



INTERNATIONAL PACIFIC



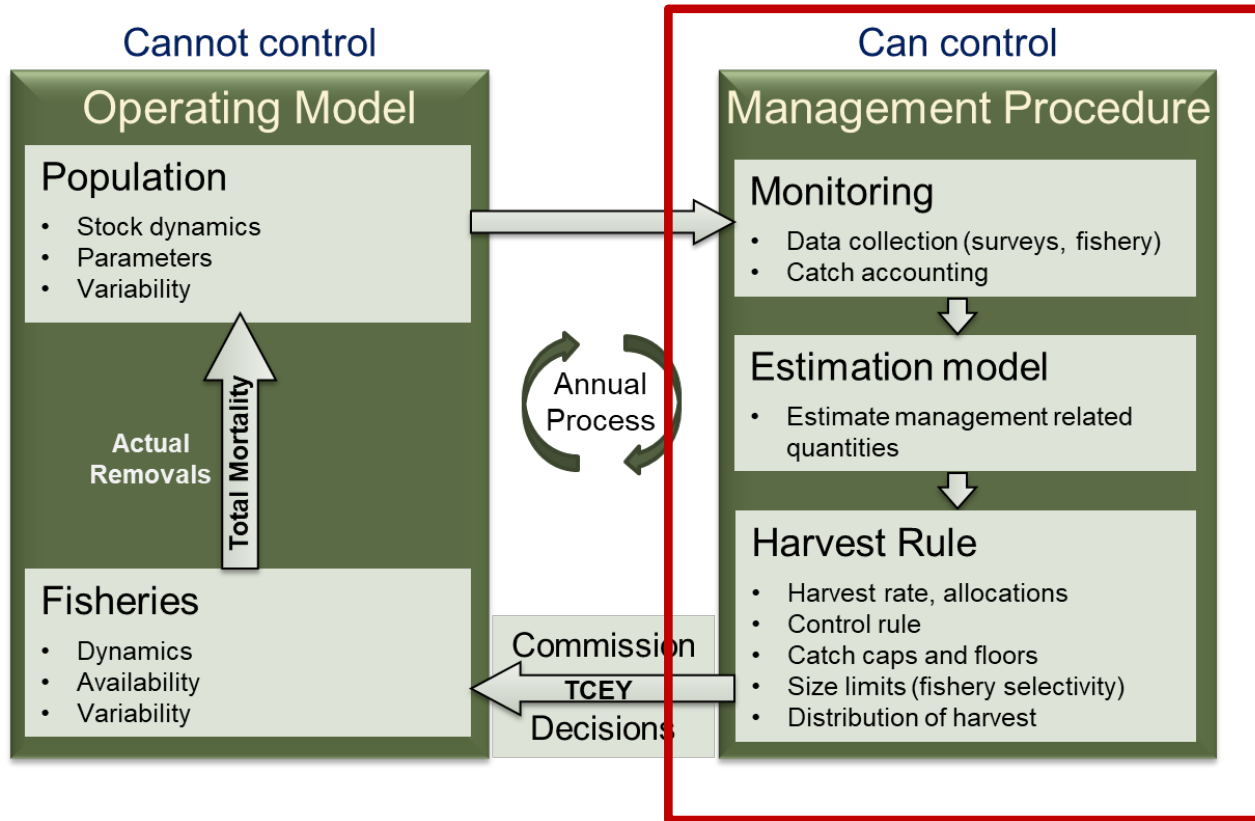
HALIBUT COMMISSION

Management Procedures

Agenda Item 4

IPHC-2020-MSAB016-07

The closed loop framework



Monitoring

- Data generated with error from the OM
 - Indices of abundance (FISS NPUE & commercial WPUE)
 - Catch-at-age
- Data provided at coastwide, Biological Region, and IPHC Regulatory Area levels

