

4.6 Developments in Management Strategy Evaluation/ Management Strategy Advisory Board

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Abstract

The Management Strategy Advisory Board (MSAB) met twice in 2016 with presentations from the new IPHC staff member, Dr. Allan Hicks. A 2-year workplan was developed and adopted by the MSAB, along with the development of a Terms of Reference and an Outreach Plan. The MSAB also reviewed the intentions of the management goals and objectives. Progress was made on the investigation of the current harvest policy, an examination of the realized decisions made over the last three years, and development of a revised harvest policy to account for mortality of all sizes and from all sources. The MSAB is generally optimistic about the progress being made and is looking forward to evaluations in 2017.

Introduction

The Commission's Management Strategy Evaluation process is a formal process in which to evaluate the performance of alternative management procedures for the Pacific halibut stock against a range of scenarios that encompass observation and process uncertainty in stock assessments, alternative hypotheses about stock dynamics and structural assumptions. This process is commonly referred to as Management Strategy Evaluation (MSE) in fisheries science. To assist and help guide this process the Commission formed a Management Strategy Advisory Board (MSAB) comprised of harvesters (commercial, sport, and subsistence), fisheries managers (DFO, NMFS, and regional fishery management councils), processors, and IPHC commissioners. The MSAB is working with IPHC staff to initially define clear measurable objectives for the Pacific halibut fishery, define candidate management procedures (MP) for testing within the MSE framework, and define the performance measures to evaluate alternative MPs.

A management strategy consists of multiple management procedures and encompasses the entire decision-making process. Generally, a management strategy can be characterized by three categories, each containing multiple management procedures: monitoring (what data to collect and use), an estimation model (stock assessment method to interpret the data), and a harvest strategy (harvest rates, control rule, size limits, and anything else needed to determine a catch level). These management procedures are things that we can control.

Conversely, components that we cannot control are incorporated in the operating models and the uncertainty is addressed through scenarios. These components are often related to the population, such as time varying quantities like recruitment and size-at-age. Some aspects of the fishery, like selectivity, may also be included as a component of uncertainty. For example, the dynamics of the fishery and its effect on changes in selectivity may be modeled with random changes through time. Additionally, it may be desired to not attempt to control some aspects of the fishery or management, but to include these in the "cannot control" category. For example, bycatch in fisheries that are not regulated by the IPHC may be incorporated by specifying a range of possible potential outcomes. The purpose of the operating model is to model a range of possibilities over

which the results are integrated. This allows for the evaluation of management strategies over these scenarios, with the goal of finding management strategies that are robust to the set of possible future realizations.

A MSE is implemented by combining the scenarios (via operating models) with a management strategy in a closed-loop simulation. This provides feedback from the management strategy into the simulated population modeled by the operating model (Fig. 1). This closed-loop simulation is projected many years into the future, and performance metrics (quantitative summaries of the results) are used to evaluate how well each management strategy performs relative to the management objectives. The central role of the MSAB is to define fishery objectives, develop candidate management procedures, develop performance metrics, and measure the performance of various management strategies against the objectives.

MSAB meetings

The MSAB held two meetings in 2016, and the minutes for these meetings are provided in Appendices A and B. Dr. Allan Hicks was hired in April 2016 to replace Dr. Steve Martell as a quantitative scientist at the Commission with a focus on MSE and harvest policy analysis, and the meeting on 9–10 May 2016 was his first meeting as IPHC staff. A 2-year workplan¹ was developed outlining a schedule for implementing a MSE to investigate management procedures for the Pacific halibut fishery, and was initially presented to the MSAB in May 2016 (MSAB07). The workplan was subsequently revised and accepted by the MSAB at the October 2016 meeting (MSAB08) with tasks outlined in the Gantt chart shown in Figure 2. The MSAB requested an investigation from IPHC staff of the current harvest policy and an examination of the realized decisions in recent years to be presented at the October MSAB meeting (see Hicks and Stewart 2017). This was to satisfy the Commission request from the 2016 Annual Meeting (AM092) to review and provide recommendations for updating the harvest policy and harvest control rules².

