



## **Report of the 15<sup>th</sup> Session of the IPHC Management Strategy Advisory Board (MSAB015)**

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Meeting held electronically, 11-14 May 2020

### **Commissioners**

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Peter DeGreef	Richard Yamada

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## ACRONYMS

AK	Alaska
AM	Annual Meeting
ADFG	Alaska Department of Fish & Game
BC	British Columbia
CA	California
CDN	Canada/Canadian
CPUE	Catch-per-unit-effort
DFO	Fisheries and Oceans Canada
IPHC	International Pacific Halibut Commission
Mlbs	Millions of pounds
MP	Management Procedure
MSAB	Management Strategy Advisory Board
MSE	Management Strategy Evaluation
NPFMC	North Pacific Fishery Management Council
NWIFC	Northwest Indian Fisheries Commission
O26	Over 26 inches
OM	Operating Model
PFMC	Pacific Fishery Management Council
SRB	Scientific Review Board
SPR	Spawning Potential Ratio
TCEY	Total Constant Exploitation Yield
U26	Under 26 inches
USA	United States of America
WPUE	Weight-per-unit-effort

## DEFINITIONS

A set of working definitions are provided in the IPHC Glossary of Terms and abbreviations:  
<https://www.iphc.int/the-commission/glossary-of-terms-and-abbreviations>

## HOW TO INTERPRET TERMINOLOGY CONTAINED IN THIS REPORT

This report has been written using the following terms and associated definitions so as to remove ambiguity surrounding how particular paragraphs should be interpreted.

- Level 1:** **RECOMMENDED; RECOMMENDATION; ADOPTED** (formal); **REQUESTED; ENDORSED** (informal): A conclusion for an action to be undertaken, by a Contracting Party, a subsidiary (advisory) body of the Commission and/or the IPHC Secretariat.
- Level 2:** **AGREED:** Any point of discussion from a meeting which the Commission considers to be an agreed course of action covered by its mandate, which has not already been dealt with under Level 1 above; a general point of agreement among delegations/participants of a meeting which does not need to be elevated in the Commission's reporting structure.
- Level 3:** **NOTED/NOTING; CONSIDERED; URGED; ACKNOWLEDGED:** General terms to be used for consistency. Any point of discussion from a meeting which the Commission considers to be important enough to record in a meeting report for future reference. Any other term may be used to highlight to the reader of an IPHC report, the importance of the relevant paragraph. Other terms may be used but will be considered for explanatory/informational purposes only and shall have no higher rating within the reporting terminology hierarchy than Level 3.



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## EXECUTIVE SUMMARY

The 15<sup>th</sup> Session of the International Pacific Halibut Commission (IPHC) Management Strategy Advisory Board (MSAB015) was held in an electronic format (remote participation), from 11-14 May 2020. The MSAB consists of 24 board members, 23 of which attended the Session from the two (2) Contracting Parties. A total of 7 individuals attended the Session as Observers. In addition, two (2) IPHC Commissioners were in attendance, Mr Paul Ryall (Canada), and Mr Richard Yamada (USA). The list of participants is provided at [Appendix I](#).

The following are a subset of the complete recommendations/requests for action from the MSAB015, which are provided in full at [Appendix VII](#).

## RECOMMENDATIONS

*NOTING that the core purpose of the MSAB015 is to review progress on the MSE Program of Work, and to provide guidance for the delivery of products to the MSAB016 in October 2020, the MSAB RECALLED that formal recommendations to the Commission would not be developed at the present meeting, but rather, these would be developed at the MSAB016.*

## REQUESTS

### *Management procedures for distributing the TCEY*

MSAB015-Req.1 ([para. 20](#)) The MSAB **REQUESTED** that a procedure to distribute the coastwide TCEY be flexible to allow for distribution directly to IPHC Regulatory Areas, or to Biological Regions or Management Zones before distributing to IPHC Regulatory Areas. Methods of distribution may be based on stock distribution, relative fishing intensities, and other allocation adjustments.

### *Multi-area operating model*

MSAB015-Req.2 ([para. 32](#)) The MSAB **REQUESTED** separating recreational and subsistence fishing mortality for IPHC Regulatory Areas 2B, 2C, and 3A in the OM to assist with the evaluation of results and allow for testing management procedures against scenarios that depart from recent observations of subsistence fishing mortality.

MSAB015-Req.3 ([para. 33](#)) The MSAB **REQUESTED** that the non-directed fishing mortality sector be modelled by IPHC Regulatory Area rather than Biological Region because this will be useful when evaluating results at the IPHC Regulatory Area level and necessary to properly calculate the sector allocations in each IPHC Regulatory Area.

### *MSAB Program of Work (2020-21) and identification of management procedures to evaluate*

MSAB015-Req.4 ([para. 43](#)) The MSAB **REQUESTED** a comparison of previous coastwide MSE simulation results with coastwide MSE simulations using the new MSE framework, expanding on the result that the current OM in the new framework is able to match spawning biomass expectations closely. This will assist in determining if changes in management procedure performance are due to a change in the MSE framework.

MSAB015-Req.5 ([para. 44](#)) The MSAB **REQUESTED** results from the management procedures provided in [Appendix V](#) are presented at the next MSAB meeting.

MSAB015-Req.6 ([para. 46](#)) The MSAB **REQUESTED** an inter-sessional meeting be held online 17-18 August 2020 to review the results from the prioritized management procedures described in [Appendix V](#).



