

**Summary of the U.S. Stakeholder Meeting on a North Pacific Albacore Harvest Strategy
February 15, 2023
Virtual**

**Pacific Islands Regional Office
and
West Coast Region**

On February 15, 2023, National Marine Fisheries Service (NMFS) Pacific Islands Regional Office and West Coast Region hosted a webinar to gather input from U.S. stakeholders on further refining the harvest strategies for North Pacific albacore (NPALB) recently adopted by the Inter-American Tropical Tuna Commission (IATTC) and the Western and Central Pacific Fisheries Commission (WCPFC). NMFS posed a series of focus questions to participants, and used the input received during the webinar to draft the summary below as well as to develop draft harvest control rules (HCRs) and exceptional circumstances text for consideration (see Appendix I). NMFS is currently soliciting comments from the Pacific Fishery Management Council (Council) on the draft harvest control rules and exceptional circumstances text. Meeting materials from the webinar including a background paper and slides presented during the webinar are included in Appendices II and III, respectively.

NMFS presented example HCRs from other tuna Regional Fishery Management Organizations and the HCRs proposed by [Canada to the IATTC in 2022](#). NMFS understood from the webinar participants that a minimum fishing level (F_{\min}) should be established should the stock be below the limit reference point, and that an HCR should be more specific than what was proposed by Canada to include the actions expected to be taken at various stages in the HCR. NMFS noted that the management strategy evaluation (MSE) evaluated two F_{\min} levels, and did not hear strong opinions about using either option. Additionally, the webinar participants discussed the intent behind the target reference point, and while some noted the potential for increased harvest when the stock is doing well could negatively impact the market, others preferred the ability to continue to fish above a fishing level corresponding to the target reference point; in other words, that total fishing intensity could fluctuate as long as the average met the target reference point.

Noting that one of the management objectives is for management changes to be gradual, NMFS solicited feedback on whether management changes should be limited between management periods (e.g., between stock assessment cycles because the stock assessment will inform stock status). NMFS did not hear specific preference for specific values, but that there was interest in including a provision about it in the future NPALB harvest strategy.

Participants discussed how to address incidental harvest of NPALB as compared to targeted harvest in the harvest strategy, noting that the harvest strategy is intended to apply to all harvest of NPALB. There was interest in using a catch limit for incidental harvest of NPALB that could be apportioned if harvest needs to be reduced. NMFS also heard that there should be some consideration to the fishery impact of adult fish caught off the spawning grounds vs. juvenile fish caught elsewhere.

Participants discussed whether the HCR should reference a specific period as a baseline for effort and/or catch, or be used as a determining factor for future allocations; whether the U.S. surface fleets should use an effort or catch control; and whether the harvest strategy should define an effort metric. Participants noted that some of these details may not be necessary to define at this stage, but expressed interest in using an effort control for the U.S. surface fleets and that the metric could take additional consideration, while recognizing that fishing days may be suitable.

Regarding exceptional circumstances, participants noted they should include circumstances that are outside of what was tested in the MSE or circumstances where critical data is missing. Additionally, participants noted that an occurrence of an exceptional circumstance may not necessarily warrant automatic change to the harvest strategy. Participants discussed a potential pathway for considering changes due to exceptional circumstances where the International Scientific Committee for Tuna and Tuna-like Species (ISC), the science body that conducts stock assessments for NPALB, could evaluate whether exceptional circumstances exist and report their findings to the IATTC. The IATTC scientific staff and Scientific Advisory Committee would, in consultation with the ISC, provide the IATTC advice of any potential actions that might deviate from the harvest strategy.

NMFS intends to also solicit input on draft HCRs and exceptional circumstances from the Permanent Advisory Committee to the U.S. Section to the WCPFC and General Advisory Committee and its Scientific Advisory Subcommittee to the U.S. Section to the IATTC. Based on input received from the March 2023 Council meeting and the aforementioned advisory bodies, the U.S. will consider submitting proposals to the meetings of the WCPFC Northern Committee (July 6-7, 2023) and the IATTC (August 7-11, 2023).

Appendix I

The following sections include draft text that could be included in the current harvest strategy for the IATTC, [Resolution C-22-04 \(Harvest Strategy for North Pacific Albacore in the Eastern Pacific Ocean\)](#).

Draft Harvest Control Rules

The harvest control rules apply to all fisheries harvesting albacore in the north Pacific.

The harvest control rule parameters produce a relationship between stock status and fishing intensity as shown in Figure 1 and are as follows:

If $SSB_{current} > SSB_{threshold}$, fishing intensity shall be set to maintain biomass around the target reference point (TRP) over a recent 10 year period. (punctuation here?)

If limit reference point (LRP) $< SSB_{current} < SSB_{threshold}$, fishing intensity (F) shall be reduced to a level in accordance with following formula:

$$F = \frac{(TRP - F_{min})}{SSB_{threshold} - LRP} * (SSB_{current} - LRP) + F_{min}$$

Changes to fishing intensity in accordance with the above paragraph shall apply between assessment starting the year after the stock assessment was completed, or until the year following the next stock assessment that provides an estimate of unfished SSB.

If $SSB_{current} < LRP$, then fishing intensity is set at F_{min} . F_{min} for the purpose of this harvest control rule is equal to [0.06(1-SPR) or F94]. In addition, IATTC members and cooperating non-members (CPCs) shall, in collaboration with the ISC and the WCPFC, adopt in no later than 2 years a plan to rebuild SSB to levels of at least the $SSB_{threshold}$ within 10 years with a probability of [90%].

If $SSB_{current} < SSB_{threshold}$, then harvest ratios per member shall be the same as those on average between [2002-2004].

Fishing intensity is managed by effort for fisheries using troll and pole-and-line gears, and catch for other fisheries.

If $LRP < SSB_{current} < SSB_{threshold}$, then the maximum [increase or] decrease between any management period shall be [15%] relative to the catch and effort levels specified for the previous management period period.

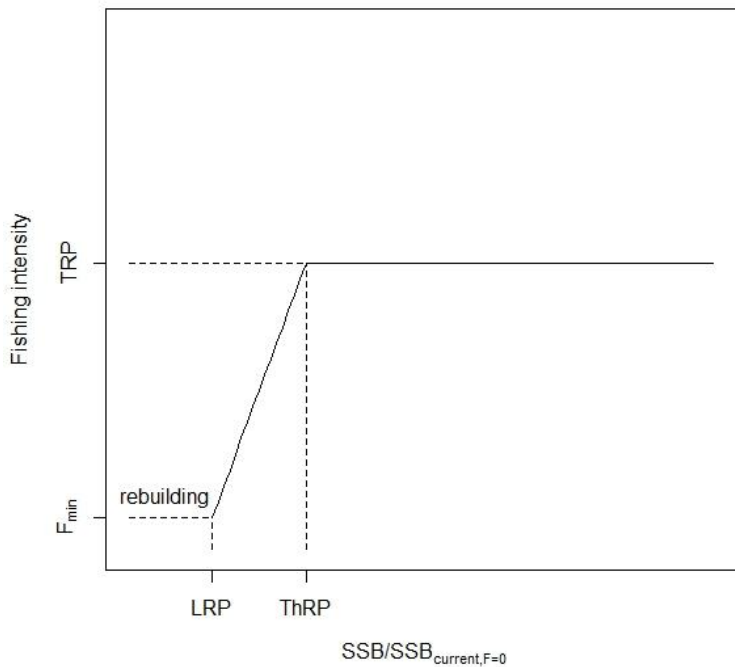


Figure 1. Illustration of the harvest control rules with TRP, threshold reference point (ThRP), LRP, and the expected SSB when fishing at the TRP (SSB_{TRP}).

