



Actions related to the IPHC Management Strategy Evaluation (MSE)

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PURPOSE

To provide a proposed list of recommended actions for Commission endorsement, arising from the International Pacific Halibut Commission (IPHC) Management Strategy Evaluation (MSE) activities presented at the 96th IPHC Annual Meeting (AM096).

INTRODUCTION

The Management Strategy Evaluation (MSE) at the International Pacific Halibut Commission (IPHC) completed an initial phase of evaluating management procedures relative to the coastwide scale of the Pacific halibut stock and fishery. Results of the MSE simulations were presented at the 95th Session of the IPHC Annual Meeting (AM095), the 13th Session of the IPHC Management Strategy Advisory Board (MSAB013), and the 14th Session of the IPHC Management Strategy Advisory Board (MSAB014). These results inform the coastwide (scale) portion of the IPHC harvest strategy policy (Figure 1) and can be used to update the scale elements of the current interim management procedure.

The next phase investigates management procedures related to the distribution of the Total Constant Exploitation Yield (TCEY). A set of primary objectives were developed by the MSAB in 2019 for approval by the Commission, which are to be used for evaluation of management procedures investigated in this next phase. Paragraph 79 of the AM096 report ([IPHC-2020-AM096-R](#)) states these recommendations, which are repeated below as Action Items with some additional background, and listed in [Table 1](#). Document [IPHC-2020-AM096-12](#) provides a full description of the MSE work in 2019.

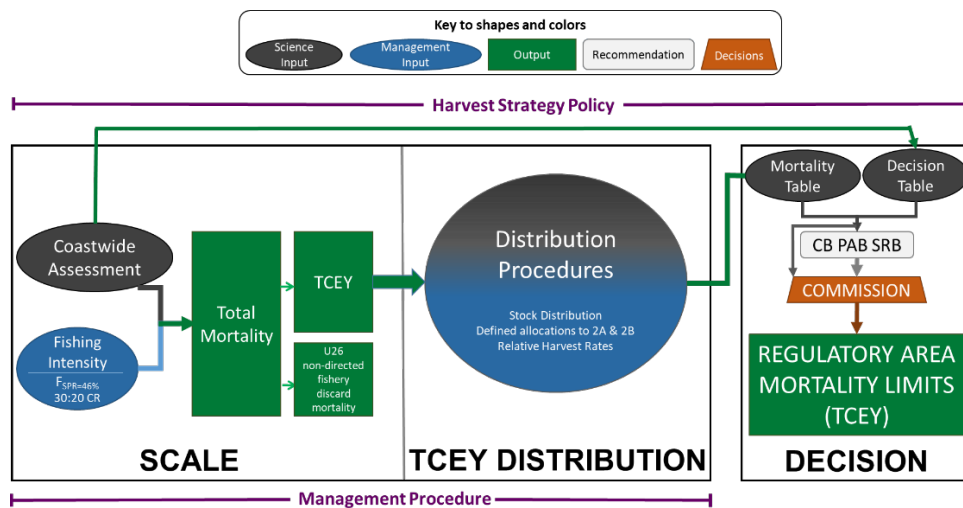


Fig. 1. Illustration of the Commission interim IPHC harvest strategy policy process (as revised for 2019-2022) showing the coastwide scale and TCEY distribution components that comprise the management procedure. The decision component is the Commission decision-making procedure, which considers inputs from many sources.

ACTION ITEMS

That the Commission:

1. **RECOMMEND** *that the primary coastwide biological sustainability objective of maintaining the female spawning biomass above a biomass limit of $SB_{20\%}$ at least 95% of the time be used to evaluate management procedures.*
 - See Table 1, Objective 1.1.

2. **RECOMMEND** *primary coastwide fishery objectives to be used for evaluation of management procedures, including*
 - 2.1. *maintain the female spawning biomass around a proxy target biomass of $SB_{36\%}$;*
 - See Table 1, Objective 2.1.
 - 2.2. *limit annual changes in the TCEY*
 - See Table 1, Objective 2.2.
 - 2.3. *optimize directed fishing yield.*
 - See Table 1, Objective 2.3.

3. **RECOMMEND** *that the primary biological sustainability objective of conserving spatial population structure across Biological Regions be used to evaluate management procedures.*
 - See Table 1, Objective 1.1.

