



02 October 2017

IPHC CIRCULAR 2017-015

Dear Commissioners,

SUBJECT: REPORT OF THE 11th SESSION OF THE IPHC SCIENTIFIC REVIEW BOARD (SRB11)

In accordance with Rule 15 (Reports and Records) of the IPHC Rules of Procedure (2017), I am pleased to provide you with the final Report of the 11th Session of the IPHC Scientific Review Board (SRB11), which was adopted via correspondence on 29 September 2017. Please distribute as you see fit.

The report is also available for download from the IPHC website at the following link:
<http://www.iphc.info/Pages/SRB-Meetings-11.aspx>

Yours sincerely

David T. Wilson, Ph.D.

Executive Director, IPHC

Attachments:

Attachment I: Report of the 11th Session of the IPHC Scientific Review Board (SRB11)



Report of the 11th Session of the IPHC Scientific Review Board (SRB11)

Seattle, Washington, U.S.A., 26-28 September 2017

DISTRIBUTION:

Participants in the Session
Members of the Commission
IPHC Secretariat

BIBLIOGRAPHIC ENTRY

IPHC 2017. Report of the 11th Session of the IPHC Scientific Review Board (SRB11). Seattle, Washington, U.S.A., 26-28 September 2017.
IPHC-2017-SRB11-R, 17 pp.



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ACRONYMS

CPUE	Catch-per-unit-effort
CV	Coefficient of Variation
IPHC	International Pacific Halibut Commission
MSAB	Management Strategy Advisory Board
MSL	Minimum Size Limit
SRB	Scientific Review Board
WPUE	Weight-Per-Unit-Effort

HOW TO INTERPRET TERMINOLOGY CONTAINED IN THIS REPORT

The SRB11 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** (formal); **REQUESTED** (informal): A conclusion for an action to be undertaken, by the Commission, a Contracting Party, a subsidiary (advisory) body of the Commission and/or the IPHC Secretariat. *Note:* Subsidiary (advisory) bodies of the Commission must have their Recommendations and Requests formally provided to the next level in the structure of the Commission for its consideration/endorsement (e.g. from an Advisory Board to the Commission). The intention is that the higher body will consider the action for endorsement under its own mandate, if the subsidiary body does not already have the required mandate. Ideally, this should be task-specific and contain a timeframe for completion.
- Level 2: AGREED:** Any point of discussion from a meeting, which the IPHC body 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 SRB 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 11th Session of the International Pacific Halibut Commission (IPHC) Scientific Review Board (SRB11) was held in Seattle, Washington, U.S.A. from 26 to 28 September 2017. The meeting was opened by the Chairperson, Dr Sean Cox (Canada).

The following are a subset of the complete recommendations/requests arising from the SRB11, which are provided at [Appendix V](#).

RECOMMENDATIONS

Pacific halibut stock assessment (2017): Data source development

SRB11–Rec.01 ([para. 14](#)) The SRB **RECOMMENDED** continuing to down-weight terminal year fishery CPUE in the annual stock assessment because terminal and post-season CPUE may be substantially different. Generating and presenting the conditional distribution for post-season CPUE given terminal CPUE, should be undertaken as a way to improve communication about most recent fishery CPUE values.

Management Strategy Evaluation: A description of the closed-loop simulations

SRB11–Rec.02 ([para. 25](#)) The SRB **RECOMMENDED** that the IPHC Secretariat and Management Strategy Advisory Board collaborate to:

- a) further clarify and improve the presentation of the Harvest Strategy Policy ([Appendix IV](#)). This would improve not only transparency of the existing interim harvest policy, but also of the MSE process for evaluating alternatives.
- b) Review harvest policies from other bodies to develop an objectives hierarchy that explicitly prioritizes long-term conservation over short-/medium-term (e.g., 3-8 years) catch performance.

SRB11–Rec.03 ([para. 29](#)) The SRB **RECOMMENDED** that the IPHC Secretariat hire a modeler/programmer to support MSE work so that timely feedback can be given the MSAB in the MSE process.