## 1. OPENING OF THE SESSION

1. The 15<sup>th</sup> Session of the International Pacific Halibut Commission (IPHC) Management Strategy Advisory Board (MSAB015) was held in an electronic format (remote participation), from 11-14 May 2020. The MSAB consists of 24 board members, 23 of which attended the Session from the two (2) Contracting Parties. A total of 7 individuals attended the Session as Observers. In addition, two (2) IPHC Commissioners were in attendance, Mr Paul Ryall (Canada), and Mr Richard Yamada (USA). The list of participants is provided at [Appendix I](#).
2. The MSAB **NOTED** that no apologies were received by the IPHC Secretariat and/or the Co-Chairpersons from board members.
3. The MSAB **RECALLED** that the primary role of the MSAB is to advise the Commission on the Management Strategy Evaluation (MSE) process. To meet this advisory role, the Commission has articulated the following specific objectives for the MSAB, as described in Appendix V, para. 2 of the [IPHC Rules of Procedure \(2020\)](#):
  - a) *define clear measurable objectives and performance measures for the fishery;*
  - b) *define candidate management strategies, which include aspects of the fishery that can be managed (e.g. regulatory requirements);*
  - c) *advise the IPHC Secretariat about plausible scenarios for investigation, which include aspects of the fishery that cannot be managed by the IPHC (e.g. environmental conditions and removals under the management authority of a domestic management agency);*
  - d) *Gather and clearly articulate the interests and concerns of constituents and incorporate them into the MSAB's discussions;*
  - e) *encourage and allow members to test tentative ideas and exploratory suggestions without prejudice to future discussions;*
  - f) *represent information, views, and outcomes of the MSAB discussions to external parties accurately and appropriately;*
  - g) *encourage the understanding and support of their constituencies for the MSAB process and for consensus positions developed by MSAB.*
4. **NOTING** paragraph 3, the MSAB **RECALLED** that the Management Strategy Evaluation process is a stakeholder informed, scientifically driven process.

## 2. ADOPTION OF THE AGENDA AND ARRANGEMENTS FOR THE SESSION

5. The MSAB **NOTED** that due to the online meeting format, the agenda was abridged each day compared to past in-person meetings to include a four-hour online meeting followed by an online report drafting session.
6. The MSAB **ADOPTED** the Agenda as provided at [Appendix II](#). The documents provided to the MSAB015 are listed at [Appendix III](#).

## 3. IPHC PROCESS

7. **NOTING** that the core purpose of the MSAB015 is to review progress on the MSE Program of Work, and to provide guidance for the delivery of products to the MSAB016 in October 2020, the MSAB **RECALLED** that formal recommendations to the Commission would not be developed at the present meeting, but rather, these would be developed at MSAB016.

### 3.1 MSAB Membership

8. The MSAB **NOTED** paper [IPHC-2020-MSAB015-03](#) which provided the current membership list and term expirations for the MSAB. The current full membership list is provided at [Appendix IV](#).



9. The MSAB **NOTED** that Dr Carey McGilliard's (USA) appointment as Co-Chairperson of the MSAB expired on 10 May 2020.
10. The MSAB **NOTED** that in accordance with Appendix V, Sect III.5 of the IPHC Rules of Procedure (2020), Dr Carey McGilliard (USA) was nominated and re-elected as Co-Chairperson of the MSAB for a two-year period (ending 10 May 2022).
11. The MSAB **NOTED** the following new members since the last MSAB meeting:
  - a) Ms Sarah **Webster** (USA-ADFG representative) was appointed by the ADFG on 24 September 2019 to replace Mr James Hasbrouck;
  - b) Mr Angus **Grout** (Canada-Commercial harvester representative) was appointed by the Commission on 3 December 2019;
  - c) Ms Maggie **Sommer** (USA-PFMC representative) was appointed by the PFMC on 14 April 2020;
  - d) Mr Joseph **Petersen** (USA-Treaty Tribes representative) was appointed by the NWIFC on 7 May 2020.

### 3.2 *Update on the actions arising from the 14<sup>th</sup> Session of the MSAB (MSAB014)*

12. The MSAB **NOTED** paper [IPHC-2020-MSAB015-04](#) which provided the MSAB with an opportunity to consider the progress made during the inter-sessional period in relation to the recommendations and requests of the 14<sup>th</sup> Session of the IPHC Management Strategy Advisory Board (MSAB014).
13. The MSAB **AGREED** to consider and revise as necessary, the actions arising from the MSAB014, and for these to be combined with any new actions arising from the MSAB015.

### 3.3 *Review of the outcomes of the 15<sup>th</sup> Session of the IPHC Scientific Review Board (SRB015)*

14. The MSAB **NOTED** paper [IPHC-2020-MSAB015-05](#) which provided the outcomes of the 15<sup>th</sup> Session of the IPHC Scientific Review Board (SRB015) relevant to the mandate of the MSAB, which were provided for reference.

### 3.4 *Outcomes of the 96<sup>th</sup> Session of the IPHC Annual Meeting (AM096) and the 6<sup>th</sup> Special Session of the IPHC (SS06)*

15. The MSAB **NOTED** paper [IPHC-2020-MSAB015-06](#) which detailed the outcomes of the 96<sup>th</sup> Session of the IPHC Annual Meeting (AM096), and the 6<sup>th</sup> Special Session of the IPHC (SS06), relevant to the mandate of the MSAB.
16. The MSAB **NOTED** the two (2) inter-sessional decisions from the Commission as follows:

*[IPHC-2020-ID001](#): The Commission **RECOMMENDED** that the primary coastwide and area-specific objectives outlined in Table 1 of Appendix A be used for evaluating MSE results conditional on future consideration of the objectives;*

*[IPHC-2020-ID002](#): The Commission **RECOMMENDED** a reference SPR fishing intensity of 43% with a 30:20 control rule be used as an updated interim harvest policy consistent with MSE results pending delivery of the final MSE results at AM097, noting the additional components intended to apply for a period of 2020 to 2022 as defined in IPHC-2020-AM096-R paragraphs 97 b, c, d, and e. Specifically, these additional components are allocations to 2A and 2B, accounting for some impacts of U26 non-directed discard mortality, and the use of a rolling three-year average for projecting non-directed fishery discard mortality.*



**3.5 Brief review of the 2020 Program of Work**

17. The MSAB **NOTED** that the MSE is scheduled for delivery at the 97<sup>th</sup> Session of the IPHC Annual Meeting (AM097) in January of 2021 and that the MSAB015 will identify management procedures, review the framework, and discuss the multi-area operating model. Results of the simulations will be evaluated during the MSAB meetings in 2020.

**4. A REVIEW OF MANAGEMENT PROCEDURES TO DETERMINE THE TOTAL CONSTANT EXPLOITATION YIELD (TCEY) BY IPHC REGULATORY AREAS FOR PACIFIC HALIBUT FISHERIES**

18. The MSAB **NOTED** paper [IPHC-2020-MSAB015-07](#) which provided an update on management procedures (MPs) related to distributing the TCEY for use in the MSE process.

