



UPDATE ON THE ACTIONS ARISING FROM THE 21ST SESSION OF THE IPHC SCIENTIFIC REVIEW BOARD (SRB021)

PREPARED BY: IPHC SECRETARIAT (17 MAY 2023)

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 SRB021.

BACKGROUND

At the SRB021, the members recommended/requested a series of actions to be taken by the IPHC Secretariat, as detailed in the SRB021 meeting report ([IPHC-2022-SRB021-R](#)) available from the IPHC website, and as provided in [Appendix A](#).

DISCUSSION

During the 21st Session of the SRB (SRB021), 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-2023-SRB022-03, 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 (SRB021).
- 2) **AGREE** to consider and revise the actions as necessary, and to combine them with any new actions arising from SRB022.

APPENDICES

Appendix A: Update on actions arising from the 21st Session of the IPHC Scientific Review Board (SRB021)

APPENDIX A
Update on actions arising from the 21st Session of the IPHC Scientific Review Board (SRB021)

RECOMMENDATIONS

Action No.	Description	Update
SRB021– Rec.01 (para. 14)	<p><i>International Pacific Halibut Commission 5-year program of integrated research and monitoring (2022-26)</i></p> <p>The SRB RECOMMENDED that the Secretariat and Commission take a more deliberate and explicit approach in deciding which research programs to fund internally or externally, since internally funded research can: (i) utilize milestones and interim evaluations as possible “kill points” where a project may be discontinued if the marginal costs outweigh the benefits of a particular research stream or project; (ii) provide pilot data to support external research proposals; and (iii) support critical applied research that falls outside typical funding agency interests.</p>	<p>Ongoing</p> <p>Update: See paper IPHC-2023-SRB022-05 which now contains a cover page that includes a first attempt to meet this recommendation. Feedback is requested from the SRB022 on formatting and content.</p>
SRB021– Rec.02 (para. 18)	<p><i>IPHC Fishery-independent setline survey (FISS)</i></p> <p>NOTING that the coefficient of variation (CV) for IPHC Regulatory Area 4B continued to exceed the 15% threshold in 2021, the SRB RECOMMENDED continuing to investigate potential means to mitigate these effects. For example, by increasing the pool of potential bidders by including vessel using snap-gear.</p>	<p>Completed</p> <p>Update: Charter bids were open to vessels fishing snap gear in 2023 and we expect some use of this gear on the 2023 FISS.</p>
SRB021– Rec.03 (para. 20)	<p><i>Updates to space-time modelling</i></p> <p>NOTING that the ‘hurdle’ model structure (separate modeling of presence/absence and abundance conditional on presence) of the space-time model used to analyze the FISS may not be the most efficient approach, the SRB RECOMMENDED that the Secretariat explore other approaches such as the use of mixture models or the ‘Tweedie’ distribution.</p>	<p>In Progress</p> <p>Update: We have had some success fitting the Tweedie model and intend to present results at SRB023. See paper IPHC-2023-SRB022-06</p>
SRB021– Rec.04 (para. 22)	<p>NOTING increasingly long computing times, limited available distributions, and space-time model instability in some cases, the SRB RECOMMENDED exploring alternatives to the R-INLA software package.</p>	<p>In Progress</p> <p>Update: To be discussed at SRB023. See paper IPHC-2023-SRB022-06</p>



Action No.	Description	Update
SRB021– Rec.05 (para. 26)	<p>Management Strategy Evaluation: update</p> <p>NOTING the MSE results for size limit scenarios presented, the SRB RECOMMENDED further analysis of the economic implications of harvesting smaller fish (e.g. reduced yield and/or increased processing costs, changes in efficiency, and potential lower value for smaller fish).</p>	<p>Completed</p> <p>Update: MSE results related to size limits were presented to the Commission at AM099, and the Commission agreed that sufficient analysis has been completed (see paragraphs 82-84 of IPHC-2023-AM099-R).</p>
SRB021– Rec.06 (para. 27)	<p>The SRB RECOMMENDED evaluating additional performance metrics including, for example, discard mortality and change in TCEY in assessment years for multi-year assessment MPs.</p>	<p>In Progress</p> <p>Update: Although the Commission has agreed to a short list of priority performance metrics, additional performance metrics of interest will be discussed at MSAB018.</p>
SRB021– Rec.07 (para. 34)	<p>Pacific halibut stock assessment: 2022</p> <p>The SRB RECOMMENDED not implementing MASE weighting for the 2022 stock assessment advice and, instead, continuing to use the equal weighting approach to the ensemble components.</p>	<p>Completed</p> <p>Update: No change in weighting was applied in 2022. Research on MASE continues.</p>
SRB021– Rec.08 (para. 35)	<p>NOTING the integration between the stock assessment and biological research in evaluating the impact of genetic sex composition data (and the one-year lag in providing these data) on assessment results along with the resourcing implications, the SRB RECOMMENDED continued evaluation of the impact on stock assessment output of analyzing this genetic sex composition data on 1, 2, or 3 year intervals.</p>	<p>In Progress</p> <p>Update: An update on this evaluation will be provided for SRB022. See paper IPHC-2023-SRB022-08.</p>
SRB021– Rec.09 (para. 41)	<p>Biological and ecosystem sciences – Project updates</p> <p>NOTING the information on recent wire tagging of Pacific halibut as part of the recreational DMR study and intent to characterize movements of Pacific halibut among IPHC Regulatory Areas, the SRB RECOMMENDED that the data available be summarized to map and analyze existing trends in the data.</p>	<p>In Progress</p> <p>Update: A summary of Pacific halibut movement from available data generated during the recreational DMR study will be provided for SRB022.</p> <p>See paper IPHC-2023-SRB022-09.</p>