Draft Exceptional Circumstances

Exceptional circumstances define situations outside the range of scenarios over which robustness of the harvest strategies was evaluated in the MSE analysis, and for which a different management action than specified by the adopted harvest strategy may have to be taken. If the ISC identifies per paragraph e) of [Resolution C-22-04](#) that exceptional circumstances have occurred, the IATTC scientific staff shall consult with the ISC and provide advice to the SAC and the IATTC on the action required, including the need for a change in harvest strategy and/or updates to the MSE framework for NPALB.

Examples of exceptional circumstances include changes in population and fleet dynamics, changes in data collection that make a stock assessment unreliable, and implementation that differs from the intended management in the harvest strategy.

Appendix II

Harvest Strategies for North Pacific Albacore Fisheries

U.S. Stakeholder Meeting on North Pacific Albacore Management

February 15, 2023

1. Background

In 2022, the Inter-American Tropical Tuna Commission (IATTC) and Western and Central Pacific Fisheries Commission (WCPFC) adopted [Resolution C-22-04](#) and [Harvest Strategy 2022-01](#), respectively, which are harvest strategies for North Pacific albacore (NP ALB). Development of these harvest strategies was largely informed by a [management strategy evaluation \(MSE\) for NP ALB](#) that the International Scientific Committee for Tuna and Tuna-Like Species (ISC) conducted from 2015-2021, and members of the two commissions coordinated such that the resulting strategies adopted share similar components. This section provides an overview of the contents of the two harvest strategies.

Both harvest strategies include the following management objectives for NP ALB:

- Maintain spawning stock biomass (SSB) above the limit reference point (LRP) with a probability of at least 80% over the next 10 years
- Maintain depletion of total biomass around historical (2006-2015) average depletion over the next 10 years
- Maintain fishing intensity (F) at or below the target reference point (TRP) with a probability of at least 50% over the next 10 years
- To the extent practicable, management changes should be relatively gradual between years.

Additionally, the IATTC and WCPFC both adopted the following reference points:

- $LRP = 14\%SSB_{current,F=0}$, which is 14% of the dynamic unfished spawning stock biomass; the acceptable level of risk of breaching the LRP shall be no greater than 20%.
- Threshold reference point (ThRP) = $30\%SSB_{current,F=0}$
- $TRP = F45$, which is the fishing intensity (F) level that results in the stock producing 45% of spawning potential ratio (SPR)

Although there was discussion on harvest control rules (HCRs) or pre-agreed decision rules that define how harvest is managed based on the status of the stock in the original proposal to IATTC, both of the harvest strategies agreed to by the IATTC and WCPFC ultimately included a diagram (Figure 1) that illustrates the HCR that would be adopted, and tasked each commission to adopt HCRs in 2023. Additionally, the ISC was requested to provide guidance on exceptional

circumstances or circumstances beyond those evaluated in the MSE process that may warrant actions that deviate from the adopted HCRs.

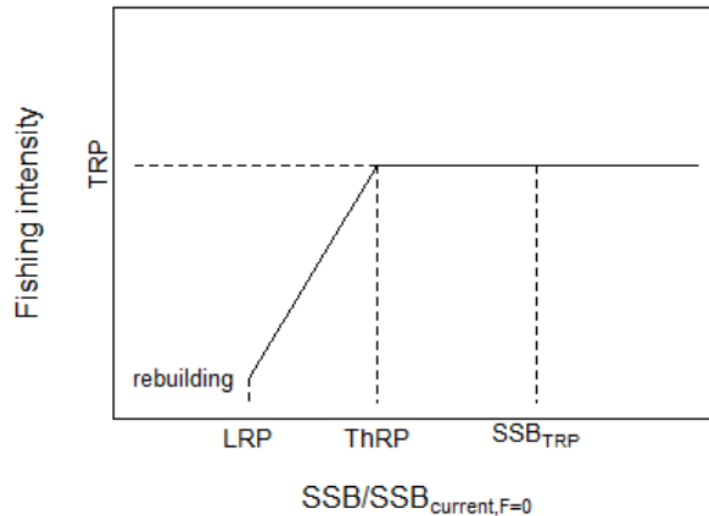


Figure. 1. Illustration of the harvest control rules with target reference point (TRP), threshold reference point (ThRP), limit reference point (LRP), and the expected SSB when fishing at the TRP (SSB_{TRP}). The harvest control rules to be adopted pursuant to paragraph 1.f. are intended to include the triggering of a rebuilding plan if the $SSB/SSB_{current,F=0}$ falls below the LRP.

Meeting Objectives:

NMFS is preparing for the upcoming 2023 IATTC and WCPFC meetings, and has the following objectives for its February 15, 2023 U.S. stakeholder meeting on international management of NP ALB:

1. Gather input on HCRs
2. Gather input on exceptional circumstances or circumstances beyond those evaluated in the MSE process that may warrant actions that deviate from the adopted HCRs.
3. Consider potential revisions for the IATTC and WCPFC harvest strategies and/or the IATTC Resolution or WCPFC conservation and management measure (CMM) to implement the harvest strategy

2. Harvest Control Rules

As mentioned above, harvest control rules are a set of pre-agreed decision rules that define how harvest will be managed based on the status of the stock. This section provides an overview on the HCRs tested/proposed for NP ALB to date, provides examples of HCRs adopted for other stocks, describes several issues for consideration in developing HCRs, and identifies focused questions that NMFS is interested in receiving input on.

MSE-tested HCR for NP ALB

The ISC MSE evaluated a number of HCRs that examined performance against several combinations of candidate reference points. The MSE tested HCRs with the adopted LRP and ThRP, however, the adopted TRP (F45) is between the candidate TRPs evaluated (F40 and F50) (Figure 1). In general, if biomass was above the ThRP, effort was limited to F_{\max} (maximum allowable fishing intensity, which is equal to the TRP tested); if biomass was found to be between the ThRP and LRP, then it was a linear decline in fishing intensity (translated into catch or effort) to F_{\min} , and if biomass is below the LRP, then F was limited to F_{\min} . Further details on the HCRs tested can be found in the [ISC ALBWG MSE Report](#).