The 9–10 May 2016 meeting of the MSAB also discussed the Terms of Reference³ and the Outreach Plan⁴. Suggestions for both of these items were considered and updated documents were presented at the 26–27 October 2016 meeting.

The main items covered at the 26–27 October 2016 MSAB meeting (MSAB08) were adoption of the Terms of Reference, a discussion on the intent of the fishery management goals and objectives, a presentation on the current harvest policy and management procedures that the MSAB may consider, and preparation for the IPHC Interim and Annual Meetings. Some revisions were suggested for the Terms of Reference which will be presented at the IPHC Annual Meeting for adoption by the Commission. In the future, IPHC Staff will propose changes to the Terms of Reference to standardize with IPHC rules of procedure. The MSAB discussed the intentions behind the goals and objectives and suggested some specific revisions and further discussion at the next MSAB meeting. The presentation on the current and realized harvest policy, described in detail in (Hicks and Stewart 2017), identified some issues with the current harvest policy that can

¹ *IPHC-2016-MSAB08-11*: http://www.iphc.info/MSAB%20Documents/meeting8/IPHC-2016-MSAB08-11-DraftWorkplanMSAB_Oct2016_v6.0.pdf

² <http://iphc.int/news-releases/447-nr20160208.html>

³ <http://www.iphc.info/MSAB%20Documents/meeting7/IPHC-2016-MSAB07-09%20MSAB%20Terms%20of%20Reference.pdf>

⁴ <http://www.iphc.info/MSAB%20Documents/meeting7/IPHC-2016-MSAB07-08%20Draft%20Outreach%20Plan.pdf>

be remedied by moving to a revised harvest policy that accounts for mortality of all sizes of fish from all sources. Preparation for the Interim and Annual Meetings involved identifying the need for guidance from Commissioners and drafting a recommendation to Commissioners encouraging the evaluation of “alternative harvest policy approaches that address [...] shortcomings [of the current harvest policy] and take into account all sizes of fish”.

Overall, the 2016 MSAB meetings ended with an optimism that progress is being made and results from the MSE will be evaluated in the near future.

Reference

Hicks, A.C, Stewart, I.J. 2017. An investigation of the current IPHC harvest policy and potential for improvement. Int. Pac. Halibut Comm. Report of Assessment and Research Activities 2016. IPHC-2016-RARA-26-R: 421-438.