**4.1 Management procedures for coastwide scale**

19. The MSAB **NOTED** that various SPR values with a 30:20 control rule in combination with various constraints have been and will be evaluated throughout 2020.

**4.2 Management procedures for distributing the TCEY**

20. The MSAB **REQUESTED** that a procedure to distribute the coastwide TCEY be flexible to allow for distribution directly to IPHC Regulatory Areas, or to Biological Regions or Management Zones before distributing to IPHC Regulatory Areas. Methods of distribution may be based on stock distribution, relative fishing intensities, and other allocation adjustments.

21. The MSAB **RECALLED** paragraph 29c of [IPHC-2018-SRB013-R](#).

*IPHC-2018-SRB013-R, para. 29: The SRB REQUESTED that in future iterations of the MSE, the IPHC Secretariat and MSAB consider:*

*c) the current conditioned operating model used to simulate coast-wide survey index and that such data be used to consider an alternative survey-based management procedure (this may provide a more transparent TMq-setting algorithm than the current SPR based control-rule and help with MSAB deliberations).*

22. The MSAB **NOTED** that alternative management procedures may use area-specific data (e.g. modelled survey results) without using a coastwide TCEY, rather than the procedure described in [paragraph 21](#). This example is a sub-category of a broader category of management procedures that are data-based rather than assessment-based.

23. The MSAB **NOTED** that without preliminary results, it is difficult to evaluate different distribution procedures.

**5. A FRAMEWORK TO INVESTIGATE FISHING INTENSITY AND DISTRIBUTING THE TOTAL CONSTANT EXPLOITATION YIELD (TCEY) FOR PACIFIC HALIBUT FISHERIES**

24. The MSAB **NOTED** paper [IPHC-2020-MSAB015-08](#) which provided an update on Management Strategy Evaluation (MSE) activities relating to the definition and development of a framework to evaluate management procedures for distributing the TCEY.

**5.1 Framework to investigate distributing the TCEY among IPHC Regulatory Areas**

25. The MSAB **NOTED** various categories of implementation variability: 1) departures from the management procedure due to the decision-making process (i.e. the adopted mortality limit), and 2) differences in the realized fishing mortality (not due to estimation error) from the adopted mortality limit (as modelled in the operating model). Furthermore, estimated fishing mortality may differ from realized fishing mortality due to uncertainty in reported landings and other sources of fishing mortality, which would be used by the estimation model.





26. The MSAB **AGREED** that the MSE results are first evaluated by simulating differences in the realized fishing mortality. This will demonstrate the behaviour of the management procedure if perfectly followed. Subsequently, simulating bias and variability in the decision-making process and estimated fishing mortality will be distinguishable from the behaviour of the MPs. This is desired for future investigations.
27. The MSAB **NOTED** that the MSE framework will allow for the inclusion of various scenarios such as time-varying parameters in response to climate change.
28. The MSAB **AGREED** that it will helpful for the SRB to review the key uncertainties in the MSE operating model, including specifications of implementation error and uncertainty in fishing mortality.

## 5.2 Multi-area operating model

29. The MSAB **NOTED** that movement between Biological Regions is modelled using probability-at-age in the OM and is informed by past studies of movement as described in [IPHC-2019-AM095-08](#) and conditioning to data within Biological Regions. In addition, uncertainty in these parameters and time variability will be included.
30. The MSAB **NOTED** that two major sources of uncertainty and variability in the OM are movement rates and allocation of recruitment to Biological Regions. The final specifications of these two processes are in progress and will be reflected in the conditioned operating models.
31. The MSAB **NOTED** that the OM is capable of separating U26 and O26 through approximations of average length at age, which will be used to calculate the TCEY.
32. The MSAB **REQUESTED** separating recreational and subsistence fishing mortality for IPHC Regulatory Areas 2B, 2C, and 3A in the OM to assist with the evaluation of results and allow for testing management procedures against scenarios that depart from recent observations of subsistence fishing mortality.
33. The MSAB **REQUESTED** that the non-directed fishing mortality sector be modelled by IPHC Regulatory Area rather than Biological Region because this will be useful when evaluating results at the IPHC Regulatory Area level and necessary to properly calculate the sector allocations in each IPHC Regulatory Area.
34. The MSAB **NOTED** that given [paragraphs 32 and 33](#) the OM will include five sectors (Directed Commercial, Directed Commercial Discards, Non-directed Commercial Discards, Recreational, and Subsistence) modelled within IPHC Regulatory Areas. This results in 33 fisheries being specified in the OM ([Table 1](#)).

**Table 1.** The thirty-three fisheries in the OM, the IPHC Regulatory Areas they are composed of, and the 2019 mortality (millions of net pounds) for each to represent the approximate magnitude of each fishery.

Fishery	IPHC Regulatory Areas	2019 Mortality
Directed Commercial 2A	2A	0.89
Directed Commercial 2B	2B	5.22
Directed Commercial 2C	2C	3.67
Directed Commercial 3A	3A	8.16
Directed Commercial 3B	3B	2.31
Directed Commercial 4A	4A	1.45
Directed Commercial 4B	4B	1.00
Directed Commercial 4CDE	4CDE	1.65
Directed Commercial Discards 2A	2A	0.03
Directed Commercial Discards 2B	2B	0.13
Directed Commercial Discards 2C	2C	0.06



Directed Commercial Discards 3A	3A	0.32
Directed Commercial Discards 3B	3B	0.15
Directed Commercial Discards 4A	4A	0.09
Directed Commercial Discards 4B	4B	0.03
Directed Commercial Discards 4CDE	4CDE	0.07
Non-directed Commercial Discards 2A	2A	0.13
Non-directed Commercial Discards 2B	2B	0.24
Non-directed Commercial Discards 2C	2C	0.09
Non-directed Commercial Discards 3A	3A	1.65
Non-directed Commercial Discards 3B	3B	0.48
Non-directed Commercial Discards 4A	4A	0.35
Non-directed Commercial Discards 4CDE	4CDE	3.50
Non-directed Commercial Discards 4B	4B	0.15
Recreational 2B	2B	0.86
Recreational 2C	2C	1.89
Recreational 3A	3A, 3B	3.69
Subsistence 2B	2B	0.41
Subsistence 2C	2C	0.37
Subsistence 3A	3A	0.19
Recreational/Subsistence 2A	2A	0.48
Recreational/Subsistence 3B	3A, 3B	3.9
Recreational/Subsistence 4	4A, 4CDE	0.06

## 6. PRELIMINARY RESULTS INVESTIGATING FISHING INTENSITY AND DISTRIBUTING THE TOTAL CONSTANT EXPLOITATION YIELD (TCEY) FOR PACIFIC HALIBUT FISHERIES

35. The MSAB **NOTED** paper [IPHC-2020-MSAB015-09 Rev 1](#) which described the preliminary results for closed-loop simulations of management procedures with coastwide scale and distribution components.
36. The MSAB **NOTED** that the verification of the new MSE framework matched coastwide model expectations and observations closely.