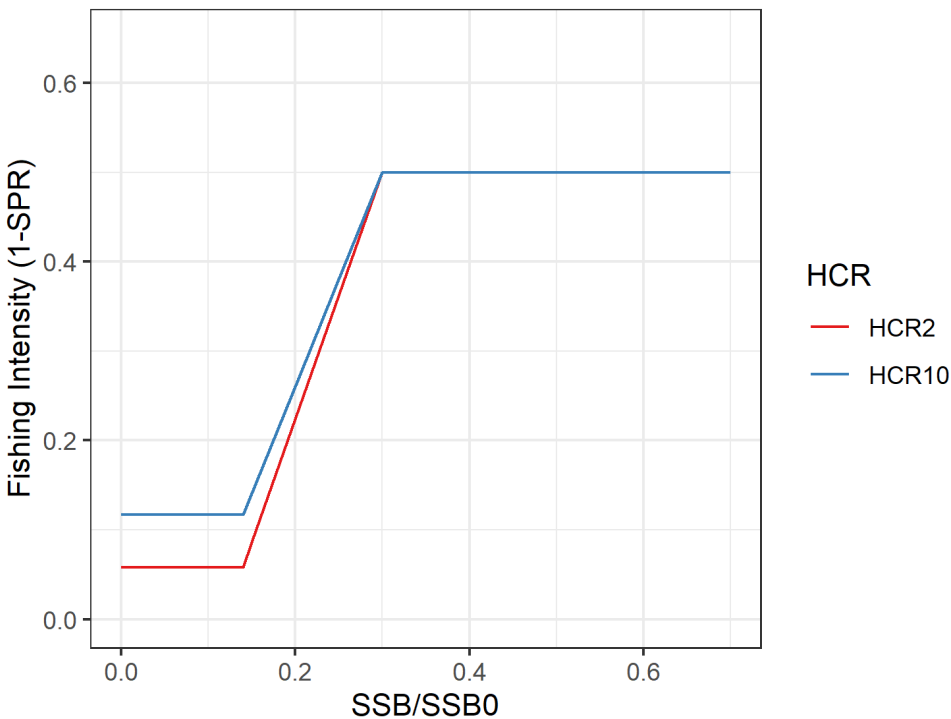


Figure 1. HCR2 and HCR10 tested in the NP ALB MSE. See table 1 for the specific reference points associated with these HCRs.

If the IATTC or WCPFC were to consider adopting an HCR similar to those evaluated in the MSE, a few components will need to be further defined such as:

- F_{\min} - the MSE used two different options for F_{\min} , and the choice of F_{\min} impacts the slope between the threshold RP and LRP (i.e., the steeper the slope, the greater the reductions in catch/effort). A lower F_{\min} results in a steeper slope and greater reductions in catch and/or effort. A higher F_{\min} results in a shallower slope but there is a tradeoff in that a higher F_{\min} results in a slightly higher probability of breaching the LRP and triggering the rebuilding plan. See Appendix 1 for performance of similar HCRs, including the two F_{\min} options.

- Management option - the MSE evaluated HCRs under a Total Allowable Catch (TAC), Total Allowable Effort (TAE), or a mixed control scenario (TAC or TAE depending on the gear). In the MSE, the simulated management module uses the stock assessment to determine the exploitation rate that results in the fishing intensity specified by the HCR. This exploitation rate is then turned into a fleet-specific exploitation rate.

Under TAC control or for TAC-controlled fleets under a mixed control scenario, a fleet-specific TAC is obtained by multiplying the fleet-specific exploitation rate times the current stock biomass from the stock assessment. For fleets under effort control, the MSE algorithm uses exploitation rate as the measure of effort. Therefore, to be able to calculate the effort level associated with the HCR, a relationship between the exploitation rate and effort measures needs to be defined by defining the effort metric (e.g., fishing days). Each fleet could be assigned a proportion of the exploitation rate, which directly correlates to the TAC or TAE.

The MSE also assumes that all fleets catching NP ALB, targeting and non-targeting, are subject to the HCR. For a real-world application the fleets subject to the HCR and which might be under effort or catch control needs to be agreed upon. For example, the current IATTC Resolutions and WCPFC CMM on NP ALB limit fishing effort targeted at NP ALB to below the 2002-2004 average, and would be considered as effort control. However, these limits would not be considered as TAE because fisheries that do not target NP ALB but catch NP ALB incidentally, like longliners targeting bigeye and yellowfin tuna, are not subject to these limits. Catch and/or effort limits need to be defined. See Appendix 1 for performance of similar HCRs using mixed vs TAC controls.

Some of these concepts are further explored below in the sections *HCR Examples for Other Tuna Stocks* and *Additional Considerations for HCRs*.

HCR Text in Canada's proposal

In 2022, [Canada proposed](#) HCRs to the proposal to IATTC that were ultimately not included in the resolution adopted in part because the United States industry and Council expressed concern about not having enough time to review them. The draft HCR's were:

Relative to the reference points established in this resolution, the HCR shall operate as follows consistent with Figure 1:

1. If the most recent stock assessment indicates that the latest estimate of SSB is above $SSB_{\text{threshold}}$ with a probability of greater than 50%, CPCs shall ensure fishing intensity is maintained at or below the TRP with a probability of at least 50%.
2. If the most recent stock assessment indicates that the latest estimate of SSB is below $SSB_{\text{threshold}}$ with a probability of [50% or greater], and above the LRP with a probability of [at least 50%], CPCs shall revise the conservation and management measures currently in force for this stock in the IATTC Convention Area with a view to reducing fishing intensity (F) and growing SSB back to levels equal to or greater than $SSB_{\text{threshold}}$.

3. If the most recent stock assessment indicates that the latest estimate of SSB is below the LRP with a probability of 80%, CPCs shall ensure fishing intensity (F) is reduced to a minimum level. In addition, CPCs shall, in collaboration with the ISC and the WCPFC, adopt no later than 2 years a plan to rebuild SSB to levels above the LRP within 10 years with a probability of [90%].

HCR Examples for Other Tuna Stocks

WCPO Skipjack in the WCPFC

The WCPFC adopted a management procedure ([CMM 2022-01](#)) for Western and Central Pacific Ocean (WCPO) skipjack in 2022. “Management procedures” are harvest strategies, but management procedures have generally been defined as pre-tested procedures with the following three components: data collection, an estimation method to provide an estimate of stock status, and an HCR to set fishing opportunities.

The WCPO skipjack HCR refers to the figure below (Figure 2).

