



IPHC Secretariat Program of Work for MSAB Related Activities in 2020 and 2021–24

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PURPOSE

To update the IPHC Program of Work for MSAB related activities for the periods 2020 and 2021–24.

1 INTRODUCTION

This Program of Work is a description of activities related to the Management Strategy Advisory Board (MSAB) that IPHC Secretariat staff will engage in for the next five years. It describes each of the priority tasks, lists some of the resources needed for each task, and provides a timeline for each task. However, this work plan is flexible and may be changed throughout this period with the guidance of the MSAB, Science Review Board (SRB) members, and Commission. This document focuses on the tasks for 2020 and references longer term tasks described in [IPHC-2019-MSAB014-09](#).

It is important to have a set of working definitions, and this is especially true to the Management Strategy Evaluation (MSE) process since it involves many technical terms that may be interpreted or used differently by different people. 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>

1.1 MANAGEMENT STRATEGY EVALUATION (MSE)

Management Strategy Evaluation (MSE) is a process to evaluate alternative management procedures and identify those that are robust to uncertainty and meet the defined objectives. This process, in general, involves the following:

1. defining fishery goals and objectives with the involvement of stakeholders and managers,
2. identifying management procedures to evaluate,
3. simulating a population with application of the management procedures,
4. evaluating and presenting the results in a way that examines trade-offs between objectives,
5. applying a chosen management procedure, and
6. repeating this process in the future to address changes in objectives, assumptions, and expectations.

Figure 1 shows these different components and that the process is not necessarily sequential but may iterate between components as learning progresses. The involvement of stakeholders and managers in every component of the process is extremely important to guide the MSE and evaluate the outcomes.

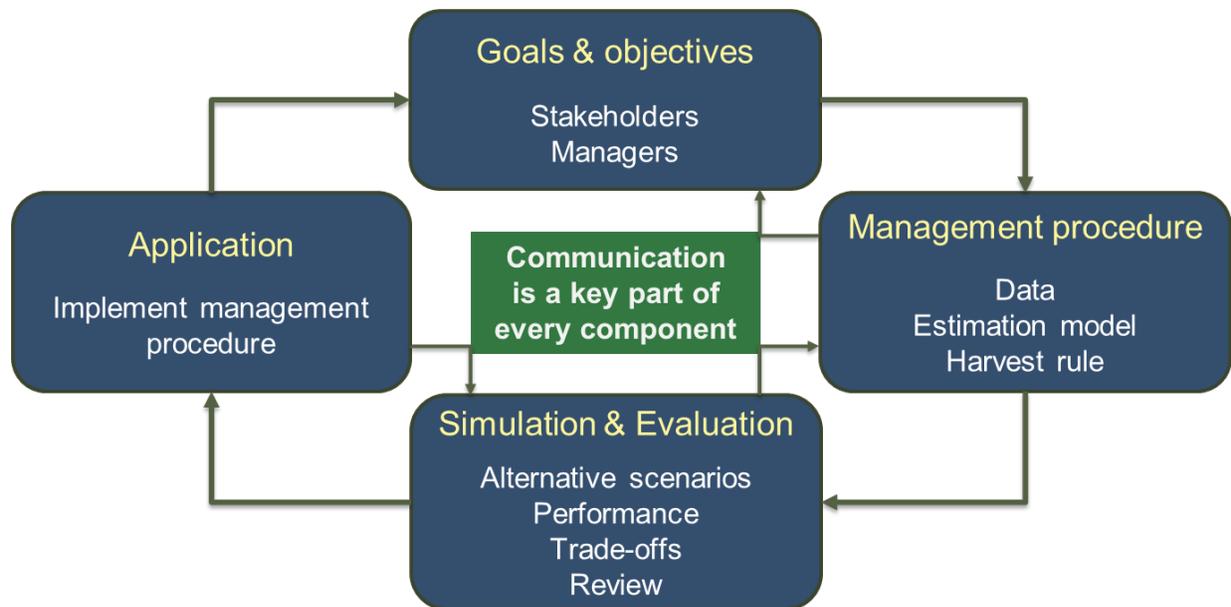


Figure 1: A depiction of the Management Strategy Evaluation (MSE) process showing the iterative nature of the process with the possibility of moving either direction between most components.