## 7. MSAB PROGRAM OF WORK

37. The MSAB **NOTED** paper [IPHC-2020-MSAB015-10](#) which provided an update on the 5-year MSE Program of Work (2019-23), given current Commission directives.

### 7.1 *MSAB Program of Work (2020-21) and identification of management procedures to evaluate*

38. The MSAB **NOTED** the fixed delivery date of January 2021 for the MSE results to the Commission, including Scale and Distribution components of the MP, for potential adoption by the Commission and subsequent implementation.
39. The MSAB **NOTED** potential categories of elements for MPs (alone or in combination) includes:
- Modelled survey estimates (e.g. relative biomass estimates by Biological Region, IPHC Regulatory Areas or other scale, O32 WPUE, trend in O32 WPUE, etc.);
  - Fishery dependent data (e.g. trend in CPUE by Biological Region, IPHC Regulatory Area or other scale);



- 
- c) Other tools (e.g. relative harvest rate, percentage allocation to an IPHC Regulatory Areas, proportion of adopted TCEY, fixed allocations, minimum TCEY, etc.).
40. The MSAB **NOTED** the following concepts to consider when developing and evaluating MPs.
- a) Simple procedures that are easy to understand, implement in simulations and in practice, interpret, and evaluate;
  - b) A broad range of management procedures is useful to understand the important effects of various elements;
  - c) Incremental elements are added to facilitate comparisons across management procedures to understand the effects of changing individual elements.

41. The MSAB **RECALLED** paragraphs 55, 57, 58 from [IPHC-2019-MSAB014-R](#):

***IPHC-2019-MSAB014-R, para 55.** The MSAB **REQUESTED** that a number of elements in distribution management procedures be included for evaluation at MSAB015:*

- a) *A coastwide constraint using a slow-up, fast-down approach with a maximum change in the TCEY of 15%;*
- b) *evaluating different relative harvest rates across IPHC Regulatory Areas or Biological Regions;*
- c) *distributing the TCEY directly to IPHC Regulatory Area;*
- d) *A fixed shares concept for all or some IPHC Regulatory Areas, Biological Regions, or Management Zones with options to distribute the TCEY to the areas without a fixed share. The determination of these shares may be fixed or varying over time; and*
- e) *A maximum fishing intensity defined by an SPR of 36% to act as a buffer when distributing the TCEY to IPHC Regulatory Areas.*

***IPHC-2019-MSAB014-R, para 57.** The MSAB **NOTED** additional elements for distribution procedures to consider as sensitivities when developing management procedures for evaluation at MSAB015 as follows:*

- a) *a constraint applied to the TCEY for each IPHC Regulatory Area using a slow-up, fast-down approach with a maximum change in the TCEY of 15%;*
- b) *using O32 estimates of stock distribution or “all sizes” estimates of stock distribution from the modelled survey results;*
- c) *evaluating different relative harvest rates across IPHC Regulatory Areas or Biological Regions (e.g. harvest rates for Biological Region 2, IPHC Regulatory Areas 2A and/or 4CDE);*
- d) *calculating shares across Biological Regions, Management Zones, or IPHC Regulatory Areas using approaches that blend multiple sources of information (e.g., using historical TCEYs and stock distribution results for all IPHC Regulatory Area, a 5-year window of estimated stock distribution, etc.);*
- e) *the importance the order of applying elements in the distribution procedure when limiting the maximum SPR (i.e. using a buffer).*

***IPHC-2019-MSAB014-R, para 58.** The MSAB **NOTED** additional elements for distribution procedures to consider when developing management procedures for evaluation at MSAB016 as follows:*



- a) *a constraint applied to the TCEY for each IPHC Regulatory Area using a slow-up, fast-down approach;*
- b) *a constraint applied to the TCEY for each IPHC Regulatory Area implementing a maximum change in the TCEY of 15%;*
- c) *a maximum fishing intensity defined by an SPR of 40% to act as a buffer when distributing the TCEY to IPHC Regulatory Areas;*
- d) *adjusting relative harvest rates to reflect current stock productivity (note that this will be explored before MSAB015);*
- e) *using trends in fishery CPUE to adjust allocation percentages by IPHC Regulatory Area (note that this will be explored before MSAB015);*
- f) *additional approaches to first distribute the TCEY to Biological Region or Management Zone.*

42. The MSAB **AGREED** that the following elements of interest for defining constraints on changes in the TCEY, and distribution procedures be considered for the Program of Work in 2020:

- a) constraints on the change in the TCEY can be applied annually or over multiple years at the coastwide or IPHC Regulatory Area level. Constraints on the change in TCEY currently considered include a maximum annual change in the TCEY of 15%, a slow-up fast down approach, multi-year mortality limits, and multi-year averages on abundance indices;
- b) indices of abundance in Biological Regions or IPHC Regulatory Area (e.g. O32 or All sizes from modelled survey results);
- c) a minimum TCEY for an IPHC Regulatory Area;
- d) defined shares by Biological Region, Management Zone, or IPHC Regulatory Area;
- e) maximum coastwide fishing intensity (e.g. SPR equal to 36% or 40%) not to be exceeded when distributing the TCEY;
- f) relative harvest rates between Biological Regions or IPHC Regulatory Areas.

43. The MSAB **REQUESTED** a comparison of previous coastwide MSE simulation results with coastwide MSE simulations using the new MSE framework, expanding on the result that the current OM in the new framework is able to match spawning biomass expectations closely. This will assist in determining if changes in management procedure performance are due to a change in the MSE framework.