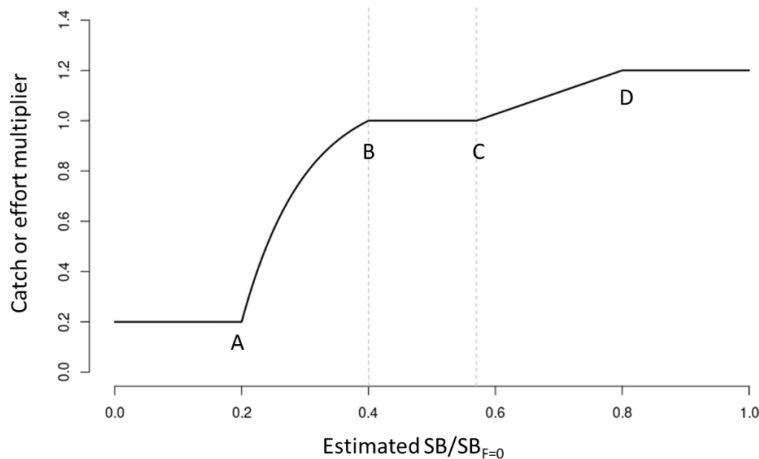


Figure 2. HCR adopted by WCPFC for WCPO skipjack tuna.

Some general features of this HCR for WCPO skipjack are:

- The output is a multiplier, or scalar, which is applied equally to the baseline of all fleets that *target* skipjack, and the control metric is effort for purse seine and catch for all other fisheries.
- An asymptotic curve between the LRP or Point A and the first threshold point or Point B allowing for more gradual decline closer to the first threshold and steeper declines closer to the LRP
- Three areas where the multiplier is held constant (to the left of Point A, between Points B and C and to the right of D).
- The management period is three years where stock status information from the most recent assessment is incorporated into the estimation model, and the output from the

estimation model informs the scalar and whether adjustments to effort/catch are needed relative to baseline conditions.

- The maximum increase or decrease in effort shall be no more than 10% of the levels in the previous 3-year period.

North Atlantic Albacore in ICCAT

The International Commission for the Conservation of Atlantic Tuna (ICCAT) adopted an HCR for North Atlantic albacore (NA ALB) in 2017 and later adopted a management procedure for NA ALB in 2021 ([Recommendation 21-04](#)), which includes an HCR that is based on a TAC (Figure 3).

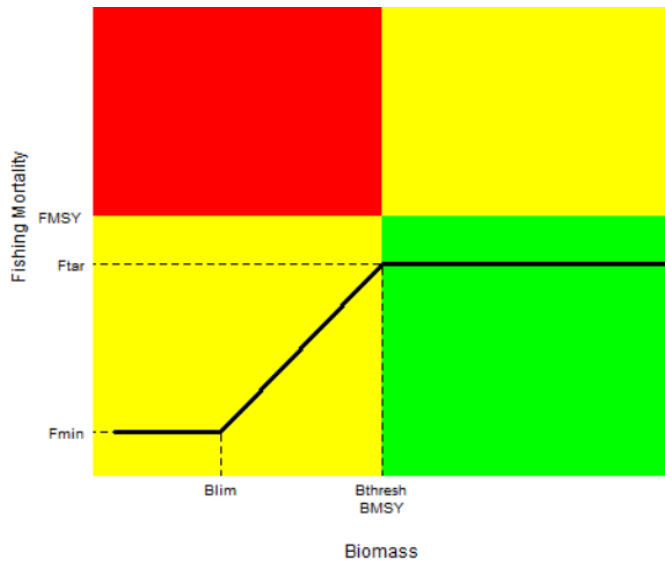


Figure 3. The HCR for NA ALB adopted by ICCAT. $B_{LIM} = 0.4 * B_{MSY}$; $B_{THRESH} = B_{MSY}$; $F_{TAR} = 0.8 * F_{MSY}$; $F_{MIN} = 0.1 * F_{MSY}$.

Elements of the HCR for NA ALB include:

- A maximum catch limit intended to avoid adverse effects to the population
- A minimum fishing mortality (F_{min}) when biomass is at or below the LRP intended to allow enough fishing to ensure scientific monitoring is possible
- Limitations on the percentage the TAC can change (25% for increases and 20% for decreases)
- The management procedure is applied every three years. The management procedure relies on the use of the MSE model for HCR outputs and this schedule is decoupled from the stock assessment schedule.

Atlantic Bluefin Tuna in ICCAT

In 2022 ICCAT adopted a management procedure that applies to both Atlantic bluefin tuna stocks ([Recommendation 22-09](#)) and contains the following elements:

- The management procedure is applied every 3 years.
- The TAC is calculated using an empirical formula based on predetermined aggregate abundance indices.
- There are constraints on the minimum and maximum amount of change in TAC between consecutive management periods (<20% increase or a 35% decrease, and no change to the TAC if the change would be less than 50 mt for the western management area and 1,000 mt for the eastern management area).
- The management procedure also specifies the performance measures and a schedule for management procedure implementation.

Additional Considerations for HCRs

Baseline TAE and TAC

The current TRP is based on fishing intensity, and the HCRs tested in the MSE used fishing intensity to derive a TAC and/or TAE based using 1999-2015 for fishery allocations. A baseline period may be used to help set a TAC or TAE, and if a baseline period is selected that is broadly accepted, this may also help with allocations of the TAC and/or TAE if they are based on proportions for that time period.

The current effort baseline that applies to vessels *fishing for* (i.e., targeting) NP ALB in the IATTC and WCPFC is the 2002-2004 average level of fishing days and/or number of vessels (IATTC Resolutions [C-05-02](#) and [C-18-03](#), and WCPFC [CMM 2019-03](#)). The 2020 NP ALB stock assessment indicates that the 2002-2004 average fishing effort resulted in a fishing intensity of F39 during those years, which is slightly above the target reference point adopted in the NP ALB harvest strategy; the TRP of F45 would be more constraining than F39. However, when measured over the following 10-year period, fishing intensity associated with the 2002-2004 average fluctuated around F45, sometimes above and sometimes below. To maintain the TRP, when SSB is above the ThRP, the IATTC and WCPFC could continue using the 2002-2004 effort limit for vessels targeting NP ALB or re-open the measure to consider a different baseline effort level. The IATTC and WCPFC may also consider specifying in the HCR if the fishing intensity to be used should be the average fishing intensity over a certain time period or the latest estimate of fishing intensity, and whether the TRP is a firm limit not to be exceeded or the middle of an acceptable range over a period of time.

As the current measures for NP ALB only apply to vessels fishing for NP ALB, the IATTC and WCPFC however, would still need to consider adopting provisions to apply a maximum TAC or baseline TAE to vessels catching NP ALB incidentally.

Metrics to Measure Effort

The current measures in the IATTC and WCPFC use vessel days (fishing days) and number of vessels as two metrics by which effort is measured. Vessel days (fishing days) is a more direct measure of harvest for the U.S. fleet, but this may or may not be viable for other fleets.

