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## UPDATE ON THE ACTIONS ARISING FROM THE 19<sup>TH</sup> SESSION OF THE IPHC SCIENTIFIC REVIEW BOARD (SRB019)

PREPARED BY: IPHC SECRETARIAT (11 MAY 2022)

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### PURPOSE

To provide the Scientific Review Board (SRB) with an opportunity to consider the progress made during the intersessional period, on the recommendations/requests arising from the SRB019.

### BACKGROUND

At the SRB019, the members recommended/requested a series of actions to be taken by the IPHC Secretariat, as detailed in the SRB019 meeting report ([IPHC-2021-SRB019-R](#)) available from the IPHC website, and as provided in [Appendix A](#).

### DISCUSSION

During the 19<sup>th</sup> Session of the SRB (SRB019), efforts will be made to ensure that any recommendations/requests for action are carefully constructed so that each contains the following elements:

- 1) a specific action to be undertaken (deliverable);
- 2) clear responsibility for the action to be undertaken (such as the IPHC Staff or SRB officers);
- 3) a desired time frame for delivery of the action (such as by the next session of the SRB or by some other specified date).

### RECOMMENDATION/S

That the SRB:

- 1) **NOTE** paper IPHC-2022-SRB020-03, which provided the SRB with an opportunity to consider the progress made during the inter-sessional period, in relation to the consolidated list of recommendations/requests arising from the previous SRB meeting (SRB019).
- 2) **AGREE** to consider and revise the actions as necessary, and to combine them with any new actions arising from SRB020.

### APPENDICES

[Appendix A: Update on actions arising from the 19<sup>th</sup> Session of the IPHC Scientific Review Board \(SRB019\)](#)

**APPENDIX A**  
**Update on actions arising from the 19<sup>th</sup> Session of the IPHC Scientific Review Board**  
**(SRB019)**

**RECOMMENDATIONS**

Action No.	Description	Update
SRB019– Rec.01 ( <a href="#">para. 13</a> )	<p><b>2022-24 IPHC Fishery-independent setline survey (FISS) design evaluation</b></p> <p>The SRB <b>RECOMMENDED</b> that the Commission note the SRB018 endorsement of the proposed 2022 design and provisional endorsement of the proposed 2023-24 designs, as provided at Appendix IV, recognizing that the designs for 2023-24 will be reviewed again at subsequent SRB meetings.</p>	<p><b>Completed:</b></p> <p>Noted by the Commission at AM098</p>
SRB019– Rec.02 ( <a href="#">para. 14</a> )	<p><b>NOTING</b> the presentation of three alternative 2022 sampling designs (<a href="#">Figs. 1, 2, and 3</a>) that optimize the SRB018-endorsed proposed 2022 design for cost, thereby meeting the goals of long-term revenue neutrality (Secondary Objective), without compromising the scientific goals of the FISS (Primary Objective), the SRB <b>RECOMMENDED</b> that the Secretariat prioritize 2022 sampling designs that include IPHC Regulatory Area 4CDE despite the relatively low contribution of this area to overall biomass and variance. This region is an important area to monitor for future range shifts and biological samples collected here are likely to be important for understanding the biology of Pacific halibut at their leading range edge.</p>	<p><b>Completed:</b></p> <p>Such designs continue to be prioritized by the Secretariat, but we note that the recommended design may not be fully implemented each year due to limited interest from potential charter vessels.</p>
SRB019– Rec.03 ( <a href="#">para. 18</a> )	<p><b>Modelling of IPHC length-weight data</b></p> <p>The SRB <b>RECOMMENDED</b> that the IPHC provide a revised length-net weight relationship for each IPHC Regulatory Area based on modelling of combined FISS and commercial sample data to be used for the calculation of all non-IPHC mortality estimates where individual weights cannot be collected, for 2021 and until further notice.</p>	<p><b>Completed:</b></p> <p>Revised length-weight relationships have been estimated for all areas. These are presented on the IPHC website, and were publicized through email contacts to domestic agency and tribal staff.</p>