44. The MSAB **REQUESTED** results from the management procedures provided in [Appendix V](#) are presented at the next MSAB meeting.

45. The MSAB **NOTED** that distribution procedure simulation results were unavailable at MSAB015, thus it may be necessary to schedule additional meetings before the 2021 deadline to provide the opportunity for two iterations to view and evaluate results.

46. The MSAB **REQUESTED** an inter-sessional meeting be held online 17-18 August 2020 to review the results from the prioritized management procedures described in [Appendix V](#).

47. The MSAB **AGREED** that limitations in engagement between MSAB members occurred at MSAB015 due to the electronic format, and that engagement with constituents was reduced due to health measures related to COVID-19. A compressed timeframe between August and October MSAB meetings may further reduce broader consultation with some constituents for some MSAB members.

48. The MSAB **NOTED** that these limitations do not affect the timeline for delivery of the MSE results at AM097 in 2021.



49. The MSAB **NOTED** that an independent external peer review of the MSE process is scheduled to occur after MSAB015.
50. The MSAB **NOTED** the proposed Program of Work provided at [Appendix VI](#).

**7.2 MSAB proposed Program of Work (2021-23)**

51. The MSAB **NOTED** that data-based management procedures using area-specific data (as described in [paragraph 22](#)) is of continued interest.
52. The MSAB **NOTED** the 2020 Commission Intersessional Decision endorsing the recommendations, priorities, responsibilities, timelines and updates from the 2<sup>nd</sup> Performance Review of the International Pacific Halibut Commission ([PRIPHC02](#)), which contains a paragraph recommending the development of a multi-year decision-making process:

IPHC-2020-ID003	<i>The Commission <b>ENDORSED</b> the recommendations, priorities, responsibilities, timelines and updates provided at Appendix B, and <b>AGREED</b> that these would be reported on at each IPHC meeting.</i>
PRIPHC02 –Rec.10 (para. 82)	<i><b>Conservation and Management: Consistency between scientific advice and fishery Regulations adopted</b> The PRIPHC02 <b>RECOMMENDED</b> that the development of MSE to underpin multi-year (strategic) decision-making be continued, and as multi-year decision making is implemented, current Secretariat capacity usage for annual stock assessments should be refocused on research to investigate MSE operating model development (including consideration of biological and fishery uncertainties) for future MSE iterations and regularised multi-year stock assessments.</i>

**8. OTHER BUSINESS**

**8.1 IPHC meetings calendar (2020-22)**

53. The MSAB **NOTED** the Commission’s current 3-year meeting calendar, and that if logistically feasible, the 16<sup>th</sup> Session of the MSAB will be held in Courtenay, BC, Canada from 19-22 October 2020.

**9. REVIEW OF THE DRAFT AND ADOPTION OF THE REPORT OF THE 15<sup>TH</sup> SESSION OF THE IPHC MANAGEMENT STRATEGY ADVISORY BOARD (MSAB015)**

54. The report of the 15<sup>th</sup> Session of the IPHC Management Strategy Advisory Board ([IPHC-2020-MSAB015-R](#)) was **ADOPTED** on 14 May 2020, including the consolidated set of recommendations and/or requests arising from MSAB015, provided at [Appendix VII](#).

**APPENDIX I**

**LIST OF PARTICIPANTS FOR THE 15<sup>TH</sup> SESSION OF THE IPHC MANAGEMENT STRATEGY  
ADVISORY BOARD (MSAB015)**

**Officers**

<b>Co-Chairperson (Canada)</b>	<b>Co-Chairperson (United States of America)</b>
Mr Adam <b>Keizer</b> : <a href="mailto:adam.keizer@dfo-mpo.gc.ca">adam.keizer@dfo-mpo.gc.ca</a>	Dr Carey <b>McGilliard</b> : <a href="mailto:Carey.McGilliard@noaa.gov">Carey.McGilliard@noaa.gov</a>

**MSAB Members**

<b>Canada</b>	<b>United States of America</b>
Mr Chuck <b>Ashcroft</b> : <a href="mailto:chuckashcroft@telus.net">chuckashcroft@telus.net</a>	Ms Rachel <b>Baker</b> : <a href="mailto:rachel.baker@alaska.gov">rachel.baker@alaska.gov</a>
Mr Angus <b>Grout</b> : <a href="mailto:rommel@telus.net">rommel@telus.net</a>	Mr Forrest <b>Braden</b> : <a href="mailto:forrest@seagoalaska.org">forrest@seagoalaska.org</a>
Mr Robert <b>Hauknes</b> : <a href="mailto:robert_hauknes@hotmail.com">robert_hauknes@hotmail.com</a>	Ms Angel <b>Drobnica</b> : <a href="mailto:adrobnica@apicda.com">adrobnica@apicda.com</a>
Ms Ann-Marie <b>Huang</b> : <a href="mailto:Ann-Marie.Huang@dfo-mpo.gc.ca">Ann-Marie.Huang@dfo-mpo.gc.ca</a>	Mr Dan <b>Falvey</b> : <a href="mailto:myriadfisheries@gmail.com">myriadfisheries@gmail.com</a>
Mr Adam <b>Keizer</b> : <a href="mailto:adam.keizer@dfo-mpo.gc.ca">adam.keizer@dfo-mpo.gc.ca</a>	Mr James <b>Johnson</b> : <a href="mailto:JimJ@glacierfish.com">JimJ@glacierfish.com</a>
Mr Jim <b>Lane</b> : <a href="mailto:jim.lane@nuuchahnulth.org">jim.lane@nuuchahnulth.org</a>	Mr Jeff <b>Kauffman</b> : <a href="mailto:jeff@spfishco.com">jeff@spfishco.com</a>
Mr Chris <b>Sporer</b> : <a href="mailto:chris.sporer@phma.ca">chris.sporer@phma.ca</a>	Mr Tom <b>Marking</b> : <a href="mailto:tmmarking@gmail.com">tmmarking@gmail.com</a>
	Mr Scott <b>Mazzone</b> : <a href="mailto:smazzone@quinault.org">smazzone@quinault.org</a>
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	Mr Joe <b>Petersen</b> : <a href="mailto:jpetersen@nwifc.org">jpetersen@nwifc.org</a>
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	Ms Sarah <b>Webster</b> : <a href="mailto:sarah.webster@alaska.gov">sarah.webster@alaska.gov</a>
<b>Absentees</b>	<b>Absentees</b>
Mr Brad <b>Mirau</b> : <a href="mailto:brad@aerotrading.ca">brad@aerotrading.ca</a>	