Biological and ecosystem science program: Presentation of potential future research projects

SRB11–Rec.04 ([para. 36](#)) The SRB **RECOMMENDED** that IPHC consider hiring a life-history modeler to provide more explicit linkage between the empirical biological program and the applied assessment and MSE modeling programs.

REQUESTS

Size limit analysis for 2017: Update

SRB11–Req.05 ([para. 21](#)) **NOTING** the thoughtful and detailed presentation on the potential impacts of changing the minimum size limit presented in Appendix E (*Evaluation of adaptive management approaches*) of paper IPHC-2017-SRB11-07, the SRB **REQUESTED** that the IPHC Secretariat, between now and SRB12, seek feedback from the Commissioners, Conference Board, Processor Advisory Board, and the Management Strategy Advisory Board, on a modified version of Appendix E. In particular, a modified version would include (i) a process for starting and possibly ending an experiment, (ii) performance metrics, and (iii) criteria for making conclusions based on the experimental outcomes.

Biological and ecosystem science program: Progress on ongoing IPHC-funded research projects

SRB11–Req.08 ([para. 32](#)) The SRB **REQUESTED** that the IPHC Secretariat prepare a presentation for SRB12, on the overall research initiatives to show how stock assessment, biology, and policy are integrated. Ultimately, such an integrated presentation should be a key component of science presentations at future IPHC Annual Meetings. For example, all research presentations would have been more effective had there been:



- a) more precise linkages among key knowledge gaps within the biology, annual stock assessment, and MSE simulations;
- b) a specific suite of questions to be discussed during the SRB meeting;
- c) sufficient background material provided such that the SRB can provide informed comment and advice related to the specific questions in (b).



1. OPENING OF THE SESSION

1. The 11th Session of the International Pacific Halibut Commission (IPHC) Scientific Review Board (SRB11) was held in Seattle, Washington, U.S.A. from 26 to 28 September 2017. The list of participants is provided at [Appendix I](#). The meeting was opened by the Chairperson, Dr Sean Cox (Canada).

2. ADOPTION OF THE AGENDA AND ARRANGEMENTS FOR THE SESSION

2. The SRB **ADOPTED** the Agenda as provided at [Appendix II](#). The documents provided to the SRB are listed in [Appendix III](#).

3. IPHC PROCESS

3.1 *Update on the actions arising from the 10th Session of the SRB (SRB10)*

3. The SRB **NOTED** paper IPHC-2017-SRB11-03, which provided an opportunity to consider the progress made during the inter-sessional period since the SRB10 meeting held in June 2017.
4. The SRB **AGREED** to consider and revise as necessary, the actions arising that are either in progress or pending, and for these to be combined with any new actions arising from the SRB11 into a consolidated list for future reporting.
5. The SRB **RECALLED** that at its 93rd Session, the Commission adopted revised IPHC Rules of Procedure (2017) by consensus. The document is available for download from the IPHC website: <http://iphc.int/basic-texts-of-the-commission.html> and includes the Terms of Reference for the SRB as follows:

Appendix VIII, Sect I, para 1. *The Scientific Review Board's (SRB) main objective is to provide an independent scientific review of Commission science products and programs, and to support and strengthen the stock assessment process. The SRB shall review modeling and evaluation used by the Management Strategy Advisory Board, and review research proposals from the Research Advisory Board and the IPHC Secretariat. The SRB will prepare reports to the Commission summarising findings, recommendations, and documentation of any divergent views for all of its reviews.*

4. IPHC FISHERY-INDEPENDENT SETLINE SURVEY

4.1 *Methods for spatial survey modelling – Update on work since June SRB meeting*

6. The SRB **NOTED** paper IPHC-2017-SRB11-04, which provided an update on space-time related modelling work undertaken since the SRB10 meeting in June 2017.
7. The SRB **REQUESTED** that the IPHC Secretariat present a form of [Table 1](#) to Commissioners, adding a column for Qualitative Cost (e.g., High, Low given sampling intensity, fishing cost, etc.).
8. The SRB **NOTED** and was pleased to see progress on a manuscript for the space-time modelling of the fishery-independent setline survey.
9. The SRB **REQUESTED** that the following be maintained on the IPHC Program of Work: (i) examination of revenue and cost-recovery (i.e., cost benefit analyses), (ii) forecast the effect on CV of the presence or absence of expansion FISS stations, (iii) plotting relative error against number of stations, and (iv) comparison of frequency of zeros between standard and expansion FISS stations.