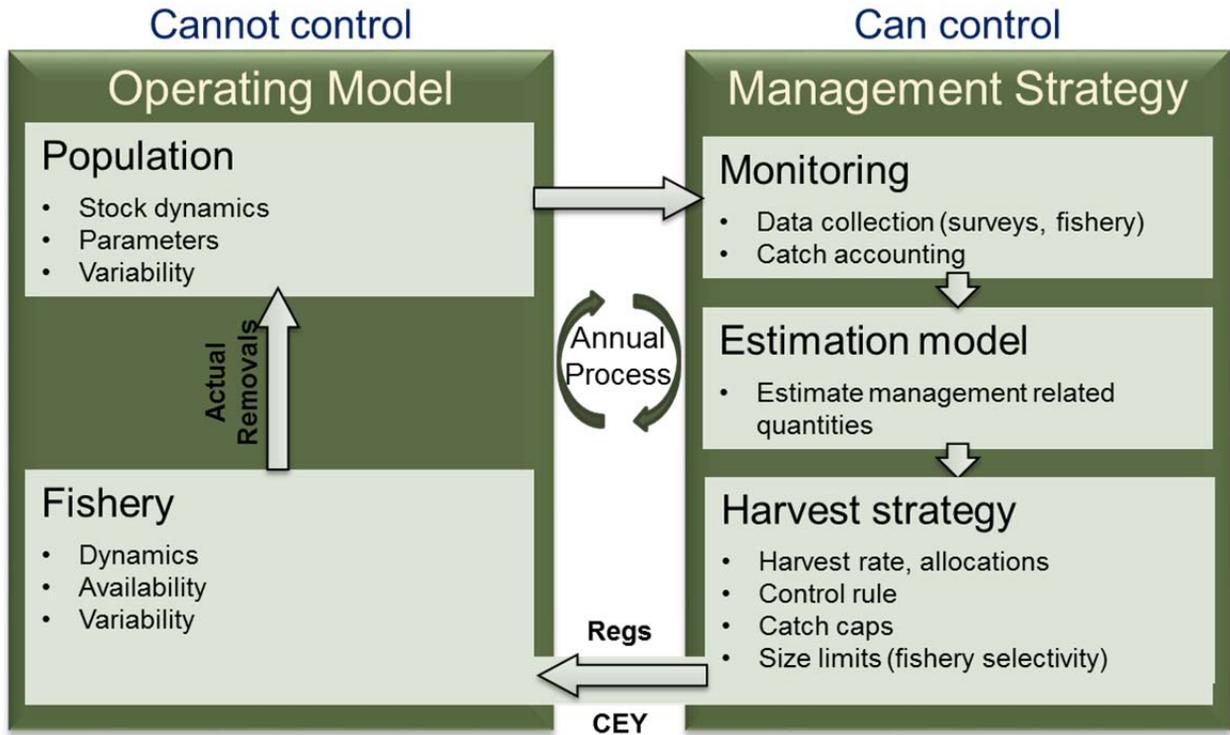


Figure 1. A closed-loop simulation for Management Strategy Evaluation. One iteration of this loop is one year of simulation.

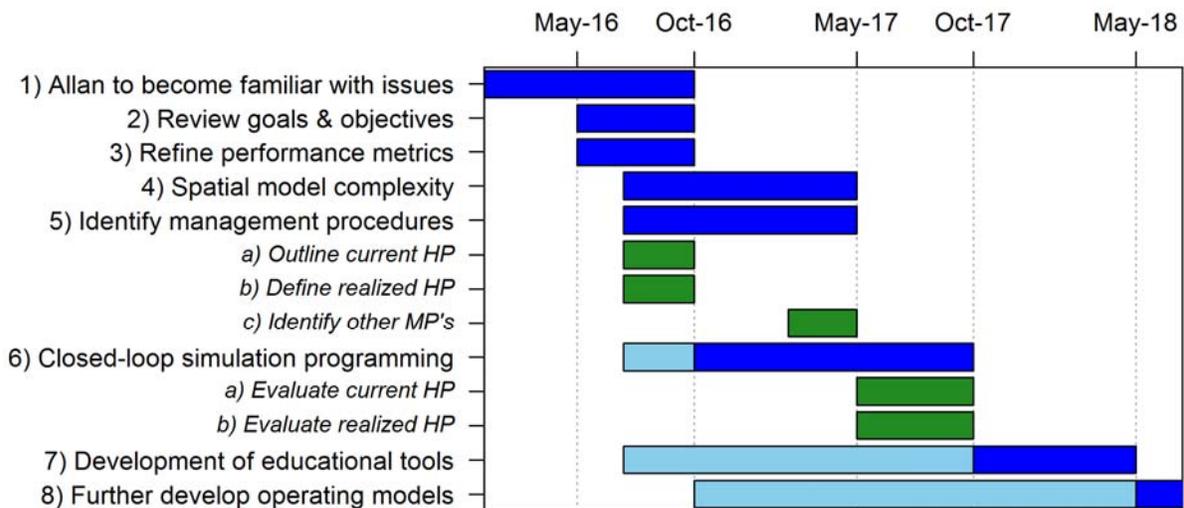


Figure 2. Gantt chart for the 2-year workplan. Dark blue colors indicate active work on the task is being done. Light blue indicates that the task is being developed or initial investigations are underway. Green bars indicate sub tasks under a main task.