**Commissioners**

<b>Canada</b>	<b>United States of America</b>
Mr Paul <b>Ryall</b> : <a href="mailto:paul.ryall@iphc.int">paul.ryall@iphc.int</a>	Mr Richard <b>Yamada</b> : <a href="mailto:richard.yamada@iphc.int">richard.yamada@iphc.int</a>

**Observers**

<b>Canada</b>	<b>United States of America</b>
Ms Courtney <b>Hann</b> (PSC)	Dr Diana <b>Stram</b> (NPFMC)
	Mr Frank <b>Lockhart</b> (NOAA)
	Ms Lynn <b>Mattes</b> (ODFW)
	Dr Jim <b>Ianelli</b> (NOAA)
	Mr James J <b>Hasbrouck</b> (DFG)
	Mr Steve <b>Joner</b> (Makah Tribe)



**IPHC Secretariat**

<b>Name</b>	<b>Position and email</b>
Dr David <b>Wilson</b>	Executive Director, <a href="mailto:david.wilson@iphc.int">david.wilson@iphc.int</a>
Dr Steven <b>Berukoff</b>	MSE Programmer, <a href="mailto:steven.berukoff@iphc.int">steven.berukoff@iphc.int</a>
Dr Piera <b>Carpi</b>	MSE Researcher, <a href="mailto:piera.carpi@iphc.int">piera.carpi@iphc.int</a>
Dr Allan <b>Hicks</b>	Quantitative Scientist, <a href="mailto:allan.hicks@iphc.int">allan.hicks@iphc.int</a>
Dr Ian <b>Stewart</b>	Quantitative Scientist, <a href="mailto:ian.stewart@iphc.int">ian.stewart@iphc.int</a>



**APPENDIX II**  
**AGENDA FOR THE 15<sup>TH</sup> SESSION OF THE IPHC MANAGEMENT STRATEGY ADVISORY BOARD**  
**(MSAB015)**

**Date:** 11-14 May 2020

**Location:** Online

**Venue:** GoToMeeting

**Time:** 09:00-13:00 PDT and 15:00–16:00 PDT daily

**Co-Chairpersons:** Mr. Adam Keizer (Canada) and Dr. Carey McGilliard (U.S.A.)

**1. OPENING OF THE SESSION**

**2. ADOPTION OF THE AGENDA AND ARRANGEMENTS FOR THE SESSION**

**3. IPHC PROCESS**

- 3.1. MSAB Membership
- 3.2. Update on the actions arising from the 14<sup>th</sup> Session of the IPHC MSAB (MSAB014)
- 3.3. Review of the outcomes of the 15<sup>th</sup> Session of the IPHC Scientific Review Board (SRB015)
- 3.4. Review of the outcomes and update on the actions arising from the 96<sup>th</sup> Session of the IPHC Annual Meeting (AM096) and the 6<sup>th</sup> Special Session of the IPHC (SS06)
- 3.5. Brief review of the 2020 Program of Work

**4. A REVIEW OF MANAGEMENT PROCEDURES TO DETERMINE THE TOTAL CONSTANT EXPLOITATION YIELD (TCEY) BY IPHC REGULATORY AREAS FOR PACIFIC HALIBUT FISHERIES**

- 4.1. Management procedures for coastwide scale
- 4.2. Management procedures for distributing the TCEY

**5. A FRAMEWORK TO INVESTIGATE FISHING INTENSITY AND DISTRIBUTING THE TOTAL CONSTANT EXPLOITATION YIELD (TCEY) FOR PACIFIC HALIBUT FISHERIES**

- 5.1. Framework to investigate distributing the TCEY among IPHC Regulatory Areas
- 5.2. Multi-area operating model

**6. PRELIMINARY RESULTS INVESTIGATING FISHING INTENSITY AND DISTRIBUTING THE TOTAL CONSTANT EXPLOITATION YIELD (TCEY) FOR PACIFIC HALIBUT FISHERIES**

**7. MSAB PROGRAM OF WORK**

- 7.1. MSAB Program of Work (2020-21) and identification of management procedures to evaluate
- 7.2. MSAB proposed program of work (2021-23)

**8. OTHER BUSINESS**

- 8.1. IPHC meetings calendar (2020-22)

**9. REVIEW OF THE DRAFT AND ADOPTION OF THE REPORT OF THE 15<sup>TH</sup> SESSION OF THE IPHC MANAGEMENT STRATEGY ADVISORY BOARD (MSAB015)**





**APPENDIX III**

**LIST OF DOCUMENTS FOR THE 15<sup>TH</sup> SESSION OF THE MANAGEMENT STRATEGY ADVISORY BOARD (MSAB015)**

<b>Document</b>	<b>Title</b>	<b>Availability</b>
IPHC-2020-MSAB015-01	Draft: Agenda & Schedule for the 15 <sup>th</sup> Session of the IPHC Management Strategy Advisory Board (MSAB015)	✓ 11 Feb 2020 ✓ 08 April 2020
IPHC-2020-MSAB015-02	Draft: List of Documents for the 15 <sup>th</sup> Session of the IPHC Management Strategy Advisory Board (MSAB015)	✓ 11 Feb 2020 ✓ 10 Apr 2020 ✓ 30 Apr 2020
IPHC-2020-MSAB015-03	MSAB Membership (D. Wilson)	✓ 10 Apr 2020
IPHC-2020-MSAB015-04	Update on the actions arising from the 14 <sup>th</sup> Session of the MSAB (MSAB014) (A. Hicks)	✓ 10 Apr 2020
IPHC-2020-MSAB015-05	Review of the outcomes of the 15 <sup>th</sup> Session of the IPHC Scientific Review Board (SRB015) (IPHC Secretariat)	✓ 10 Apr 2020
IPHC-2020-MSAB015-06	Outcomes of the 96 <sup>th</sup> Session of the IPHC Annual meeting (AM096) and the 6 <sup>th</sup> Special Session of the IPHC (SS06) (D. Wilson & A. Hicks)	✓ 10 Apr 2020
IPHC-2020-MSAB015-07	Management procedures to determine the total constant exploitation yield (TCEY) by IPHC Regulatory Areas for Pacific halibut fisheries (P. Carpi, A. Hicks, S. Berukoff)	✓ 10 Apr 2020
IPHC-2020-MSAB015-08	A framework to investigate fishing intensity and distributing the total constant exploitation yield (TCEY) for Pacific halibut fisheries. (A. Hicks, S. Berukoff, P. Carpi, & I. Stewart)	✓ 10 Apr 2020
IPHC-2020-MSAB015-09 Rev_1	Preliminary results investigating fishing intensity and distributing the total constant exploitation yield (TCEY) for Pacific halibut fisheries (A. Hicks, S. Berukoff, P. Carpi, & I. Stewart)	✓ 10 Apr 2020 ✓ 30 Apr 2020
IPHC-2020-MSAB015-10	IPHC Secretariat Program of Work for MSAB Related Activities 2020-23 (A. Hicks, P. Carpi, & S. Berukoff)	✓ 10 Apr 2020