Table 1. Summary of FISS expansion data and recommendations for future survey frequency.

IPHC Regulatory Area	Expansion region	Density [†]	Variability (spatial/ temporal)	Recommend FISS frequency
2A	Deep and shallow waters	Low	Low	≥ 10 years
2A	Salish Sea	Low-average	High	5 years
2A	Northern California	Average above 40°N; low south of 40°N	Average (during expansion period 2011-2014)	3-5 years
4A	Aleutian Islands	High	High	3-5 years
4A	Shelf edge	Average	Low	≥ 10 years

[†]Density relative to annually surveyed parts of the regulatory area.

4.2 Preliminary FISS results

10. The SRB **NOTED** paper IPHC-2017-SRB11-05, which outlined the material on preliminary IPHC fishery-independent setline survey (FISS) results.
11. The SRB **NOTED** substantial variation in survey catch rates within IPHC Regulatory Areas such as 4B. Therefore, expansion of FISS stations to increase coverage (over 100%) is justified within IPHC Regulatory Area 4B to improve estimation of the overall mean density.
12. The SRB **REQUESTED** continuing research – subsequent to the 94th Annual Meeting of the IPHC (AM094) - on the effect of other covariates such as dissolved oxygen on the IPHC fishery-independent setline survey catch rates, and for any results to be presented at SRB12.

5. PACIFIC HALIBUT STOCK ASSESSMENT: 2017

13. The SRB **NOTED** paper IPHC-2017-SRB11-06 which provided an overview of data and modelling updates, as well as a preliminary evaluation of the stock assessment ensemble proposed for use in the 2017-18 annual process.

5.1 Data source development

14. The SRB **RECOMMENDED** continuing to down-weight terminal year fishery CPUE in the annual stock assessment because terminal and post-season CPUE may be substantially different. Generating and presenting the conditional distribution for post-season CPUE given terminal CPUE, should be undertaken as a way to improve communication about most recent fishery CPUE values.
15. The SRB **REQUESTED** continuing research on discrepancies between Estimated and Measured weights of Pacific halibut, be presented at SRB12.
16. The SRB **NOTED** the plot of WA Commercial vs WA Tribal fishery CPUE ([Fig. 1](#)), provide in response to a previous request of the SRB.

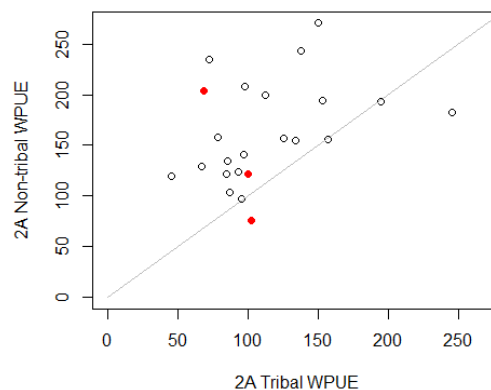


Fig. 1. Non-tribal commercial WPUE vs. tribal WPUE (1989-2016) in IPHC Regulatory Area 2A. The most recent three years available (2014-16) are highlighted in red; the grey line indicates a 1:1 relationship.



5.2 Modelling updates

17. The SRB **NOTED** the continuing research on weighting models within the ensemble. Among the approaches tested, none appeared more suitable than equal weighting, as is currently used in assessment.

5.3 Preliminary results for 2017

18. The SRB **NOTED** that no preliminary assessments model runs were available, which was fine given the lack of major changes to the assessment model and historical data.