Action No.	Description	Update
SRB019– Rec.04 ( <a href="#">para. 30</a> )	<p><b><i>Pacific halibut stock assessment: 2021 - Modelling updates</i></b></p> <p><b>NOTING</b> that the surplus production analysis revealed a recent pattern of harvest exceeding surplus production despite current biomass being below the target biomass, the SRB <b>RECOMMENDED</b> that the IPHC Secretariat continue to report on surplus production in addition to trends and scale of surplus production and fishing intensity as part of the annual assessment.</p>	<p><b>Completed:</b></p> <p>This information was included in the 2021 stock assessment and presentation to the Commission.</p>
SRB019– Rec.05 ( <a href="#">para. 34</a> )	<p><b><i>Management Strategy Evaluation: Update</i></b></p> <p>The SRB <b>RECOMMENDED</b> the investigation of empirical procedures to inform mortality limits in non-assessment years of a multi-year assessment MP.</p>	<p><b>In progress:</b></p> <p>Empirical procedures will be implemented as a component of the management procedures for multi-year assessments. This will provide a stepping-stone to a complete empirical procedure.</p>
SRB019– Rec.06 ( <a href="#">para. 35</a> )	<p><b>NOTING</b> the inclusion of uncertainty stemming from implementation <b><i>uncertainty</i></b>, the SRB <b>RECOMMENDED</b> that the IPHC Secretariat develop, for presentation at SRB020, alternative scenarios that represent implementation <b><i>bias</i></b>, i.e. the potential for quota reductions called for by the management procedure to be less likely implemented than quota increases.</p>	<p><b>In progress:</b></p> <p>Implementation error and bias has been developed and the details are currently being coded into the closed-loop simulation framework.</p>
SRB019– Rec.07 ( <a href="#">para. 38</a> )	<p><b><i>IPHC Secretariat MSE Program of Work (2021-23)</i></b></p> <p>The SRB <b>RECOMMENDED</b> that the initial management procedure be evaluated on the basis of the current operating model.</p>	<p><b>Completed:</b></p> <p>Results from the initial MSE simulations were presented to the Commission at AM098. A new OM incorporating multiple models has been developed for the investigation of size limits and multi-year assessments.</p>



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SRB019– Rec.08 ( <a href="#">para. 39</a> )	The SRB <b>RECOMMENDED</b> that the IPHC Secretariat develop alternative OMs from various hypotheses related to population processes or environmental covariates for implementation in the MSE framework, noting <a href="#">paragraph 38</a> , and that tasks leading to the adoption of a well-defined MP should be prioritized.	<b>In progress:</b> A new OM with multiple models representing various hypotheses for movement and natural mortality has been developed.
SRB019– Rec.09 ( <a href="#">para. 43</a> )	<b>IPHC 5-Year biological and ecosystem science research plan (2017-21)</b> The SRB <b>RECOMMENDED</b> that the Secretariat consider the value of other opportunistically collected samples that would facilitate further downstream analyses in a cost effective manner.	<b>In progress:</b> The IPHC Secretariat is maximizing opportunities for sample collection from fish encountered in experimental field trials as well as in the IPHC FISS.
SRB019– Rec.10 ( <a href="#">para. 56</a> )	<b>Research integration</b> The SRB <b>RECOMMENDED</b> that the IPHC Secretariat identify those research areas with uncertainty and indicate research questions that would require the SRB to provide input and/or decision in future documentation and presentations provided to the SRB.	<b>In progress:</b> The Secretariat is working towards delineating research questions that address key areas of uncertainty for Stock Assessment and Management Strategy Evaluation.

### REQUESTS

Action No.	Description	Update
SRB019– Req.01 ( <a href="#">para. 8</a> )	<b>Update on the actions arising from the 18<sup>th</sup> Session of the SRB (SRB018)</b> The SRB <b>RECALLED</b> three actions for delivery at SRB020 as follows:  a) SRB018–Req.1 (para. 13) IPHC Fishery-independent setline survey (FISS): 2022-24 FISS design evaluation. The SRB <b>REQUESTED</b> plots by survey area of WPUE vs. depth from both FISS and commercial fisheries to help understand if there is part of	<b>In progress:</b> Work addressing (a) and (b) will be presented at SRB020.



