



INTERNATIONAL PACIFIC



HALIBUT COMMISSION

# Reports of the Management Strategy Advisory Board

Agenda Item 8.2

IPHC-2019-MSAB013-R

IPHC-2019-MSAB014-R

# Management Strategy Advisory Board

- Co-Chairpersons
  - Canada: Mr Adam Keizer (DFO)
  - USA: Dr. Carey McGilliard (NOAA-Fisheries)
- MSAB013 occurred 6-9 May; Sitka, AK, USA
- MSAB014 occurred 21-24 October; Seattle, WA, USA



# 2019 Key Deliverables

- Finished defining objectives for distribution and scale (fishing intensity)
- Reviewed multi-area model development
- Identified management procedures for distribution and scale



# 2019 Key Deliverables

- Defined objectives for distribution and scale (fishing intensity)
  - MSAB014-Rec.01
  - MSAB014-Rec.02
- Identified management procedures for distribution and scale
  - MSAB014-Rec.03
  - MSAB014-Rec.04
  - MSAB014-Rec.05



# Recommendation: Primary Objectives

General Objective	Measureable Objective
<b>1.1. Keep female spawning biomass above a limit to avoid critical stock sizes and conserve spatial population structure</b>	Maintain a female spawning stock biomass above a biomass limit reference point at least 95% of the time
	Maintain a defined minimum proportion of female spawning biomass in each Biological Region
<b>2.1 Maintain spawning biomass around a level that optimizes fishing activities</b>	Maintain the coastwide female spawning biomass above a biomass target reference point at least 50% of the time
<b>2.2. Limit catch variability</b>	Limit annual changes in the coastwide TCEY
	Limit annual changes in the Regulatory Area TCEY
<b>2.3. Provide directed fishing yield</b>	Optimize average coastwide TCEY
	Optimize TCEY among Regulatory Areas
	Optimize the percentage of the coastwide TCEY among Regulatory Areas
	Maintain a minimum TCEY for each Regulatory Area
	Maintain a percentage of the coastwide TCEY for each Regulatory Area



# Recommendation: Primary Objectives

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<b>1.1. Keep female spawning biomass above a limit to avoid critical stock sizes and conserve spatial population structure</b>	Maintain a female spawning stock biomass above a biomass limit reference point at least 95% of the time Maintain a defined minimum proportion of female spawning biomass in each Biological Region
<b>2.1 Maintain spawning biomass around a level that optimises fishing activities</b>	Maintain the coastwide female spawning biomass above a biomass target reference point at least 50% of the time
<b>2.2. Limit catch variability</b>	Complete table in Appendix V, MSAB014-R: <a href="https://iphc.int/uploads/pdf/msab/msab014/iphc-2019-msab014-r.pdf">https://iphc.int/uploads/pdf/msab/msab014/iphc-2019-msab014-r.pdf</a>
<b>2.3. Provide directed fishing yield</b>	Optimize TCEY among Regulatory Areas Optimize the percentage of the coastwide TCEY among Regulatory Areas Maintain a minimum TCEY for each Regulatory Area Maintain a percentage of the coastwide TCEY for each Regulatory Area



# MSAB014.Rec.01 – Biomass Target

- **AGREED** 30% of unfished spawning biomass is a precautionary proxy for  $RSB_{MSY}$ 
  - analysis from equilibrium model, the stock assessment ensemble, and the MSE operating model
- **NOTED** that the consequences of exceeding MSY can introduce a considerable amount of risk to the spawning biomass.
  - we cannot know MSY exactly for any stock
  - precautionary proxies address this uncertainty, offer benefits of stability and conservation
- **RECOMMENDED** a coastwide fishery objective, in response to a request from the Commissioners, to maintain the spawning biomass above a target reference point of  $RSB_{36\%}$ , 50% of the time over the long-term.



# MSAB014.Rec.03 – Fishing Intensity

- **RECOMMENDED** that:
  - a) a coastwide fishing intensity SPR of 43%, with a 30:20 HCR, and with one of two constraints
    - 1) +/-15% maximum change in total mortality, and/or
    - 2) slow up, fast down, be used in harvest strategy development process; and
  - b) a range of management procedures including fishing intensity SPR of 40-46% be considered
    - in light of implementation variability within the closed-loop simulations when investigating distribution.