6. SIZE LIMIT ANALYSIS FOR 2017: UPDATE

19. The SRB **NOTED** paper IPHC-2017-SRB11-07 that provided an evaluation of the current 32" (81.3 cm) Minimum Size Limit (MSL) in the directed commercial Pacific halibut fishery, and described likely changes to the Pacific halibut fishery under alternative minimum size limits.
20. The SRB **NOTED** the plot demonstrating that removing the minimum size limit is expected to cause an increase in total mortality (Z) for younger Pacific halibut for both males and females, and a slight decrease in total mortality of older fish.
21. **NOTING** the thoughtful and detailed presentation on the potential impacts of changing the minimum size limit presented in Appendix E (*Evaluation of adaptive management approaches*) of paper IPHC-2017-SRB11-07, the SRB **REQUESTED** that the IPHC Secretariat, between now and SRB12, seek feedback from the Commissioners, Conference Board, Processors Advisory Board, and the Management Strategy Advisory Board, on a modified version of Appendix E. In particular, a modified version would include (i) a process for starting and possibly ending an experiment, (ii) performance metrics, and (iii) criteria for making conclusions based on the experimental outcomes.

7. MANAGEMENT STRATEGY EVALUATION: UPDATE

22. The SRB **NOTED** paper IPHC-2017-SRB11-08 that provided an update on the progress of the IPHC Management Strategy Evaluation process and seek recommendations from the SRB related to the Management Strategy Evaluation.

7.1 A description of the closed-loop simulations

23. The SRB **NOTED** the substantial progress in developing a very powerful simulation tool for evaluating robustness of alternative harvest policies. For example, the current simulation modeling framework could examine the expected long-term consequences of the current harvest policy.
24. The SRB **NOTED** that the current simulation framework is not yet adequate for evaluating short-term and medium-term outcomes because it assumes perfect knowledge about stock size and parameters in all future years. The SRB looks forward to SRB12 where we *expect* to see the implications of uncertainty in annual assessments and parameters.
25. The SRB **RECOMMENDED** that the IPHC Secretariat and Management Strategy Advisory Board collaborate to:
- further clarify and improve the presentation of the Harvest Strategy Policy ([Appendix IV](#)). This would improve not only transparency of the existing interim harvest policy, but also of the MSE process for evaluating alternatives.
 - Review harvest policies from other bodies to develop an objectives hierarchy that explicitly prioritizes long-term conservation over short-/medium-term (e.g., 3-8 years) catch performance.
26. The SRB **NOTED** that the simulation model for projecting future changes in weight-at-age and regime shifts was presented in the type of detail that had previously been requested by the SRB; that is, with some specific equations and distributional assumptions so that the SRB could evaluate the model input, output, and parameterization, as well as alternative formulations.



27. The SRB **REQUESTED** that a quasi-extinction threshold be established so that:
- simulation replicates can be flagged when projected spawning biomass drops below this threshold;
 - parameter sets causing quasi-extinction in the historical period can be dropped from the operating model initialization.
28. The SRB **REQUESTED** that the MSE simulation initialize the operating model biomass in the current year from the more precise Ensemble distribution of the current state (e.g., 2017) rather than the wider distribution obtained from the Operating model.
29. The SRB **RECOMMENDED** that the IPHC Secretariat hire a modeler/programmer to support MSE work so that timely feedback can be given the MSAB in the MSE process.

7.2 Simulation results and presenting results to the IPHC Management Strategy Advisory Board (MSAB)

See [paragraphs 23 and 24](#).

8. BIOLOGICAL AND ECOSYSTEM SCIENCE PROGRAM RESEARCH UPDATES

8.1 Progress on ongoing IPHC-funded research projects

30. The SRB **NOTED** papers IPHC-2017-SRB11-09 which detailed current progress on research projects conducted by the IPHC Biological and Ecosystem Science Research Program.
31. The SRB **NOTED** an improved presentation and substantial progress of the biological research program. In particular, material was presented in a more concise fashion and an effort was made to link biological research program goals and objectives to key IPHC activities such as annual assessments and MSE simulations. However, the SRB did not consider this a sufficient response to SRB10-Req. 04:

"The SRB REQUESTED that a future presentation on the overall research initiatives show how stock assessment, biology, and policy are integrated"