Management Period

The management period is the length of time that the output from the HCR is applied. The time interval may be unrelated to the assessment cycle (NA ALB and Atlantic bluefin tuna) or related to the assessment cycle as for WCPFC skipjack. The time interval selected for management periods NA ALB, Atlantic bluefin tuna and WCPFC skipjack is three years. For example, if the assessment is completed every three years: in 2026 the stock assessment produces an estimate; the HCR is applied from 2027-2029; in 2029, the next assessment produces an estimate and a potentially new HCR is applied from 2030-2032. The management period directly impacts the management objective of having gradual changes in management between years, or periods. In the NP ALB MSE a management period of three years was used following the current 3-year assessment cycle.

Focus Questions For Section 2 on HCRs:

- 1) Are the HCRs in Canada's proposal appropriate? If yes, are there specific changes you would propose to the text?
- 2) To meet the objective that management changes be gradual, should the limit on change apply to increases and decreases, or just decreases? If both, should they be the same or different? What should the values be? Also, should these bounds apply to when the stock is between the limit and threshold reference points or greater than the threshold reference point only?
- 3) Do you have a specific F_{\min} in mind that meets a certain function?
- 4) Do you think the concept of C_{\max} (a maximum allowable catch regardless of the HCR output; see ICCAT NA ALB example) is valuable and if so, how should it be determined? Note that the MSE did include a maximum catch of 120,000 mt, which corresponded to the maximum historical catch because, as suggested during a stakeholder meeting during the MSE process, more would be too much for the fleet/market.
- 5) The HCR tested in the NP ALB MSE included a linear decrease between the threshold RP and LRP. Other HCRs, such as the WCPFC skipjack HCR have an asymptotic curve, which would require a smaller decrease closer to the threshold and a larger decrease closer to the LRP. Are there preferences on HCR shape or preference for sticking closely to the depiction in the adopted harvest strategy?
- 6) Should the harvest strategy include a review/evaluation schedule similar to the WCPO skipjack management procedure in the WCPFC?
- 7) If incidental catch of NP ALB is not addressed in the HCR, how should it be addressed? The WCPFC and IATTC harvest strategies reference *all* harvest of North Pacific albacore

- how should an HCR be framed to address target and non-target catch? Consider, among other things, an example for NA ALB in ICCAT that includes a TAC for a specific member that catches NA ALB incidentally, and whether we would need to re-open the 2005 measures adopted by the IATTC and WCPFC.

- 8) What level of detail is needed for HCRs for NP ALB? Does the HCR in the resolution/harvest strategy need the details seen in other examples, such as the equation and/or table?
- 9) Should the HCRs reference a baseline period (e.g., specific TAC/TAE, time periods, TAC/TAE that meets F45), and if so, what should the baseline be? Consider that this could re-open the 2005 measures adopted by the IATTC and WCPFC.
- 10) Do stakeholders still prefer a mixed control with surface fleets subjected to an effort control?
- 11) If the HCR includes effort, should the effort metric be further defined (e.g., number of vessels, fishing days, etc.) and what should be the metric? Should it be different for different fleets?
- 12) Should the 1999-2015 catch ratios be used to split the fishing impact as was done in the MSE? Would you use a different period?
- 13) Should the harvest strategies specify a management period for NP ALB, and if so, what should that management period be for NP ALB?

3. Exceptional Circumstances

In conducting MSEs, many assumptions are made on data availability as well as on general conditions and life history parameters expected. As noted earlier, “exceptional circumstances” are circumstances beyond those evaluated in the MSE process, and identification of exceptional circumstances may result in the need to initiate another MSE and/or to consider a different process than what was agreed to in the harvest strategy or harvest control rule.

Both the IATTC and WCPFC in their harvest strategies in 2022 included provisions directing staff to work with/requesting, respectively, the ISC to develop criteria for identification of exceptional circumstances in 2023. Thus, we expect the ISC to provide some information for consideration related to exceptional circumstances.

Both the management procedures adopted for NA ALB in ICCAT ([Annex 2 of 2021-04-e](#)) and for skipjack in the WCPFC (Annex IV of [CMM 2022-01](#)) include provisions on exceptional circumstances. The exceptional circumstances protocol for NA ALB is detailed in terms of the process for identifying exceptional circumstances, indicators to consider, actions to trigger alternative management or potential adjustments to the stock assessment or management procedure, and a timeline of when checks and actions should occur. In contrast, the exceptional circumstances protocol for skipjack in the WCPFC is more generally described and less prescriptive. In both cases, the scientific bodies of the respective commissions are tasked with monitoring and identifying if exceptional circumstances exist and providing advice to the commission on recommended courses of action.

Focus Question on Section 4 on Exceptional Circumstances:

- 14) Are exceptional circumstances important to identify for the harvest strategy for North Pacific albacore, and if so, what criteria and/or process should be considered?

4. Considerations for Drafting and Implementing the Harvest Strategies

Once the WCPFC and IATTC adopt revised harvest strategies, each organization may need to consider if revisions to the existing CMM and Resolution are warranted to implement their harvest strategies. Both measures currently limit the effort of vessels fishing for North Pacific albacore to the 2002-2004 baseline. If changes to the CMM or Resolution occur, the United States may need to consider if regulatory actions are necessary to implement any such requirements. Additionally, the management procedures adopted for other stocks include other elements such as monitoring, baseline TACs/TAE and U.S. stakeholders should consider whether there are other elements that should be included in a revised future harvest strategy.

Additional Potential Elements of a Management Procedure

Process for Estimating Latest SSB to Utilize the HCR

As noted, the WCPFC and ICCAT have adopted management procedures for WCPO skipjack, NA ALB, and Atlantic bluefin tuna. In addition to adopting HCRs, parameters related to data collection and the estimation method to derive stock status are also described in a management procedure. We do note that one potential difference in the way that the management procedures are set up for NA ALB and WCPO skipjack and what was originally envisioned for NP ALB is that NA ALB and WCPO skipjack rely on use of the simulated stock assessment model used as the MSE estimation model- whereas for NP ALB the ISC intends to conduct periodic stock assessment to inform stock status rather than using the ISC ALB WG 2017 stock assessment used in the MSE as the estimation model.

Monitoring and Implementing Changes to Effort/Catch

To date, the NP ALB fleet has not had to take measures to reduce effort or catch. In the event thresholds to reduce catch or effort are met in the new harvest control rules, the United States would be expected to adjust accordingly. Some options in other fisheries to reduce effort include:

- Placement on lists to be authorized to fish in the year (e.g., IATTC active purse seine list with limited capacity)
- Limited entry programs
- Fishing Day Limits

Options in other fisheries to reduce catch include:

- Trip limits to reduce the rate of harvest while allowing for incidental catches
- Closure upon reaching catch limit

In addition to adjusting effort or catch, both metrics would need to be monitored to ensure timely inseason action. Options in other fisheries to monitor catch/effort include:

- Electronic logbooks (catch and effort) and landing receipts (catch only) with timely submission.