Action No.	Description	Update
SRB021– Rec.10 (para. 44)	NOTING the Secretariat's interest in applications of molecular markers for somatic growth and evaluation of growth patterns, the SRB RECOMMENDED that the Secretariat devote attention to annotation of sequence data that may be relevant to understanding spatial, temporal, and demographic (size/age) variation growth and maturation.	Pending Update: The Secretariat is discussing avenues to address the SRB recommendation.
SRB021– Rec.11 (para. 47)	NOTING the flow chart presented in Figure 1 of paper IPHC-2022-SRB021-09 , the SRB RECOMMENDED that (i) additional analyses be conducted in areas of unsupervised clustering for individuals, and (ii) estimate measures of genetic variation among individuals within and among sampling groups to characterize inter-individual relationships, which could provide further indication of admixture. The coefficients of relationship among individuals within sampling location and levels of pair-wise variance in SNP allele frequency between sampling locations can be used to identify 'source' and 'sink' regions.	In Progress Update: A summary of progress on K-means clustering and model selection criteria will be presented at SRB022. See paper IPHC-2023-SRB022-09 .
SRB021– Rec.12 (para. 48)	The SRB NOTED that in the sub-area of Population Genetics and Structure, the Secretariat intends to use Site Frequency Spectral (SFS) analyses. Both selection and population growth can produce similar SFS patterns in data. As such, the SRB RECOMMENDED testing using a 'Tajima D' analysis and estimate levels of excess of low frequency SNP alleles within sampling areas (or reporting units).	In Progress Update: The IPHC Secretariat has begun incorporating the estimation of Tajima's D for each collection in their analysis of low-coverage whole genome resequencing data. See paper IPHC-2023-SRB022-09 .



Action No.	Description	Update
SRB021– Rec.13 (para. 49)	<p>NOTING that Secretariat’s intention to use Multiple Dimensional Scaling to visualise inter-individual and inter-location genetic similarity, the SRB RECOMMENDED that the Secretariat develop a data baseline of background information at the individual level to better develop hypotheses to explain visual patterns in data.</p>	<p>In Progress</p> <p>Update: The biological data and sample attributes for the individuals used for low-coverage whole genome resequencing are being used for this purpose. Relationships between these attributes and the results obtained from ordination methods (e.g. PCA & MDS) are being investigated to assist with the interpretation of the resulting visual patterns.</p> <p>See paper IPHC-2023-SRB022-09.</p>
SRB021– Rec.14 (para. 50)	<p>NOTING the Secretariat’s interest in describing linkage relationships, and that descriptions of linkage disequilibrium can be fraught with difficulty in situations of admixture and due to vagaries in breeding structure, the SRB RECOMMENDED that the Secretariat explore other literature not cited in IPHC-2022-SRB021-09 in this area.</p>	<p>Completed</p> <p>Update: The IPHC Secretariat acknowledges this and is exploring additional literature pertaining to this issue to ensure that these analyses are consistent with current published literature.</p>
SRB021– Rec.15 (para. 51)	<p>The SRB RECOMMENDED that the Secretariat (i) develop a rapid screening panel of SNP markers (e.g. GTseq, RADcapture) for future use in Close-Kin Mark recapture (CKMR), population assignment, or other applications (CKMR applications may necessitate the development of microhaplotypes to achieve adequate accuracy in multi-generational pedigree analyses), and (ii) begin developing potential SNP panels and evaluate accuracy of population-based or pedigree-based assignment under scenarios likely to be encountered in future IPHC applications.</p>	<p>Pending</p> <p>Update: The low-coverage whole genome resequencing dataset that the IPHC Secretariat has recently generated will be leveraged to develop application-specific marker panels in the future.</p>