32. The SRB **REQUESTED** that the IPHC Secretariat prepare a presentation for SRB12, on the overall research initiatives to show how stock assessment, biology, and policy are integrated. Ultimately, such an integrated presentation should be a key component of science presentations at future IPHC Annual Meetings. For example, all research presentations would have been more effective had there been:
- more precise linkages among key knowledge gaps within the biology, annual stock assessment, and MSE simulations;
 - a specific suite of questions to be discussed during the SRB meeting;
 - sufficient background material provided such that the SRB can provide informed comment and advice related to the specific questions in (b).
33. **NOTING** that some of the biological science work is externally funded and peer-reviewed, the SRB **REQUESTED** that future background papers include successfully funded proposals so that the SRB has sufficient detail to review implementation and progress of the work.
34. The SRB **REQUESTED** that the IPHC Secretariat provide specific advice about the SRB's role in reviewing the design, analytical methods, and implementation of internally-funded projects.

8.2 Implementation plans and scheduling for externally-funded projects

No comments

8.3 Presentation of potential future research projects

35. **NOTING** the presentation of project timelines and milestones, the SRB **REQUESTED** that timelines also be included for incorporating biological research results into the stock assessment and MSE work.



-
36. The SRB **RECOMMENDED** that IPHC consider hiring a life-history modeler to provide more explicit linkage between the empirical biological program and the applied assessment and MSE modeling programs.

9. OTHER BUSINESS

9.1 *IPHC meetings calendar (2018-20): SRB*

37. **NOTING** the annual IPHC meetings calendar (2017-19) adopted by the Commission at its 93rd Session in 2017, the SRB **AGREED** to the improved format of the current Session and that the same format should apply to all future SRB meetings.

10. THE PROCESS FOR ‘REVIEW OF THE DRAFT AND ADOPTION OF THE REPORT OF THE 11TH SESSION OF THE IPHC SCIENTIFIC REVIEW BOARD (SRB11)’

38. The report of the 11th Session of the IPHC Scientific Review Board (IPHC-2017-SRB11–R) was **ADOPTED** via correspondence on 29 September 2017, including the consolidated set of recommendations and/or requests arising from SRB11, provided at [Appendix V](#).

APPENDIX I
LIST OF PARTICIPANTS FOR THE 11TH SESSION OF THE
IPHC SCIENTIFIC REVIEW BOARD (SRB11)

SRB Members

Dr Sean Cox : spcox@sfu.ca ; Professor, School of Resource and Environmental Management, Simon Fraser University, 8888 University Dr., Burnaby, B.C., Canada V5A 1S6
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Dr Kim Scribner : scribne3@msu.edu ; Professor, Department of Fisheries and Wildlife, Michigan State University, 2E Natural Resources Building, East Lansing, MI, U.S.A., 48824
Absent
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Dr Allan Hicks	Quantitative Scientist, allan@iphc.int
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Dr Ray Webster	Quantitative Scientist, ray@iphc.int
Dr Josep Planas	Biological and Ecosystem Sciences Branch Manager, josep@iphc.int



APPENDIX II
AGENDA FOR THE 11TH SESSION OF THE
IPHC SCIENTIFIC REVIEW BOARD (SRB11)

Date: 26–28 September 2017

Location: Seattle, Washington, U.S.A.

Venue: IPHC Board Room, Salmon Bay

Time: 12:00-17:00 (26th), 09:00-17:00 (27th), 09:00-14:00 (the 28th)

Chairperson: Dr Sean Cox (Simon Fraser University)