Area of Applicability

Management responsibility for NP ALB is split between the IATTC (east of 150° W) and the WCPFC (west of 150° W). The [WCPFC convention](#) established the Northern Committee “to make recommendations on the implementation of such conservation and management measures as may be adopted by the Commission for the area north of the 20° parallel of north latitude and on the formulation of such measures in respect of stocks which occur mostly in this area.” The [WCPFC Rules of Procedure](#) further define northern stocks as “northern Pacific bluefin, northern albacore and the northern stock of swordfish.”

While the current CMM for NP ALB (CMM 2019-03) applies in the Convention Area north of the equator, recent discussions at WCPFC and Northern Committee have resulted in a CMM for NP swordfish that was limited to the area north of 20° N provoking discussions on how to address management for the entire range of the stock. The United States is considering the implications of these discussions and strategies to ensure management covers the full extent of the stock geographically.

Focus Questions on Section 5 on Considerations for Drafting and Implementing Harvest Strategies:

- 15) Should revisions to the harvest strategy consider elements other than HCRs and exceptional circumstances?
- 16) What if any changes to the CMM/Resolution should be contemplated (e.g., effort metric, monitoring, baseline TAE/TAC Commission wide and/or per member)?
- 17) Do you have preliminary suggestions for monitoring and implementing effort/catch limits for the U.S. fleet?
- 18) For the Northern Committee, if revisions to the CMM result in limiting the scope of the CMM to north of 20 N, how should we consider managing the stock across its range?

5. Next Steps

Based on input from this meeting, NMFS may consider drafting a proposal for feedback for the March 2023 Pacific Fishery Management Council meeting and solicit input from the Permanent Advisory Committee and General Advisory Committee. NMFS anticipates that discussions on revising the harvest strategy for NP ALB would occur at the 19th Meeting of the Northern Committee (NC19), July 6-7, 2023, and at the 101st Meeting of the IATTC August 7-11, 2023. The ISC is also expected to conduct a new stock assessment for NP ALB in 2023. Preliminary results of that assessment may be available for the IATTC Scientific Advisory Committee meeting in May 2023, and NC19, and the final assessment will be available following the 23rd ISC Plenary, July 10-17, 2023.

Appendix I

HCR	TRP	LRP (%SSB _{current,F=0})	ThRP (%SSB _{current,F=0})	Fraction of Fmin	Odds SSB > LRP	Odds Depletion > minimum historical	TRP/F	Odds a decrease in catch is <30% between assessment periods
2	F50	14%	30%	0.25	0.99	0.74	0.92	1.00
10	F50	14%	30%	0.50	0.99	0.74	0.92	1.00
6	F40	14%	20%	0.25	0.97	0.72	1.04	1.00
14	F40	14%	20%	0.50	0.97	0.72	1.04	1.00

Table 1. Performance indicators for HCR2, HCR10, HCR6, and HCR14 under mixed control across all iterations and uncertainty scenarios tested in the NP ALB MSE. TRP refers to target reference point, LRP to limit reference point and ThRP to the threshold reference point, SSB to female spawning biomass and SSB_{current,F=0} to unfished dynamic female spawning stock biomass. The LRP and ThRP refer to the specified fraction of unfished dynamic SSB.

HCR	TRP	LRP (%SSB _{current,F=0})	ThRP (%SSB _{current,F=0})	Fraction of Fmin	Odds SSB > LRP	Odds Depletion > minimum historical	TRP/F	Odds a decrease in catch is <30% between assessment periods
2	F50	14%	30%	0.25	0.96	0.70	0.72	1.00
10	F50	14%	30%	0.50	0.96	0.70	0.74	1.00
6	F40	14%	20%	0.25	0.93	0.68	0.63	1.00
14	F40	14%	20%	0.50	0.92	0.67	0.67	1.00

Table X2. Performance indicators for HCR2, HCR10, HCR6, and HCR14 under TAC control across all iterations and uncertainty scenarios tested in the NP ALB MSE. TRP refers to target reference point, LRP to limit reference point and ThRP to the threshold reference point, SSB to female spawning biomass and SSB_{current,F=0} to unfished dynamic female spawning stock biomass. The LRP and ThRP refer to the specified fraction of unfished dynamic SSB.

Appendix III

U.S. Stakeholder Meeting - Harvest Control Rules, Exceptional Circumstances and Harvest Strategies for North Pacific Albacore

February 15, 2023

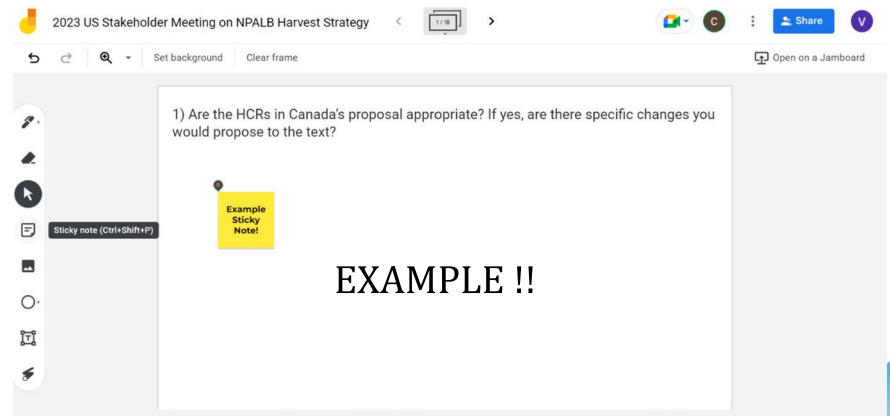
Meeting Outline

- Introduction and Meeting Logistics
- Background
- Meeting Objectives
- Harvest Control Rules
- Exceptional Circumstances
- Considerations for Drafting and Implementing the Harvest Strategies
- Next Steps

Meeting Logistics

- Please mute when not speaking
- Raise your hand if you would like to speak
- Please state your name and affiliation when speaking
- We will solicit comment after specific sections. Focus questions are contained within the background paper for this meeting.

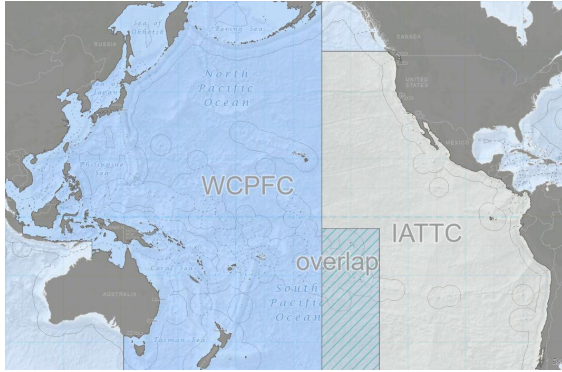
Jamboard



Background - International Management of NP ALB

International management of North Pacific albacore (NP ALB) shared between
Inter-American Tropical Tuna Commission (IATTC)
&

Western and Central Pacific Fisheries Commission (WCPFC) Northern Committee (NC)



Background timeline

2005

- WCPFC and IATTC adopted effort limits for fisheries fishing for NP ALB

2014

- NC adopts precautionary management framework for NP albacore, which was renamed as a harvest strategy in 2017.