**APPENDIX IV**  
**MSAB MEMBERSHIP**  
(as of 14 May 2020)

Membership category	Member	Canada	U.S.A.	Current Term commencement	Current Term expiration
<b>Commercial harvesters (6-8)</b>					
1	Sporer, Chris	CDN Commercial		9-May-17	8-May-21
2	Hauknes, Robert	CDN Commercial		9-May-17	8-May-21
3	Grout, Angus	CDN Commercial		3-Dec-19	3-Dec-21
4	Vacant	CDN Commercial			
5	Kauffman, Jeff		USA Commercial	9-May-19	8-May-23
6	Odegaard, Per		USA Commercial	9-May-17	8-May-21
7	Falvey, Dan		USA Commercial	9-May-17	8-May-21
8	Johnson, James		USA Commercial	17-Apr-19	16-Apr-23
<b>First Nations/ Tribal fisheries (2-4)</b>					
1	Lane, Jim	CDN First Nations		9-May-17	8-May-21
2	Vacant	CDN First Nations			
3	Mazzone, Scott		USA Treaty Tribes	9-May-19	8-May-23
4	Peterson, Joseph		USA Treaty Tribes	7-May-20	6-May-22
<b>Government Agencies (4-8)</b>					
1	Keizer, Adam	DFO		9-May-19	8-May-23
2	Huang, Ann-Marie	CDN Science Advisor		10-May-18	09-May-22
3	Vacant	DFO			
4	Merrill, Glenn		NOAA-Fisheries	7-May-18	06-May-22
5	McGilliard, Carey		USA Science Advisor	9-May-17	08-May-21
6	Sommer, Maggie		PFMC	14-Apr-20	13-Apr-22
7	Baker, Rachel		NPFMC	23-Oct-19	22-Oct-21
8	Webster, Sarah		ADFG	24-Sep-19	23-Sep-21
<b>Processors (2-4)</b>					
1	Parker, Peggy	USA /CDN Processing	USA/CDN Processing	9-May-19	8-May-23
2	Mirau, Brad	CDN Processing		9-May-19	8-May-23
3	Vacant	CDN Processing			
4	Morelli, Joseph		USA Processing	29-Aug-18	28-Aug-22
5	Drobnic, Angel		USA Processing	17-Apr-19	16-Apr-23



Membership category	Member	Canada	U.S.A.	Current Term commencement	Current Term expiration
<b>Recreational/ Sport fisheries (2-4)</b>					
<b>1</b>	Ashcroft, Chuck	CDN Sportfishing		17-Apr-19	16-Apr-23
<b>2</b>	<b>Vacant</b>	CDN Sportfishing			
<b>3</b>	Marking, Tom		USA Sportfishing (CA)	9-May-19	8-May-23
<b>4</b>	Braden, Forrest		USA sportfishing (AK)	17-Apr-19	16-Apr-23



**APPENDIX V**  
**PROPOSED AND RECOMMENDED MANAGEMENT PROCEDURES**

Recommended management procedures to be evaluated by the MSAB in 2020 and the priority of investigation. A priority of 1 denotes a focus on producing precise performance metrics.

MP	Coastwide	Regional	IPHC Regulatory Area	Priority
MP 15-A	SPR 30:20		<ul style="list-style-type: none"> <li>O32 stock distribution</li> <li>Proportional relative harvest rates (1.0 for 2-3A, 0.75 for 3B-4)</li> <li>1.65 Mlbs floor in 2A<sup>1</sup></li> <li>Formula percentage for 2B<sup>2</sup></li> </ul>	1
MP 15-B	SPR 30:20 MaxChange15%		<ul style="list-style-type: none"> <li>O32 stock distribution</li> <li>Proportional relative harvest rates (1.0 for 2-3A, 0.75 for 3B-4)</li> <li>1.65 Mlbs floor in 2A<sup>1</sup></li> <li>Formula percentage for 2B<sup>2</sup></li> </ul>	1
MP 15-C	SPR 30:20 MaxChange15%	Biological Regions, O32 stock distribution Rel HRs <sup>3</sup> : R2=1, R3=1, R4=0.75, R4B=0.75	<ul style="list-style-type: none"> <li>O32 stock distribution</li> <li>Relative harvest rates not applied</li> <li>1.65 Mlbs floor in 2A<sup>1</sup></li> <li>Formula percentage for 2B<sup>2</sup></li> </ul>	2
MP 15-D	SPR 30:20 MaxChange15% Max FI (36%)		First <ul style="list-style-type: none"> <li>O32 stock distribution</li> <li>Relative harvest rates (1.0 for 2-3A, 0.75 for 3B-4)</li> </ul> Second within buffer (pro-rated if exceeds buffer) <ul style="list-style-type: none"> <li>1.65 Mlbs floor in 2A<sup>1</sup></li> <li>Formula percentage for 2B<sup>2</sup></li> </ul>	2
MP 15-E	SPR 30:20 MaxChange15%		<ul style="list-style-type: none"> <li>O32 stock distribution</li> <li>Proportional relative harvest rates (1.0 for 2-3A, 0.75 for 3B-4)</li> <li>1.65 Mlbs floor in 2A<sup>1</sup></li> </ul>	2
MP 15-F	SPR 30:20 MaxChange15%	National Shares: 20% to 2B, 80% to other	<ul style="list-style-type: none"> <li>O32 stock distribution to areas other than 2B</li> <li>Relative harvest rates (1.0 for 2-3A, 0.75 for 3B-4)</li> </ul>	1
MP 15-G	SPR 30:20 MaxChange15%		<ul style="list-style-type: none"> <li>O32 stock distribution</li> <li>Relative harvest rates (1.0 for 2-3A, 0.75 for 3B-4)</li> </ul>	1
MP 15-H	SPR 30:20 MaxChange15%		<ul style="list-style-type: none"> <li>O32 stock distribution</li> <li>Relative harvest rates (1 for 2-3, 4A, 4CDE, 0.75 for 4B)</li> </ul>	1
MP 15-I	SPR 30:20 MaxChange15%		<ul style="list-style-type: none"> <li>All sizes stock distribution</li> <li>Relative harvest rates (1.0 for 2-3A, 0.75 for 3B-4)</li> </ul>	2
MP 15-J	SPR 30:20 MaxChange15%		<ul style="list-style-type: none"> <li>O32 stock distribution (5-year moving average)</li> <li>Relative harvest rates (1.0 for 2-3A, 0.75 for 3B-4)</li> </ul>	1