1.2 BACKGROUND

Many important tasks have been completed or started regarding the MSE for Pacific halibut (*Hippoglossus stenolepis*). Much of the work proposed will use past accomplishments to further the MSE process. The past accomplishments include the following:

1. Familiarization with the MSE process.
2. Defining conservation and fishery goals.
3. Defining objectives and performance metrics for those goals.
4. Developing coast-wide (single-area) and spatial (multiple-area) models.
5. Identifying management procedures for the coastwide fishing intensity and distributing the TCEY to IPHC Regulatory Areas.
6. Presentation of results investigating coastwide fishing intensity.

Management Strategy Evaluation is a process that can develop over many years with many iterations. It is also a process that needs monitoring and adjustments to make sure that management procedures are performing adequately. Therefore, the MSE work for Pacific halibut fisheries will be ongoing as new objectives are defined, more complex models are built, and results are updated. This time will include continued consultation with stakeholders and managers via the MSAB meetings, defining and refining goals and objectives, developing operating models, running simulations, and reporting results. Along the way, there will be useful outcomes that may be used to improve existing management and will influence recommendations for future work. Embracing this iterative process, the program of work identifies the tasks to continue to make progress on the investigation of management strategies.

2 MAIN TASKS FOR THE NEXT 5 YEARS

Task 1: Review, update, and further define goals and objectives

Task 2: Develop performance metrics to evaluate objectives

Task 3: Identify realistic management procedures of interest to evaluate

Task 4: Design and code a closed-loop simulation framework

Task 5: Further the development of operating models

Task 6: Run closed-loop simulations and evaluate results

Task 7: Develop tools that will engage stakeholders and facilitate communication

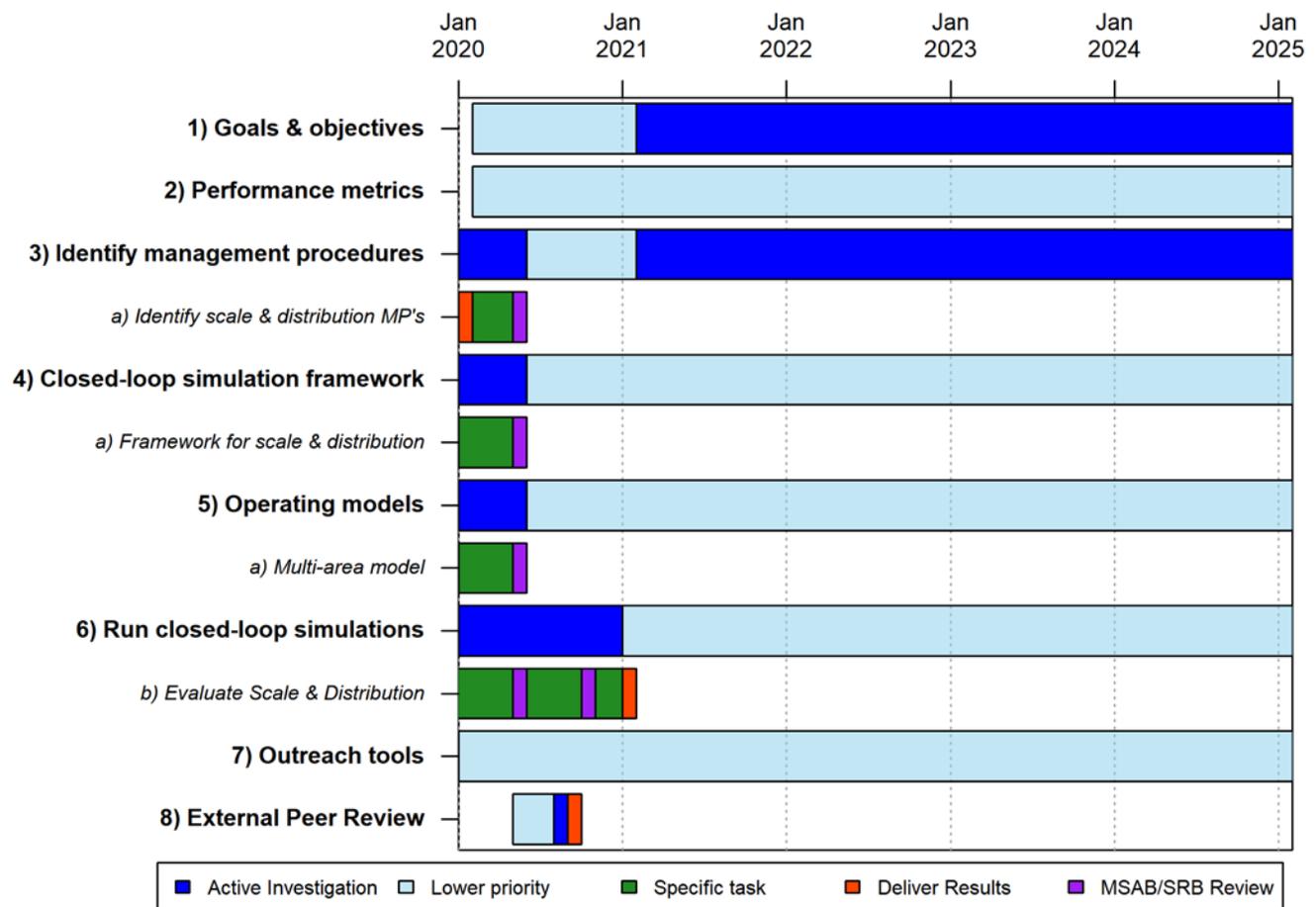


Figure 2: Gantt chart for the five-year work plan. Tasks are listed as rows. Dark blue indicates when the major portion of the main tasks work will be done. Light blue indicates when preliminary or continuing work on the main tasks will be done. Dark green indicates when the work on specific sub-topics will be done. Red areas show when results will be presented to the Commission. Purple areas show when the task will be reviewed by the MSAB and/or the SRB.

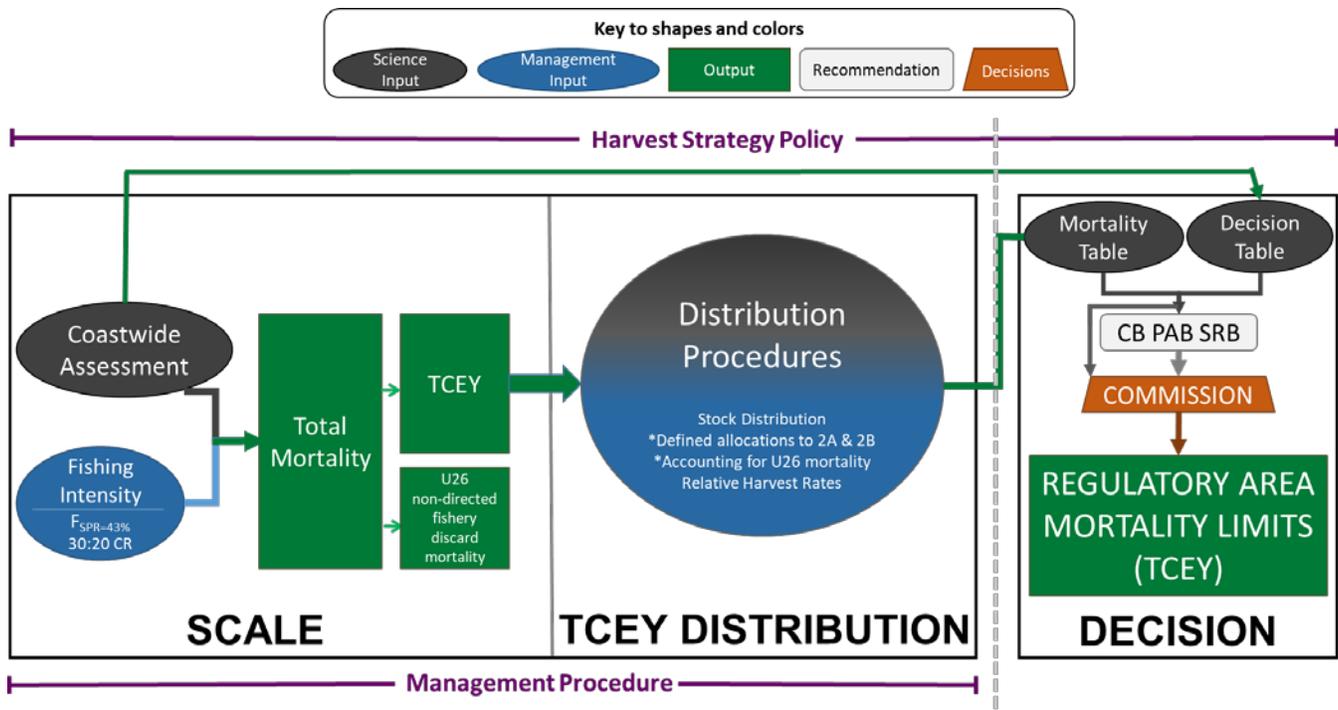


Figure 3: Illustration of the Commission interim IPHC harvest strategy policy (reflecting paragraph ID002 in [IPHC CIRCULAR 2020-007](#)) showing the coastwide scale and TCEY distribution components that comprise the management procedure. Items with an asterisk are three-year interim agreements to 2022. The decision component is the Commission decision-making procedure, which considers inputs from many sources.