2015-2021

- ISC conducts a management strategy evaluation (MSE) for NP albacore



Background timeline

2021

WCPFC NC tasked itself to

- review the limit reference point (LRP)
- consider adoption of a target reference point (TRP) in 2022, and
- adopt a harvest control rule and a threshold reference point (ThRP) in 2023

2022

- NMFS hosted [webinar](#) to gather input on NP ALB management objectives and reference points
- IATTC and WCPFC adopted harvest strategies for NP ALB



HARVEST STRATEGIES FOR NORTH PACIFIC ALBACORE



Management Objectives

- Maintain spawning stock biomass (SSB) above the limit reference point (LRP) with a probability of at least 80% over the next 10 years.
- Maintain depletion of total biomass around historical (2006-2015) average depletion over the next 10 years
- Maintain fishing intensity (F) at or below the target reference point (TRP) with a probability of at least 50% over the next 10 years
- To the extent practicable, management changes should be relatively gradual between years.



Reference Points

- Limit Reference Point (LRP) = $14\%SSB_{current,F=0}$ which is 14% of the dynamic unfished spawning stock biomass; the acceptable level of risk of breaching the LRP shall be no greater than 20%.
- Threshold reference point (ThRP) = $30\%SSB_{current,F=0}$
- Target Reference Point (TRP) = F45, which is the fishing intensity (F) level that results in the stock producing 45% of spawning potential ratio (SPR)

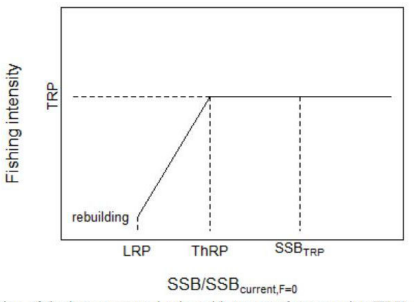
Acceptable Levels of Risk

- Risk of breaching the LRP based on the most current estimate of SSB shall be no greater than 20%.



Harvest Control Rules

- Adopt HCRs consistent with Figure 1
- HCRs shall outline actions Commission should take to manage NP ALB
- Actions shall be determined by the position of the most recent fishing intensity and biomass estimates relative to the reference points



Monitoring Strategy

- ISC to conduct a stock assessment every three years at which time status relative to reference points will be evaluated
- In performing stock assessment, ISC to consider if biology, environmental conditions, data sources, status of the stock and or other underlying assumptions have changed substantially enough to warrant revisiting the components in this harvest strategy

Other Provisions

- Promote compatibility between harvest strategies adopted by WCPFC and IATTC
- ISC requested to develop criteria for identification of exceptional circumstances in 2023



Meeting Objective

Gather U.S. stakeholder input on:

- Gather input on Harvest Control Rules (HCRs)
- Gather input on exceptional circumstances or circumstances beyond those evaluated in the MSE process that may warrant actions that deviate from the adopted HCRs.
- Consider potential revisions for the IATTC and WCPFC harvest strategies and/or the IATTC Resolution or WCPFC conservation and management measure (CMM) to implement the harvest strategy



HARVEST CONTROL RULES



Harvest Control Rules

Harvest control rules are a set of pre-agreed decision rules that define how harvest will be managed based on the status of the stock.

- MSE Tested HCR for NP ALB
- NP ALB HCR Proposed by Canada to IATTC
- WCPO Skipjack HCR
- North Atlantic Albacore HCR
- Atlantic Bluefin Tuna HCR



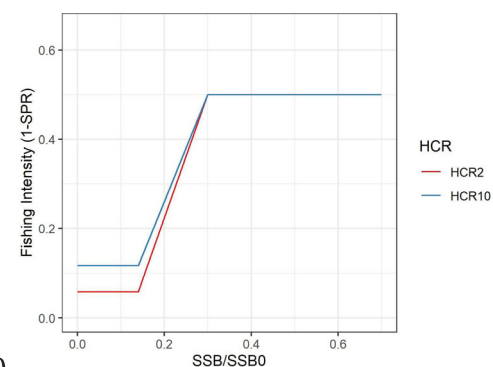
ISC MSE-Tested HCR for NP ALB

General

- Management applied to all fleets harvesting NP ALB
- 3 year management period

Components requiring further consideration:

- F_{min}
- Management Regime (TAC, TAE, mixed control)



Appendix 1

	HCR	TRP	LRP (%SSB _{current,F=0})	ThRP (%SSB _{current,F=0})	Fraction of F _{min}	Odds SSB > LRP	Odds Depletion > minimum historical	TRP/F	Odds a decrease in catch is <30% between assessment periods
Mixed Control	2	F50	14%	30%	0.25	0.99	0.74	0.92	1.00
	10	F50	14%	30%	0.50	0.99	0.74	0.92	1.00
	6	F40	14%	20%	0.25	0.97	0.72	1.04	1.00
	14	F40	14%	20%	0.50	0.97	0.72	1.04	1.00
TAC Control	2	F50	14%	30%	0.25	0.96	0.70	0.72	1.00
	10	F50	14%	30%	0.50	0.96	0.70	0.74	1.00
	6	F40	14%	20%	0.25	0.93	0.68	0.63	1.00
	14	F40	14%	20%	0.50	0.92	0.67	0.67	1.00



Canada Proposal to IATTC for NP ALB HCR

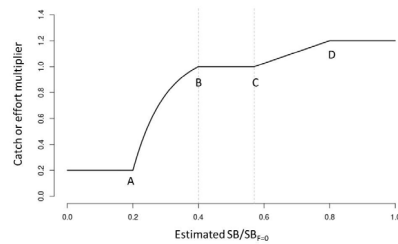
Relative to the reference points established in this resolution, the HCR shall operate as follows consistent with Figure 1:

- If the most recent stock assessment indicates that the latest estimate of SSB is above SSB_{threshold} with a probability of greater than 50%, CPCs shall ensure fishing intensity is maintained at or below the TRP with a probability of at least 50%.
- If the most recent stock assessment indicates that the latest estimate of SSB is below SSB_{threshold} with a probability of [50% or greater], and above the LRP with a probability of [at least 50%], CPCs shall revise the conservation and management measures currently in force for this stock in the IATTC Convention Area with a view to reducing fishing intensity (F) and growing SSB back to levels equal to or greater than SSB_{threshold}.
- If the most recent stock assessment indicates that the latest estimate of SSB is below the LRP with a probability of 80%, CPCs shall ensure fishing intensity (F) is reduced to a minimum level. In addition, CPCs shall, in collaboration with the ISC and the WCPFC, adopt no later than 2 years a plan to rebuild SSB to levels above the LRP within 10 years with a probability of [90%].