MP	Coastwide	Regional	IPHC Regulatory Area	Priority
MP 15-K	SPR 30:20 MaxChange15%		<ul style="list-style-type: none"><li>5-year shares determined from 5-year O32 stock distribution (vary over time but change only every 5<sup>th</sup> year)</li></ul>	2

<sup>1</sup> paragraph 97b [IPHC-2020-AM096-R](#)

<sup>2</sup> paragraph 97c of [IPHC-2020-AM096-R](#)

<sup>3</sup> R2 refers to Biological Region 2 (2A, 2B, 2C); R3 refers to Biological Region 3 (3A, 3B); R4 refers to Biological Region 4 (4A, 4CDE), and R4B refers to Biological Region 4B.



**APPENDIX VI**  
**MSE PROGRAM OF WORK (2019-21)**

<b>13<sup>th</sup> Session of the IPHC MSAB (MSAB013) - May 2019</b>	<b>Status</b>
Evaluate additional Scale management procedures	Completed
Review goals and objectives	Completed
Spatial model complexity	Completed
Identify management procedures (Scale & Distribution)	Completed
Review Framework	Completed
<b>14<sup>th</sup> Session of the IPHC MSAB (MSAB014) - October 2019</b>	
Review Framework	Completed
Review multi-area model development	Completed
Spatial Model Complexity	Completed
Define Goals and Objectives (Scale & Distribution)	Completed
Identify management procedures (Scale & Distribution)	Completed
<b>96<sup>th</sup> Session of the IPHC Annual Meeting (AM096) - January 2020</b>	
Update on progress	Completed
<b>15<sup>th</sup> Session of the IPHC MSAB (MSAB015) - May 2020</b>	
Review goals and objectives (Scale & Distribution)	Completed
Review simulation framework	Completed
Review multi-area model	Completed
Review preliminary results	Partially completed
Identify management procedures (Scale & Distribution)	Completed
<b>Inter-sessional meeting of the IPHC MSAB - August 2019</b>	
Review preliminary results	
Revise management procedures (Scale & Distribution)	
<b>16<sup>th</sup> Session of the IPHC MSAB (MSAB016) - October 2020</b>	
Review final results	
Provide recommendations on management procedures	
<b>97<sup>th</sup> Session of the IPHC Annual Meeting (AM097) - January 2021</b>	
Presentation of complete MSE product to the Commission	
Recommendations on Scale and Distribution management procedures	



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**APPENDIX VII**

**CONSOLIDATED SET OF RECOMMENDATIONS AND REQUESTS OF THE 15<sup>TH</sup> SESSION OF THE  
IPHC MANAGEMENT STRATEGY ADVISORY BOARD (MSAB015)**

***RECOMMENDATIONS***

*NOTING that the core purpose of the MSAB015 is to review progress on the MSE Program of Work, and to provide guidance for the delivery of products to the MSAB016 in October 2020, the MSAB **RECALLED** that formal recommendations to the Commission would not be developed at the present meeting, but rather, these would be developed at the MSAB016.*

***REQUESTS***

***Management procedures for distributing the TCEY***

MSAB015-Req.1 ([para. 20](#)) The MSAB **REQUESTED** that a procedure to distribute the coastwide TCEY be flexible to allow for distribution directly to IPHC Regulatory Areas, or to Biological Regions or Management Zones before distributing to IPHC Regulatory Areas. Methods of distribution may be based on stock distribution, relative fishing intensities, and other allocation adjustments.

***Multi-area operating model***

MSAB015-Req.2 ([para. 32](#)) The MSAB **REQUESTED** separating recreational and subsistence fishing mortality for IPHC Regulatory Areas 2B, 2C, and 3A in the OM to assist with the evaluation of results and allow for testing management procedures against scenarios that depart from recent observations of subsistence fishing mortality.

MSAB015-Req.3 ([para. 33](#)) The MSAB **REQUESTED** that the non-directed fishing mortality sector be modelled by IPHC Regulatory Area rather than Biological Region because this will be useful when evaluating results at the IPHC Regulatory Area level and necessary to properly calculate the sector allocations in each IPHC Regulatory Area.

***MSAB Program of Work (2020-21) and identification of management procedures to evaluate***

MSAB015-Req.4 ([para. 43](#)) The MSAB **REQUESTED** a comparison of previous coastwide MSE simulation results with coastwide MSE simulations using the new MSE framework, expanding on the result that the current OM in the new framework is able to match spawning biomass expectations closely. This will assist in determining if changes in management procedure performance are due to a change in the MSE framework.

MSAB015-Req.5 ([para. 44](#)) The MSAB **REQUESTED** results from the management procedures provided in [Appendix V](#) are presented at the next MSAB meeting.

MSAB015-Req.6 ([para. 46](#)) The MSAB **REQUESTED** an inter-sessional meeting be held online 17-18 August 2020 to review the results from the prioritized management procedures described in [Appendix V](#).