC's work on the MSE.

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. Those

candidate TRPs, LRPs and HCRs will be tested and changed if appropriate during the MSE development process.

In preparation for the Joint WG meeting in 2019, the ISC is requested to organize workshops in early 2018 and 2019 to support the identification of specific management objectives, including level of risks and timelines. The workshops will include managers, scientists and stakeholders, taking into account any recommendations of the Joint WG, and the number of representatives should be relatively small, as it was for the MSE workshop for North Pacific albacore.

In evaluating the performance of candidate target reference points, limit reference points, and harvest control rules, the Northern Committee, in consultation with the ISC and the Scientific Committee, should consider the following criteria:

1. Probability of achieving each of the rebuilding targets within each of the rebuilding periods (if applicable).
2. Time expected to achieve each of the rebuilding targets (if applicable).
3. Expected annual yield, by fishery.
4. Expected annual fishing effort, by PBF-directed fishery.
5. Inter-annual variability in yield and fishing effort, by fishery.
6. Probabilities of SSB falling below the B-limit and the historical lowest level.
7. Probability of fishing mortality exceeding F_{MSY} or an appropriate proxy, and other relevant benchmarks.
8. Expected proportional fishery impact on SSB, by fishery and by WCPO fisheries and EPO fisheries.

Recognizing that developing the operating model and other aspects of the MSE will take time and additional resources, and might require further dialogue between the Northern Committee, the ISC, and the IATTC, while the MSE is in development the ISC is requested to perform this work using the best means at its disposal.

Attachment 3
(NC13 Summary Report, Attachment G)

The Commission for the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific Ocean

Northern Committee
Thirteenth Regular Session

August 28 – September 1, 2017
Busan, Korea

Conservation and Management Measure for Pacific Bluefin Tuna

Conservation and Management Measure 2017-XX

The Western and Central Pacific Fisheries Commission (WCPFC):

Recognizing that WCPFC6 adopted Conservation and Management Measure for Pacific bluefin tuna (CMM 2009-07) and the measure was revised six times since then (CMM 2010-04, CMM 2012-06, CMM 2013-09, CMM 2014-04, CMM 2015-04 and CMM 2016-04) based on the conservation advice from the International Scientific Committee for Tuna and Tuna-like Species in the North Pacific Ocean (ISC) on this stock;

Noting with concern the latest stock assessment provided by ISC Plenary Meeting in July 2016, indicating the following:

- (1) SSB fluctuated throughout the assessment period (1952–2014), (2) SSB steadily declined from 1996 to 2010, and (3) the decline appears to have ceased since 2010, although the stock remains near the historic low (2.6% of unfished SSB);
- The 2014 estimated recruitment was relatively low, and the average recruitment for the last five years may have been below the historical average;
- The fishery exploitation rate in 2011-2013 exceeded all biological reference points evaluated by the ISC except F_{MED} and F_{LOSS}.
- Since the early 1990s, the WCPO purse seine fisheries, in particular those targeting small fish (age 0-1) have had an increasing impact on the spawning stock biomass, and in 2014 had a greater impact than any other fishery group.
- The projection results indicate that: (1) the probability of SSB recovering to the initial rebuilding target ($SSB_{MED1952-2014}$) by 2024 is 69% or above the level prescribed in the WCPFC CMM 2015-04 if low recruitment scenario is assumed and WCPFC CMM 2015-04 and IATTC Resolution C-14-06 continue in force and are fully implemented; and (2) a 10% reduction in the catch limit for fish smaller than 30 kg would have a larger effect on recovery than a 10% reduction in the catch limit for fish larger than 30 kg; and
- Catching a high number of smaller juvenile fish can have a greater impact on future spawning stock biomass than catching the same weight of larger fish;

Further recalling that paragraph (4), Article 22 of the WCPFC Convention, which requires cooperation between the Commission and the IATTC to reach agreement to harmonize CMMs for fish stocks such as Pacific bluefin tuna that occur in the convention areas of both organizations;

Adopts, in accordance with Article 10 of the WCPFC Convention that:

General Provision

1. This conservation and management measure has been prepared to implement the Harvest Strategy for Pacific Bluefin Tuna Fisheries, and the Northern Committee shall periodically review and recommend revisions to this measure as needed to implement the Harvest Strategy.

Management measures

2. CCMs shall take measures necessary to ensure that:

(1) Total fishing effort by their vessel fishing for Pacific bluefin tuna in the area north of the 20° N shall stay below the 2002–2004 annual average levels.

(2) All catches of Pacific bluefin tuna less than 30 kg shall be reduced to 50% of the 2002–2004 annual average levels. Any overage of the catch limit shall be deducted from the catch limit for the following year.

3. CCMs shall take measures necessary to ensure that all catches of Pacific Bluefin tuna 30kg or larger shall not be increased from the 2002-2004 annual average levels[9]. Any overage of the catch limit shall be deducted from the catch limit for the following year. However, in 2017, 2018, 2019, and 2020 CCMs may use part of the catch limit for Pacific bluefin tuna smaller than 30 kg stipulated in paragraph 2 (2) above to catch Pacific bluefin tuna 30 kg or larger in the same year. In this case, the amount of catch 30 kg or larger shall be counted against the catch limit for Pacific bluefin tuna smaller than 30 kg. CCMs shall not use the catch limit for Pacific bluefin tuna 30 kg or larger to catch Pacific bluefin tuna smaller than 30 kg. The ISC is requested to review, in its work referred to in Section 5 of Harvest Strategy, the implications of this special provision in terms of PBF mortality and stock rebuilding probabilities in 2020. Based on that review, in 2020 the Northern Committee will determine whether it should be continued past 2020, and if so, recommend changes to the CMM as appropriate.