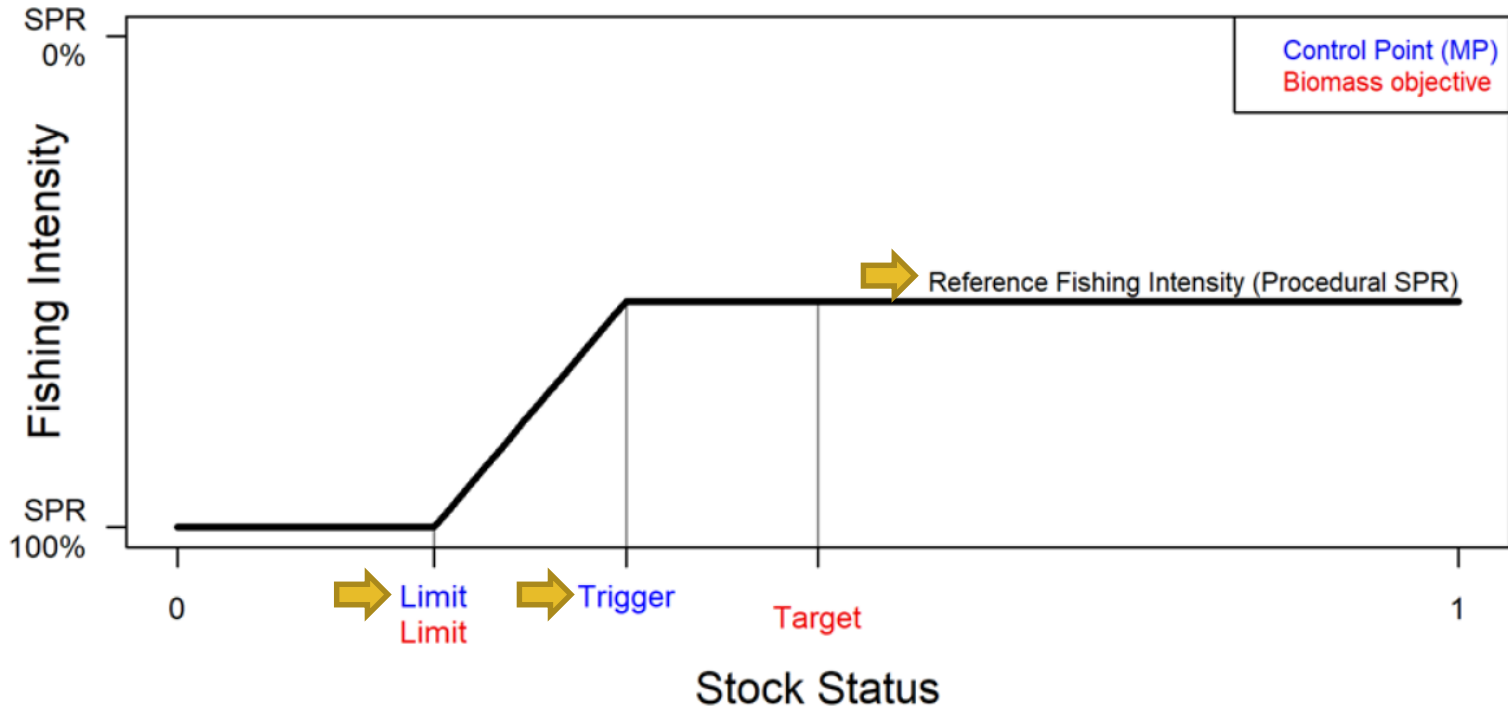


# MSAB014.Rec.04-05: Management Procedures

- Considered a range of management procedure components:
  - Applying a operational control points
    - e.g. trigger, reference, target biomass, with 30:20-type rules
  - Applying reference fishing intensity
  - Limiting interannual catch limit changes
  - Adjusting relative harvest rates by area
  - Smoothing index trends
  - Stock distribution sizes (O32, all sizes)
  - Using historical and averaged stock distribution



# Harvest control rule with operational control points



# MSAB014.Rec.05: Management Procedures

- 17 candidate procedures proposed
- 10 procedures prioritized for evaluation at MSAB015
  - Includes evaluation of interim procedure implemented at AM095
- Complete table in Appendix VI, MSAB014-R:
- <https://iphc.int/uploads/pdf/msab/msab014/iphc-2019-msab014-r.pdf>

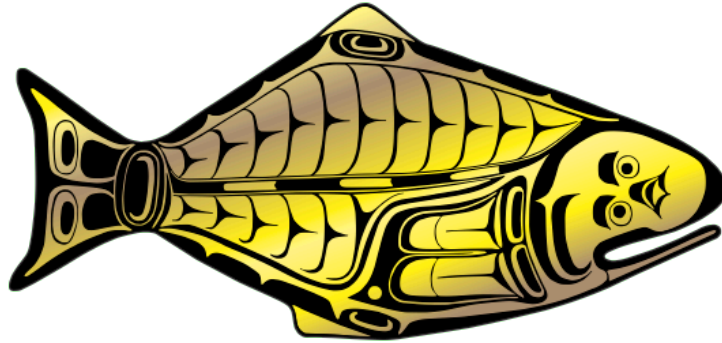


# 2020 Key Deliverables

- MSAB015 (May 2020)
  - Review simulation framework, multi-area model, and preliminary results for distribution and scale together
  - Identify management procedures for distribution and scale
- MSAB016 (October 2020)
  - Review simulation results to rank management procedures relative to objectives and identify tradeoffs between objectives
  - Develop management procedure recommendation to Commission for AM097



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