4. **RECOMMEND** *primary fishery objectives at the IPHC Regulatory Area scale for evaluation of management procedures, including*
 - 4.1. *limit annual changes in the TCEY for each IPHC Regulatory Area;*
 - See Table 1, Objective 2.2.
 - 4.2. *optimize the TCEY among IPHC Regulatory Areas;*
 - See Table 1, Objective 2.3.
 - 4.3. *optimize a percentage of the coastwide TCEY among IPHC Regulatory Areas;*
 - See Table 1, Objective 2.3.
 - 4.4. *maintain the TCEY above a minimum absolute level within each IPHC Regulatory Area;*
 - See Table 1, Objective 2.3.
 - 4.5. *maintain a percentage of the coastwide TCEY above a minimum level within each IPHC Regulatory Area;*
 - See Table 1, Objective 2.3.

5. **AGREE** *that given the results from the coastwide MSE, the following elements from the scale (coastwide) component of the management procedure meet the coastwide objectives*

5.1. *SPR values greater than 40%*

5.2. *A control rule of 30:20,*

5.3. *Constraints on the annual change in the TCEY that either limit the annual change to 15%, use a slow-up, fast-down approach, or fix the mortality limits for three-year periods.*

See Section 2 in [IPHC-2020-AM096-12](#).

6. **RECOMMEND** *a reference SPR fishing intensity of 43% with a 30:20 control rule and allocations to 2A and 2B, as defined in [IPHC-2019-AM095-R paragraphs 69 b and c](#), and in [IPHC-2020-AM096-R paragraph 97](#), be used as an updated interim harvest policy consistent with MSE results pending delivery of the final MSE results at AM097.*

See Section 2 in [IPHC-2020-AM096-12](#).

Table 1: Primary measurable objectives, evaluated over a simulated ten-year period, recommended at MSAB014. Objective 1.1 is a biological sustainability (conservation) objective and objectives 2.1, 2.2, and 2.3 are fishery objectives. Reproduced from [IPHC-2020-AM096-12](#)

GENERAL OBJECTIVE	MEASURABLE OBJECTIVE	MEASURABLE OUTCOME	TIME-FRAME	TOLERANCE	PERFORMANCE METRIC
1.1. KEEP FEMALE SPAWNING BIOMASS ABOVE A LIMIT TO AVOID CRITICAL STOCK SIZES AND CONSERVE SPATIAL POPULATION STRUCTURE	Maintain a female spawning stock biomass above a biomass limit reference point at least 95% of the time	$SB < \text{Spawning Biomass Limit } (SB_{Lim})$ $SB_{Lim}=20\%$ unfished spawning biomass	Long-term	0.05	$P(SB < SB_{Lim})$
	Maintain a defined minimum proportion of female spawning biomass in each Biological Region	$p_{SB,2} > 5\%$ $p_{SB,3} > 33\%$ $p_{SB,2} > 10\%$ $p_{SB,2} > 2\%$	Long-term	0.05	$P(p_{SB,R} < p_{SB,R,min})$
2.1 MAINTAIN SPAWNING BIOMASS AROUND A LEVEL THAT OPTIMIZES FISHING ACTIVITIES	Maintain the coastwide female spawning biomass above a biomass target reference point at least 50% of the time	$SB < \text{Spawning Biomass Target } (SB_{Targ})$ $SB_{Targ}=SB_{36\%}$ unfished spawning biomass	Long-term	0.50	$P(SB < SB_{Targ})$
2.2. LIMIT CATCH VARIABILITY	Limit annual changes in the coastwide TCEY	Annual Change (AC) > 15% in any 3 years	Short-term		$P(AC_3 > 15\%)$
		Median coastwide Average Annual Variability (AAV)	Short-term		Median AAV
	Limit annual changes in the Regulatory Area TCEY	Annual Change (AC) > 15% in any 3 years	Short-term		$P(AC_3 > 15\%)$
		Average AAV by Regulatory Area (AAV _A)	Short-term		Median AAV _A
2.3. PROVIDE DIRECTED FISHING YIELD	Optimize average coastwide TCEY	Median coastwide TCEY	Short-term		Median \overline{TCEY}
	Optimize TCEY among Regulatory Areas	Median TCEY _A	Short-term		Median \overline{TCEY}_A
	Optimize the percentage of the coastwide TCEY among Regulatory Areas	Median %TCEY _A	Short-term		Median $\left(\frac{TCEY_A}{TCEY}\right)$
	Maintain a minimum TCEY for each Regulatory Area	Minimum TCEY _A	Short-term		Median Min(TCEY)
	Maintain a percentage of the coastwide TCEY for each Regulatory Area	Minimum %TCEY _A	Short-term		Median Min(%TCEY)