Vice-Chairpersons: Nil

- 1. OPENING OF THE SESSION**
- 2. ADOPTION OF THE AGENDA AND ARRANGEMENTS FOR THE SESSION**
- 3. IPHC PROCESS**
- 4. IPHC FISHERY-INDEPENDENT SETLINE SURVEY**
 - 4.1 Methods for spatial survey modelling - Update on work since June SRB meeting (R. Webster)
 - 4.2 Preliminary setline survey results (R. Webster)
- 5. PACIFIC HALIBUT STOCK ASSESSMENT: 2017**
 - 5.1 Data source development (I. Stewart)
 - 5.2 Modelling updates (I. Stewart)
 - 5.3 Preliminary results for 2017 (I. Stewart)
- 6. SIZE LIMIT ANALYSIS FOR 2017: Update (I. Stewart)**
- 7. MANAGEMENT STRATEGY EVALUATION: UPDATE**
 - 7.1 A description of the closed-loops simulations (A. Hicks)
 - 7.2 Simulation results and presenting results to the IPHC Management Strategy Advisory Board (A. Hicks)
- 8. BIOLOGICAL AND ECOSYSTEM SCIENCE PROGRAM RESEARCH UPDATES**
 - 8.1 Progress on ongoing IPHC-funded research projects (J. Planas)
 - 8.2 Implementation plans and scheduling for externally-funded projects (J. Planas)
 - 8.3 Presentation of potential future research projects (J. Planas)
- 9. OTHER BUSINESS**
- 10. THE PROCESS FOR ‘REVIEW OF THE DRAFT AND ADOPTION OF THE REPORT OF THE 11th SESSION OF THE IPHC SCIENTIFIC REVIEW BOARD (SRB11)’**