Action No.	Description	Update
	<p>the Pacific halibut stock in deeper waters not covered by the FISS.</p> <p>b) SRB018–Req.2 (para. 14) The SRB <b>REQUESTED</b> that the IPHC Secretariat conduct a preliminary comparison, to be presented at SRB020, between male, female, and sex-aggregated analysis of the FISS data using the spatial-temporal model.</p> <p>c) SRB018–Req.14 (para. 52) The SRB <b>NOTED</b> that, without a clearer understanding of the Commissions purpose for future use of this work, it is difficult to provide guidance on prioritising model development (e.g. improve spatial resolution, incorporate dynamic / predictive processes, adding more detail on subsistence and recreational fisheries, including uncertainty in the assessment). The SRB therefore <b>REQUESTED</b> specific guidance and clarification from the Commission on the objectives and intended use of this study.</p>	
<p>SRB019– Req.02 (<a href="#">para. 19</a>)</p>	<p><b>Modelling of IPHC length-weight data</b></p> <p><b>NOTING</b> the emerging difference between length-weight regressions based on historical vs. recent data, the SRB <b>REQUESTED</b> further investigation of the underlying processes (whether in the observation process - e.g. timing of sample collection - or biological changes - e.g. changes in somatic growth) driving these differences. While the suggested solution provides a numerical solution it also annually requires significant sampling and analysis efforts which could potentially be reduced through a better understanding of the processes involved.</p>	<p><b>In progress:</b></p> <p>Work is underway examining these data more closely in the context of Pacific halibut condition and understanding factors that may affect changes in condition. We note that weighing of fish at sea is now a routine part of the sampling process with the principle goal of ensuring accurate recording of Pacific halibut weights on the FISS.</p>
<p>SRB019– Req.03 (<a href="#">para. 22</a>)</p>	<p><b>Review of IPHC hook competition standardization</b></p> <p><b>NOTING</b> the presentation of methods used for hook competition standardization, the SRB <b>REQUESTED</b> continued analysis of this phenomenon and incorporation of these corrections in the FISS data analysis, including potential use of hook timer studies if the technology permits.</p>	<p><b>In progress:</b></p> <p>Field research using standard and modified circle hook designs and hook-timers is planned for summer 2022.</p>



Action No.	Description	Update
SRB019– Req.04 ( <a href="#">para. 24</a> )	<p><b><i>Accounting for the effects of whale depredation on the FISS</i></b></p> <p><b>NOTING</b> the presentation of methods used for accounting for whale depredation, and the limited impact of the correction at this point, the SRB <b>REQUESTED</b> that the IPHC Secretariat continue to monitor the influence of whale depredation on the FISS and the stock assessment. If the whale depredation correction becomes more important in the future, it will become important to conduct a broader investigation of ways that this phenomenon could be described and accounted for, if at all, in the FISS. Also, the impact / treatment of the associated compositions should be better explained within the stock assessment.. While the SRB generally supports the idea to use all possible data there is a question as to whether the simple time covariate approach risks introducing bias through changes in density of Pacific halibut and / or whales and through ignoring possible depredation selectivity by size and sex.</p>	<p><b>In progress:</b></p> <p>Collection of whale interactions information is an ongoing part of the FISS, and Secretariat staff will continue to monitor any changes in rates of whale interactions.</p>
SRB019– Req.05 ( <a href="#">para. 31</a> )	<p><b><i>Pacific halibut stock assessment: 2021 - Modelling updates</i></b></p> <p>The SRB <b>REQUESTED</b> that the IPHC Secretariat consider the following topics for inclusion in the 2022 full stock assessment and presentation for SRB evaluation at SRB020 in June 2022:</p> <ul style="list-style-type: none"> <li>a) Sensitivity analysis of the assessment to processes being investigated by the Biological and Ecosystem Research Program, e.g. spatiotemporal differences in maturity schedules, discard mortality, and length-weight relationships;</li> <li>b) Continued exploration of data weighting;</li> <li>c) Evaluation of treatment of commercial sex ratio;</li> <li>d) Use of the Pacific Decadal Oscillation (PDO) and other environmental covariates to predict recruitment;</li> <li>e) Estimation of whale depredation mortality for potential explicit inclusion in the assessment model; and</li> </ul>	<p><b>Completed</b></p> <p>Sensitivity analyses covering maturity and unobserved mortality were included in the 2021 stock assessment. Directly measured weights have been incrementally included in all analyses beginning in 2015, with full adoption of the revised relationship completed in 2021.</p> <p>Items (b) – (f) are all included in the preliminary stock assessment; see IPHC-2022-SRB020-07.</p>