3 PROGRAM OF WORK FOR 2020

The first full MSE results incorporating coastwide scale and distribution components of the management procedure (Figure 3) will be presented at the 97th IPHC Annual Meeting (AM097) in January 2021. Therefore, results of simulations incorporating various management procedures based on the framework shown in Figure 3 will be reviewed by the SRB and evaluated by the MSAB in 2020. There are three main tasks to accomplish in 2020: 1) identify management procedures incorporating coastwide and distribution components to simulate, 2) condition a multi-area operating model and prepare a framework for closed-loop simulations, and 3) present results in various ways in order to evaluate the management procedures. These three main tasks are described below and Table 1 identifies the tasks that will be undertaken at each MSAB and SRB meeting in 2020.

4 IDENTIFY REALISTIC MANAGEMENT PROCEDURES OF INTEREST TO EVALUATE

The coastwide MSE investigated management procedures related to the coastwide fishing intensity including the SPR associated with a fishing mortality rate (F_{SPR}), the trigger in a control rule determining at what level of relative spawning biomass the fishing intensity is linearly reduced, and various constraints that dampen the annual change in the TCEY. The results from

the coastwide MSE provided insight into options and a range of SPR values to further evaluate along with distribution procedures. These are listed in paragraph 49 of [IPHC-2019-MSAB014-R](#).

49. The MSAB RECOMMENDED that SPR values of 0.3, 0.34, 0.38, 0.40, 0.42, 0.46, and 0.50 with a 30:20 control rule be evaluated at MSAB015 along with constraints defined by a maximum change in the TCEY of 15%, a slow-up fast-down approach, and/or setting quotas every third year.

Table 1: Tasks to complete in 2020 at the two scheduled MSAB meetings.

May 2020 MSAB Meeting (MSAB015)
Review Goals and Objectives (Distribution & Scale)
Review simulation framework
Review multi-area model
Review preliminary results
Identify MPs (Distribution & Scale)
June 2020 SRB Meeting (SRB016)
Review simulation framework
Review multi-area model
Review preliminary results
September 2020 SRB Meeting (SRB017)
Review penultimate results
October 2020 MSAB Meeting (MSAB016)
Review final results
Provide recommendations on MPs for scale and distribution
Annual Meeting 2021
Presentation of first complete MSE product to the Commission
Recommendations on Scale and Distribution MP

Various procedures related to distributing the TCEY were discussed at MSAB014 and listed in paragraphs 55, 57, and 58 of [IPHC-2019-MSAB014-R](#).

*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.*
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).*
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.*

There are many combinations of elements and it would be nearly impossible to simulate and evaluate all possible combinations. Therefore, seventeen specific procedures for distributing the TCEY to IPHC Regulatory Areas were identified in Table 1 of Appendix VI in [IPHC-2019-MSAB014-R](#). These management procedures form the basis of the management procedures that will be simulated and evaluated in 2020.

The outcome of MSAB015 will be a list of specific management procedures to evaluate at MSAB016.

5 RECOMMENDATION/S

That the MSAB:

- 1) **NOTE** paper IPHC-2020-MSAB015-10 which describes the IPHC Program of Work for MSAB related activities for the periods 2020 and 2021–2024.
- 2) **NOTE** the delivery date of January 2021 (97th Annual Meeting) for the first complete MSE results including Scale and Distribution components of the management procedure for potential adoption by the Commission and subsequent implementation.
- 3) **RECOMMEND** additions or deletions to this Program of Work, or changes to the timeline, priorities, and deliverables.
- 4) **RECOMMEND** management procedures with coastwide scale and distribution elements to simulate in 2020 and evaluate at MSAB016.

6 ADDITIONAL DOCUMENTATION / REFERENCES

IPHC-2019- MSAB014-09. 2019. IPHC Secretariat Program of Work for MSAB Related Activities 2019-23. 20 September 2019. 17 pp.

<https://iphc.int/uploads/pdf/msab/msab014/iphc-2019-msab014-09.pdf>

IPHC-2019-MSAB014-R. Report of the 14th Session of the IPHC Management Strategy Advisory Board (MSAB014). Seattle, WA, U.S.A. 21–24 October 2019. 27 pp.

<https://iphc.int/uploads/pdf/msab/msab014/iphc-2019-msab014-r.pdf>