REQUESTS



Action No.	Description	Update
SRB021– Req.01 (para. 15)	<p><i>International Pacific Halibut Commission 5-year program of integrated research and monitoring (2022-26)</i></p> <p>The SRB RECALLED SRB020–Rec.05 (para. 36) (shown below) and REQUESTED that the Secretariat evaluate data collected during the FISS or other IPHC research programs that might be useful for the broader scientific community and potential existing external repositories that might house these data.</p> <p>SRB020–Rec.05 (para. 36) “<i>The SRB NOTED the exceptional level of transparency and commitment to the principles of open science represented by the Secretariat’s data and code-sharing practices and, therefore, RECOMMENDED that the Secretariat consider producing peer-reviewed data report publications, which would (a) enhance outreach to potential external data users and (b) allow for tracking external use of IPHC data and resources.</i>”</p>	<p><i>In Progress</i></p> <p>Update: The Secretariat is researching potential data publication resources, including in-house options, to further improve transparency and visibility.</p>
SRB021– Req.02 (para. 30)	<p><i>Management Strategy Evaluation: update</i></p> <p>The SRB REQUESTED that the Secretariat examine MPs based on a three-year assessment cycle with annual TCEY changes proportional to changes in the FISS index because (i) this approach would be simpler and more transparent than a model, which has not yet been developed); (ii) the high benefit to cost ratio for multi-year TCEYs; (iii) it matches the current three-year full assessment cycle; and (iv) the general approach has precedents in other fishery commissions (e.g. Southern Bluefin Tuna).</p>	<p><i>In Progress</i></p> <p>Update: The Secretariat presented MSE results for a three-year assessment cycle to the Commission at AM099. The Commission agreed that there is utility in continuing to explore multi-year stock assessment management procedures.</p> <p>See paper IPHC-2023-SRB022-07.</p>
SRB021– Req.03 (para. 32)	<p><i>Pacific halibut stock assessment: 2022</i></p> <p>The SRB RECALLED SRB020–Rec.02 (para. 23) and SRB020-Rec.04 (para. 25) (shown below), and REQUESTED an update at SRB022:</p> <p>SRB020–Rec.02 (para. 23) “<i>The SRB NOTED that most models within the ensemble produced reasonable and well-constrained estimates of natural mortality (M) and RECOMMENDED that estimation of M should be adopted in the short AAF assessment model with consideration in</i></p>	<p><i>In Progress</i></p> <p>Update: M was estimated in the short AAF model in 2022. Evaluation of 2022 M estimates relative to preliminary estimates to be provided for SRB022 along with further exploration of marine mammal depredation.</p>



Action No.	Description	Update
	<p><i>other models as part of the stock assessment research program.”</i></p> <p>SRB020–Rec.04 (para. 25) “<i>The SRB NOTED apparent discrepancies in marine mammal prevalence among anecdotal reports, FISS observations, and preliminary evaluation of logbook data, and therefore RECOMMENDED further investigation of methods to better estimate marine mammal prevalence and impacts on the fishery.</i>”</p>	<p>See paper IPHC-2023-SRB022-08.</p>
<p>SRB021– Req.04 (para. 33)</p>	<p>NOTING the substantial interannual variation in MASE weightings of the four assessment models, the SRB AGREED that one-step-ahead predictive skill is a potentially promising basis for model weighting, and REQUESTED continued research into MASE weightings averaged over longer time periods as well as comparing these to alternative weighting metrics, for example, via cross-validation.</p>	<p>In Progress</p> <p>Update: Further exploration on MASE weighting will be provided for SRB022.</p> <p>See paper IPHC-2023-SRB022-08.</p>
<p>SRB021– Req.05 (para. 37)</p>	<p>Biological and ecosystem sciences – Project updates</p> <p>The SRB REQUESTED that the Secretariat amend the priorities under bullet “2. Reproduction” (IPHC-2022-SRB021-09) to include other avenues of investigations such as size/age specific fecundity and spatial variation in same.</p>	<p>Completed</p> <p>Update: Fecundity estimations by size/age and spatial variation are now incorporated as priorities for the research area of Reproduction.</p>
<p>SRB021– Req.06 (para. 39)</p>	<p>The SRB NOTED and APPRECIATED details provided concerning ongoing or anticipated statistical analyses of data that enhanced the SRB’s ability to understand and critique methods to expected research outcomes and REQUESTED continued consistency in the presentation in these areas.</p>	<p>Completed</p> <p>Update: The Secretariat will continue efforts to provide details of data analysis approaches used and planned.</p>
<p>SRB021– Req.07 (para. 40)</p>	<p>NOTING the progress update on Migration and Distribution and the specific research goal of creating a map of suitable juvenile Pacific halibut settlement habitat, the SRB REQUESTED (i) a clearer statement of the relevance of this research to management, MSE, and/or the stock assessment and (ii) clarification regarding the types of data to be collected and used to determine occupancy (and preference), and by what data sources.</p>	<p>Completed</p> <p>Update: The Secretariat will clarify the relevance and data sources and types used for mapping suitable juvenile habitat in SRB022.</p>



Action No.	Description	Update
SRB021– Req.08 (para. 43)	NOTING the Secretariat’s interest in growth and size-at-age relationships, the SRB REQUESTED clarification of narrative regarding collection of environmental covariate data for projecting future short-term size-at-age trends.	<i>In Progress</i> Update: The Secretariat is working towards better defining future work on the influence of environmental covariate data on size-at-age trends.
SRB021– Req.09 (para. 45)	NOTING the Secretariat's interest in identification of evidence for spatial population structure, and given the IPHC manages stocks on the basis of biological reporting regions, the SRB REQUESTED clarification on how the Secretariat may alter assessments if ‘functionally isolated components of the population are found’.	<i>Completed</i> Update: Summary of this topic included in IPHC-2022-SRB022-08 .