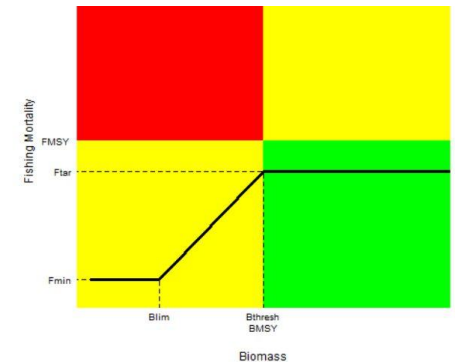
WCPFC - WCPO Skipjack HCR

- Multiplier applied to the baseline of all fleets that *target* skipjack
- Mixed Control (effort for purse seine and catch for all other fisheries)
- Asymptotic curve between the LRP and the first threshold point. Three areas where the multiplier is held constant.
- Three areas where multiplier is held constant
- Management period is three years - outputs determined from run of estimation model.
- Maximum increase or decrease in effort shall be no more than 10% of the levels in the previous 3-year period.



ICCAT - North Atlantic Albacore

- A maximum catch limit
- F_{min} intended to allow enough fishing for scientific monitoring
- Limitations on the percentage the TAC can change
- Management procedure is applied every three years.
- Management procedures relies on outputs of the MSE model for HCR outputs. Schedule is decoupled from stock assessment schedule.



ICCAT - Atlantic Bluefin Tuna

- Management procedure is applied every 3 years
- TAC calculated using an empirical formula based upon aggregate abundance indices
- Constraints on the minimum and maximum amount of change in TAC between consecutive management periods
- Management procedure specifies the performance measures and a schedule for management procedure implementation



Jamboard Time - Questions 1-8



Additional Considerations for HCRs - Baseline TAE/TAC

What baseline TAC and TAE do you want to meet the target?

- Current effort limit: 2002-2004 average applies to vessels targeting NPALB
- During 2002-2004, F39
- From 2005-2014, avg. = F45 = TRP
- Is TRP treated as a maximum limit or one that can fluctuate?
- A change = re-open measure
- What about incidental harvest? What about catch?



Additional Considerations for HCRs - Baseline Period/Allocation

- MSE tested a harvest allocation based on 1999-2015 average
- Allocation based on 1995-2015 or 2002-2004 would not be very different

	1999-2015 Harvest Ratio	2002-2004 Harvest Ratio
EPO	0.23	0.23
Chinese Taipei	0.05	0.06
JapanLL	0.28	0.22
JapanPL	0.35	0.40
Vanuatu	0.03	0.03
Other	0.06	0.06



Additional Considerations for HCRs - Metrics to Measure Effort & Management Period

Unit of effort

- Fishing days, number of vessels, other?
- Fishing days may work for US fleet, but not others

Management period

- How often check status and run HCR? How long does the newest information from the HCR apply?
- Implications for gradual changes in management
- May align with assessment cycle
- ISC is requested to complete NPALB assessment every 3 years (status quo)



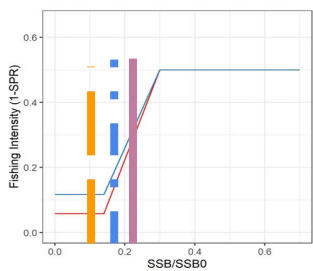
MSE-tested HCR - Example

$$\frac{SSB_{LIMIT} < SSB < SSB_{THRESHOLD}}{TAE = TAE_{MIN} + [H_{TARGET} - TAE_{MIN}] * (SSB - SSB_{LIMIT}) / (SSB_{THRESHOLD} - SSB_{LIMIT}), \text{ or } TAE_{MIN}, \text{ whichever is greater}}$$

Table 2 (page 72). [ISC's MSE Report](#).



HCR-tested MSE - Example



Fmin	SSBcurrent	Fishing days
0.25	22%SSB0	12400
	17%SSB0	6269
	10%SSB0	2591
0.5	22%SSB0	13696
	17%SSB0	8375
	10%SSB0	5182

*Baseline for the EPO (at TRP) = 22, 209 days



Additional Considerations for HCRs - Jamboard time for Questions 9-13



EXCEPTIONAL CIRCUMSTANCES



Exceptional Circumstances

Recall the current agreement

- *“When performing a stock assessment, the ISC will consider if **the biology, environmental conditions, data sources, status of the stock, and/or other underlying assumptions have changed substantially enough to warrant revisiting the components in this harvest strategy.**”*
- ISC is requested to develop *“**criteria for the identification of exceptional circumstances**”*

NA ALB and WCPO skipjack tuna contain provisions with exceptional circumstances...Do we want something similar?



Exceptional Circumstances - NA ALB and WCPO Skipjack Tunas Management Procedures

NA ALB

- Tasks science body to monitor for pre-agreed exceptional circumstances (ECs)
- Protocols Commission *must* then follow (e.g., science body advises specific TAC)
- Relatively prescriptive

WCPO Skipjack

- Directs science body to review for ECs
- Provides examples of ECs
- Protocol = science body advises Commission potential next steps



Exceptional Circumstances - Jamboard Time for Question 14



CONSIDERATIONS FOR DRAFTING AND IMPLEMENTING THE HARVEST STRATEGIES



Additional Considerations - Drafting and Implementing Harvest Strategies

- **Management Procedure:** harvest strategies with data collection, an estimation method to provide an estimate of stock status, and an HCR to set fishing opportunities
- What elements should we include in revisions to the harvest strategy this year?



Additional Elements of a Management Procedure

Estimating Latest SSB

- Description of how to derive the SSB that informs the HCR
- MSE model (NA ALB and WCPO skipjack) vs. stock assessment (NP ALB)



Additional Elements of a Management Procedure

Monitoring & Implementing Changes to Effort/Catch

- **Strategies to reduce effort:**
 - Lists authorized to fish (capacity-based)
 - Limited entry (number of vessels)
 - Fishing day limits
- **Strategies to reduce catch:**
 - Trip limits
 - Catch limits
- **Monitoring is important**
 - Electronic logbooks (catch/effort)
 - Landing receipts with timely submission (catch)



Additional Elements

Area of Applicability

- Northern Committee makes recommendations on northern stocks, and north of 20° N
- Recently WCPFC members have highlighted this restriction
- Goal = manage across entire range
- In recent 5 years, from 0-30° N
 - Total catch (MT) ranged from 11-26%
 - Numbers of fish ranged from 5-13%



Considerations for Drafting and Implementing Harvest Strategies - Jamboard time for Questions 15-18



Next Steps

Solicit Feedback and Advice from

- Pacific Fishery Management Council - March 2023
- PAC
- GAC - June 15, 2023

Potentially submit a proposal to WCPFC NC (July 6-7, 2023 / IATTC (August 7-11, 2023)



Thank you!