Action No.	Description	Update
	f) Other factors discussed since the last stock assessment.	
SRB019– Req.06 ( <a href="#">para. 46</a> )	<p><b>Biological and ecosystem science research</b></p> <p><b>Reproduction</b></p> <p>The SRB <b>NOTED</b> that the IPHC Secretariat is finalising a proposed sampling design for the collection of ovaries in the 2023 FISS, for providing precise estimates of fecundity and <b>REQUESTED</b> for SRB020 in June 2022, more detail on the considerations taken to ensure the sampling maximises the opportunity to address the objectives.</p>	<p><b>In progress:</b></p> <p>The IPHC Secretariat is working towards selecting appropriate methods for fecundity estimations and towards devising a sampling strategy for 2023.</p>
SRB019– Req.07 ( <a href="#">para. 50</a> )	<p><b>Growth and Physiological Condition</b></p> <p>The SRB <b>REQUESTED</b> that the IPHC Secretariat pause further pursuit of this research until it can articulate specifically how this approach will inform the stock assessment or MSE and why this approach is preferable to investigation of age-length-weight information which is available at a much broader geographic and temporal scale.</p>	<p><b>Completed:</b></p> <p>The IPHC Secretariat is complying with this request.</p>
SRB019– Req.08 ( <a href="#">para. 59</a> )	<p><b>Pacific halibut fishery economics update</b></p> <p>The SRB <b>NOTED</b> that substantial uncertainties surround our understanding of recreational fishing effort dynamics (e.g. the expected change in effort with changes in season length or size limits and the availability of alternative target species such as Pacific salmon) and <b>REQUESTED</b> that the IPHC Secretariat assess and present at SRB020, the feasibility and value of various stated preference (e.g. a discrete choice experiment) and revealed preference (e.g. time series analysis of fishing effort patterns with respect to regulatory changes) approaches to understanding recreational effort dynamics.</p>	<p><b>Project closed:</b></p> <p>The socioeconomic study was concluded at the 98<sup>th</sup> Session of the IPHC Annual Meeting (AM098) (<a href="#">IPHC–2022–AM098–R</a>, par. 70).</p>
SRB019– Req.09 ( <a href="#">para. 60</a> )	<p>The SRB <b>REQUESTED</b> that the IPHC Secretariat assess and present at SRB020, the potential of using data from the Guided Angler Fish Program (USA) and Pacific Region Experimental Recreational Halibut Program (Canada) as inputs to the economic analysis of Pacific halibut, particularly the trade-offs between the commercial and the recreational sector.</p>	<p><b>Project closed:</b></p> <p>The socioeconomic study was concluded at the 98<sup>th</sup> Session of the IPHC Annual Meeting (AM098) (<a href="#">IPHC–2022–AM098–R</a>, par. 70).</p>



Action No.	Description	Update
SRB019– Req.10 ( <a href="#">para. 61</a> )	The SRB <b>REQUESTED</b> further information (e.g. inverse demand curves), to be presented at SRB020, on the regional supply-price relationships for commercial landings, as well as localized importance of the Pacific halibut fishery to communities.	<b>Project closed:</b> The socioeconomic study was concluded at the 98 <sup>th</sup> Session of the IPHC Annual Meeting (AM098) ( <a href="#">IPHC-2022-AM098-R</a> , par. 70).
SRB019– Req.11 ( <a href="#">para. 63</a> )	<p><b><i>International Pacific Halibut Commission 5-year program of integrated science and research (2021-26)</i></b></p> <p>The SRB <b>REQUESTED</b> that the IPHC Secretariat consider the following changes (in no particular order) to this document by SRB2020:</p> <ul style="list-style-type: none"> <li>a) Add an Executive Summary;</li> <li>b) Change the title, the overall statement of purpose section, and Fig. 4 to better reflect the goals and intent of the research program;</li> <li>c) Enhance stock assessment section to reflect research in this area including some of the priorities from the external review etc.;</li> <li>d) Include the intent to use the MSE to provide research direction and prioritisation (feedback) to the biological research program;</li> <li>e) Keep monitoring section separate as is, but demonstrate the linkage to the research through resource sharing etc.;</li> <li>f) Add a performance metric related to the provisioning of high-quality management advice that meets the Commission's needs;</li> <li>g) Include specific subsections on implications for integration with other core areas and relevance to management;</li> <li>h) Draft the section on climate change.</li> </ul>	<b>In progress:</b> See paper IPHC-2022-SRB020-10