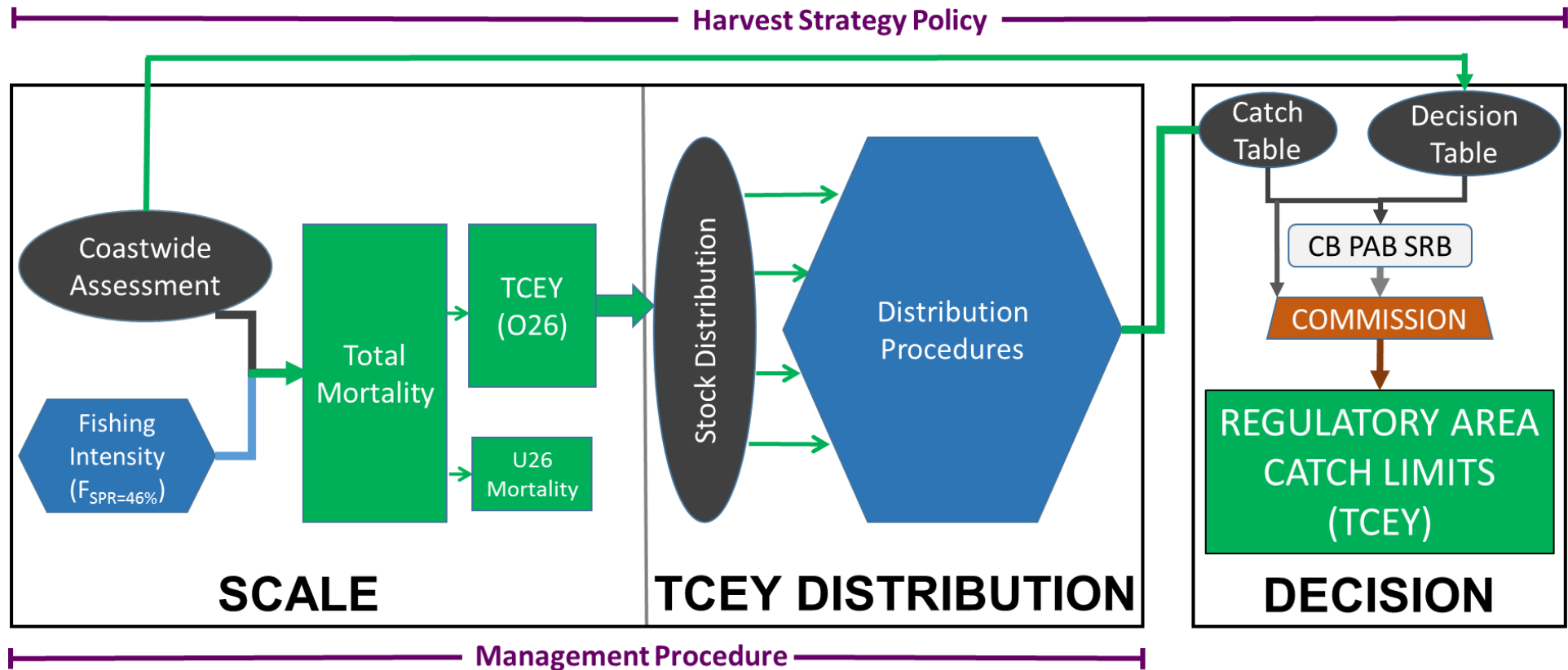


APPENDIX III
LIST OF DOCUMENTS FOR THE 11TH SESSION OF THE
IPHC SCIENTIFIC REVIEW BOARD (SRB11)

Document	Title	Availability
IPHC-2017-SRB11-01	DRAFT: Agenda & Schedule for the 11 th Session of the Scientific Review Board (SRB11)	✓ 26 June 2017
IPHC-2017-SRB11-02	DRAFT: List of Documents for the 11 th Session of the Scientific Review Board (SRB11)	✓ 28 & 31 August 2017
IPHC-2017-SRB11-03	Update on the actions arising from the 10 th Session of the SRB (SRB10) (IPHC Secretariat)	✓ 27 August 2017
IPHC-2017-SRB11-04	Methods for spatial survey modelling - Update on work since June SRB10 meeting (R. Webster)	✓ 29 August 2017
IPHC-2017-SRB11-05	Preliminary IPHC Fishery-independent setline survey (FISS) results: 2017 (R. Webster)	✓ 30 August 2017
IPHC-2017-SRB11-06	Pacific halibut stock assessment development for 2017 (I. Stewart)	✓ 31 August 2017
IPHC-2017-SRB11-07	Evaluation of the IPHC's 32" minimum size limit: Update since the June SRB10 meeting (I. Stewart & A. Hicks)	✓ 28 August 2017
IPHC-2017-SRB11-08	Management Strategy Evaluation: Update since the June SRB10 meeting (A. Hicks)	✓ 30 August 2017
IPHC-2017-SRB11-09	Report on biological research activities at IPHC: Update since the June SRB10 meeting (J. Planas)	✓ 28 August 2017
<i>Information papers</i>		
IPHC-2017-SRB11-INF01	Nil	Nil



APPENDIX IV
REVISED: HARVEST STRATEGY POLICY PROCESS





APPENDIX V

**CONSOLIDATED SET OF RECOMMENDATIONS AND REQUESTS OF THE 11TH SESSION OF THE
IPHC SCIENTIFIC REVIEW BOARD (SRB11)**

RECOMMENDATIONS

Pacific halibut stock assessment (2017): Data source development

SRB11–Rec.01 ([para. 14](#)) The SRB **RECOMMENDED** continuing to down-weight terminal year fishery CPUE in the annual stock assessment because terminal and post-season CPUE may be substantially different. Generating and presenting the conditional distribution for post-season CPUE given terminal CPUE, should be undertaken as a way to improve communication about most recent fishery CPUE values.

Management Strategy Evaluation: A description of the closed-loop simulations

SRB11–Rec.02 ([para. 25](#)) The SRB **RECOMMENDED** that the IPHC Secretariat and Management Strategy Advisory Board collaborate to:

- c) further clarify and improve the presentation of the Harvest Strategy Policy ([Appendix IV](#)). This would improve not only transparency of the existing interim harvest policy, but also of the MSE process for evaluating alternatives.
- d) Review harvest policies from other bodies to develop an objectives hierarchy that explicitly prioritizes long-term conservation over short-/medium-term (e.g., 3-8 years) catch performance.

SRB11–Rec.03 ([para. 29](#)) The SRB **RECOMMENDED** that the IPHC Secretariat hire a modeler/programmer to support MSE work so that timely feedback can be given the MSAB in the MSE process.

Biological and ecosystem science program: Presentation of potential future research projects

SRB11–Rec.04 ([para. 36](#)) The SRB **RECOMMENDED** that IPHC consider hiring a life-history modeler to provide more explicit linkage between the empirical biological program and the applied assessment and MSE modeling programs.