4. CCMs shall report their 2002–2004 baseline fishing effort and <30 kg and >=30 kg catch levels for 2013 and 2014, by fishery, as referred to in paragraphs 2 and 3, to the Executive Director by 31 July 2015. CCMs shall also report to the Executive Director by 31 July each year their fishing effort and <30 kg and >=30 kg catch levels, by fishery, for the previous 3 year, accounting for all catches, including discards. The Executive Director will compile this information each year into an appropriate format for the use of the Northern Committee.

5. CCMs shall intensify cooperation for effective implementation of this CMM, including juvenile catch reduction.

6. CCMs, in particular those catching juvenile Pacific bluefin tuna, shall take measures to monitor and obtain prompt results of recruitment of juveniles each year.

[9] CCMs with a base line catch of 10 t or less may increase its catch as long as it does not exceed 10 t.

7. Consistent with their rights and obligations under international law, and in accordance with domestic laws and regulations, CCMs shall, to the extent possible, take measures necessary to prevent commercial transaction of Pacific bluefin tuna and its products that undermine the effectiveness of this CMM, especially measures prescribed in the paragraph 2 and 3 above. CCMs shall cooperate for this purpose.

8. CCMs shall cooperate to establish a catch documentation scheme (CDS) to be applied to Pacific bluefin tuna in accordance with the Attachment of this CMM.

9. CCMs shall also take measures necessary to strengthen monitoring and data collecting system for Pacific bluefin tuna fisheries and farming in order to improve the data quality and timeliness of all the data reporting;

10. CCMs shall report to Executive Director by 31 July annually measures they used to implement paragraphs 2, 3, 4, 6, 7, 9 and 12 of this CMM. CCMs shall also monitor the international trade of the products derived from Pacific bluefin tuna and report the results to Executive Director by 31 July annually. The Northern Committee shall annually review those reports CCMs submit pursuant to this paragraph and if necessary, advise a CCM to take an action for enhancing its compliance with this CMM.

11. The WCPFC Executive Director shall communicate this Conservation Management Measure to the IATTC Secretariat and its contracting parties whose fishing vessels engage in fishing for Pacific bluefin tuna in EPO and request them to take equivalent measures in conformity with this CMM.

12. To enhance effectiveness of this measure, CCMs are encouraged to communicate with and, if appropriate, work with the concerned IATTC contracting parties bilaterally.

13. The provisions of paragraphs 2 and 3 shall not prejudice the legitimate rights and obligations under international law of those small island developing State Members and participating territories in the Convention Area whose current fishing activity for Pacific bluefin tuna is limited, but that have a real interest in fishing for the species, that may wish to develop their own fisheries for Pacific bluefin tuna in the future.

14. The provisions of paragraph 13 shall not provide a basis for an increase in fishing effort by fishing vessels owned or operated by interests outside such developing coastal State, particularly Small Island Developing State Members or participating territories, unless such fishing is conducted in support of efforts by such Members and territories to develop their own domestic fisheries.

Attachment

Development of a Catch Document Scheme for Pacific Bluefin Tuna

Background

At the 1st joint working group meeting between NC and IATTC, held in Fukuoka, Japan from August 29 to September 1, 2016, participants supported to advance the work on the Catch Documentation

Scheme (CDS) in the next joint working group meeting, in line with the development of overarching CDS framework by WCPFC and taking into account of the existing CDS by other RFMOs.

1. Objective of the Catch Document Scheme

The objective of CDS is to combat IUU fishing for Pacific Bluefin Tuna (PBF) by providing a means of preventing PBF and its products identified as caught by or originating from IUU fishing activities from moving through the commodity chain and ultimately entering markets.

2. Use of electronic scheme

Whether CDS will be a paper based scheme, an electronic scheme or a gradual transition from a paper based one to an electronic one should be first decided since the requirement of each scheme would be quite different.

3. Basic elements to be included in the draft conservation and management measure (CMM)

It is considered that at least the following elements should be considered in drafting CMM.

(17) Objective
(18) General provision
(19) Definition of terms
(20) Validation authorities and validating process of catch documents and re-export certificates
(21) Verification authorities and verifying process for import and re-import
(22) How to handle PBF caught by artisanal fisheries
(23) How to handle PBF caught by recreational or sport fisheries
(24) Use of tagging as a condition for exemption of validation
(25) Communication between exporting members and importing members
(26) Communication between members and the Secretariat
(27) Role of the Secretariat
(28) Relationship with non-members
(29) Relationship with other CDSs and similar programs
(30) Consideration to developing members
(31) Schedule for introduction
(32) Attachment
(i) Catch document forms
(ii) Re-export certificate forms
(iii) Instruction sheets for how to fill out forms
(iv) List of data to be extracted and compiled by the Secretariat

4. Work plan

The following schedule may need to be modified, depending on the progress on the WCPFC CDS for tropical tunas.

2017 The joint working group will submit this concept paper to the NC and IATTC for endorsement. NC will send the WCPFC annual meeting the recommendation to endorse the paper.

2018 The joint working group will hold a technical meeting, preferably around its meeting, to materialize the concept paper into a draft CMM. The joint working

group will report the progress to the WCPFC via NC and the IATTC, respectively.

2019 The joint working group will hold a second technical meeting to improve the draft CMM. The joint working group will report the progress to the WCPFC via NC and the IATTC, respectively.

2020 The joint working group will hold a third technical meeting to finalize the draft CMM. Once it is finalized, the joint working group will submit it to the NC and the IATTC for adoption. The NC will send the WCPFC the recommendation to adopt it.