REQUESTS

IPHC fishery-independent setline survey: Methods for spatial survey modelling

SRB11–Req.01 ([para. 7](#)) The SRB **REQUESTED** that the IPHC Secretariat present a form of [Table 1](#) to Commissioners, adding a column for Qualitative Cost (e.g., High, Low given sampling intensity, fishing cost, etc.).

SRB11–Req.02 ([para. 9](#)) The SRB **REQUESTED** that the following be maintained on the IPHC Program of Work: (i) examination of revenue and cost-recovery (i.e., cost benefit analyses), (ii) forecast the effect on CV of the presence or absence of expansion FISS stations, (iii) plotting relative error against number of stations, and (iv) comparison of frequency of zeros between standard and expansion FISS stations.

IPHC fishery-independent setline survey: Preliminary FISS results

SRB11–Req.03 ([para. 12](#)) The SRB **REQUESTED** continuing research – subsequent to the 94th Annual Meeting of the IPHC (AM094) - on the effect of other covariates such as dissolved oxygen on the IPHC fishery-independent setline survey catch rates, and for any results to be presented at SRB12.

Pacific halibut stock assessment (2017): Data source development

SRB11–Req.04 ([para. 15](#)) The SRB **REQUESTED** continuing research on discrepancies between Estimated and Measured weights of Pacific halibut, be presented at SRB12.



Size limit analysis for 2017: Update

SRB11–Req.05 ([para. 21](#)) **NOTING** the thoughtful and detailed presentation on the potential impacts of changing the minimum size limit presented in Appendix E (*Evaluation of adaptive management approaches*) of paper IPHC-2017-SRB11-07, the SRB **REQUESTED** that the IPHC Secretariat, between now and SRB12, seek feedback from the Commissioners, Conference Board, Processors Advisory Board, and the Management Strategy Advisory Board, on a modified version of Appendix E. In particular, a modified version would include (i) a process for starting and possibly ending an experiment, (ii) performance metrics, and (iii) criteria for making conclusions based on the experimental outcomes.

Management Strategy Evaluation: A description of the closed-loop simulations

SRB11–Req.06 ([para. 27](#)) The SRB **REQUESTED** that a quasi-extinction threshold be established so that:

- a) simulation replicates can be flagged when projected spawning biomass drops below this threshold;
- b) parameter sets causing quasi-extinction in the historical period can be dropped from the operating model initialization.

SRB11–Req.07 ([para. 28](#)) The SRB **REQUESTED** that the MSE simulation initialize the operating model biomass in the current year from the more precise Ensemble distribution of the current state (e.g., 2017) rather than the wider distribution obtained from the Operating model.

Biological and ecosystem science program: Progress on ongoing IPHC-funded research projects

SRB11–Req.08 ([para. 32](#)) The SRB **REQUESTED** that the IPHC Secretariat prepare a presentation for SRB12, on the overall research initiatives to show how stock assessment, biology, and policy are integrated. Ultimately, such an integrated presentation should be a key component of science presentations at future IPHC Annual Meetings. For example, all research presentations would have been more effective had there been:

- d) more precise linkages among key knowledge gaps within the biology, annual stock assessment, and MSE simulations;
- e) a specific suite of questions to be discussed during the SRB meeting;
- f) sufficient background material provided such that the SRB can provide informed comment and advice related to the specific questions in (b).

SRB11–Req.09 ([para. 33](#)) **NOTING** that some of the biological science work is externally funded and peer-reviewed, the SRB **REQUESTED** that future background papers include successfully funded proposals so that the SRB has sufficient detail to review implementation and progress of the work.

SRB11–Req.10 ([para. 34](#)) The SRB **REQUESTED** that the IPHC Secretariat provide specific advice about the SRB's role in reviewing the design, analytical methods, and implementation of internally-funded projects.

Biological and ecosystem science program: Presentation of potential future research projects

SRB11–Req.11 ([para. 35](#)) **NOTING** the presentation of project timelines and milestones, the SRB **REQUESTED** that timelines also be included for incorporating biological research results into the stock assessment and MSE work.