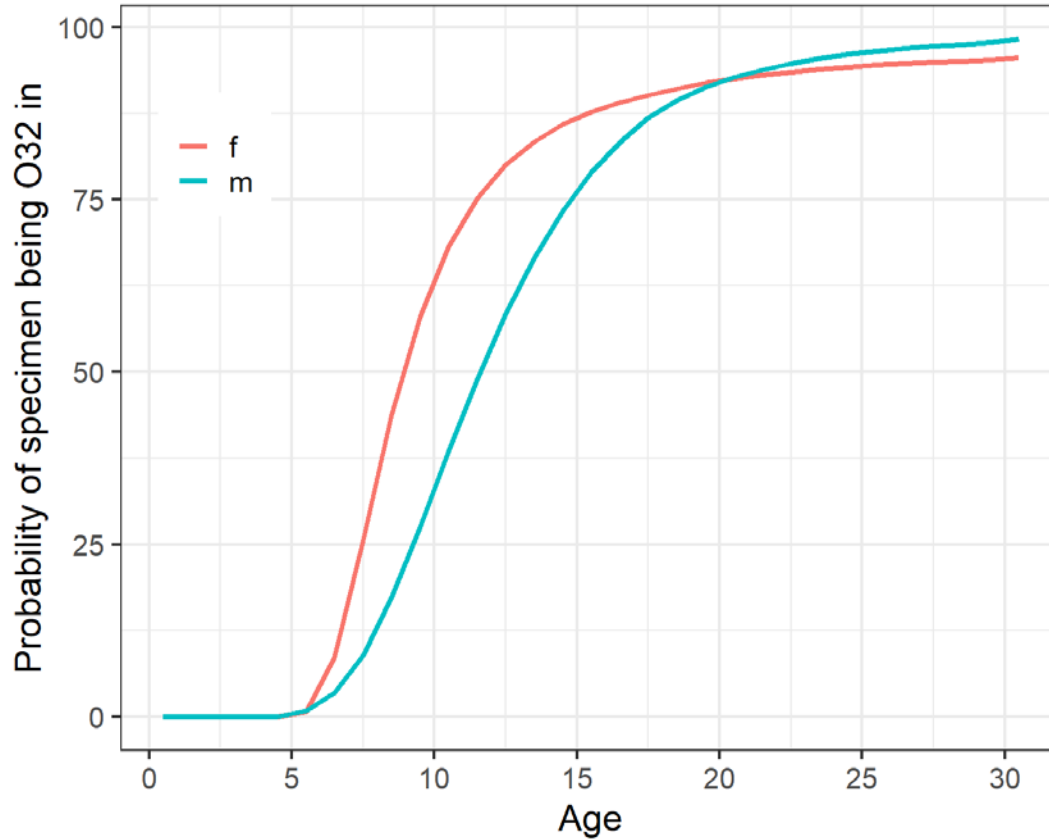


Monitoring

- The Pacific halibut population is modelled in the OM at a Biological Region level.
- Stock distribution is calculated for each region and error is introduced resampling from a lognormal distribution.
- Fixed proportions are used to calculate the stock distribution at a regulatory area level.
- For O32 stock distribution a fixed proportions of length at age is used.
- Catch-at-age data are generated with error for each fishery using a Dirichlet distribution



Probability O32



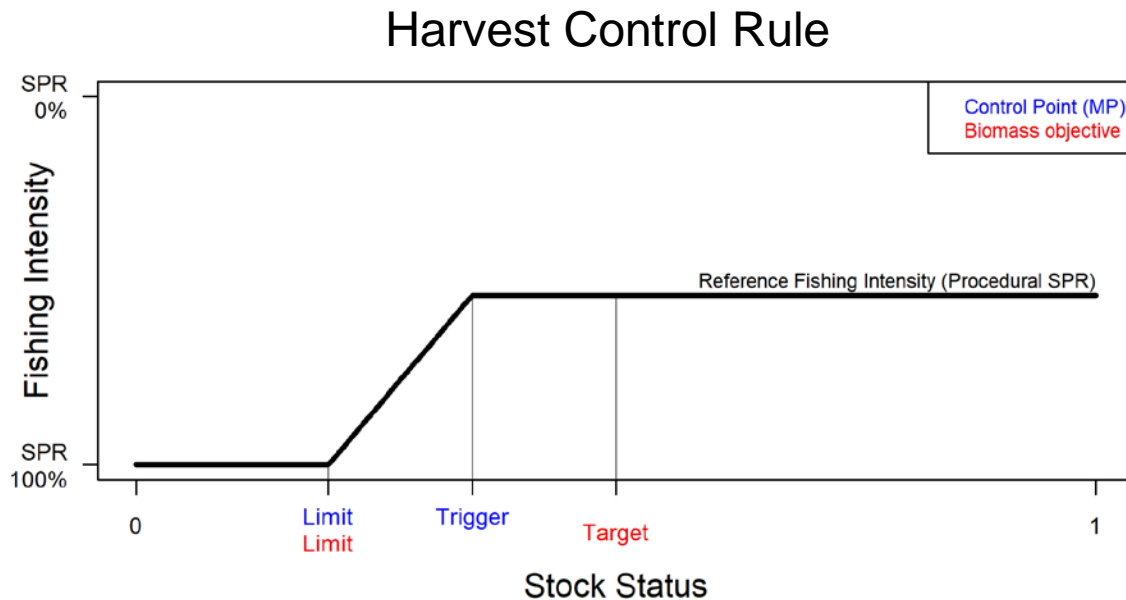
Harvest rule

- The HR is the application of the estimation model output to determine mortality limits for the upcoming year or years.
 1. Coastwide component
 2. Distribution component



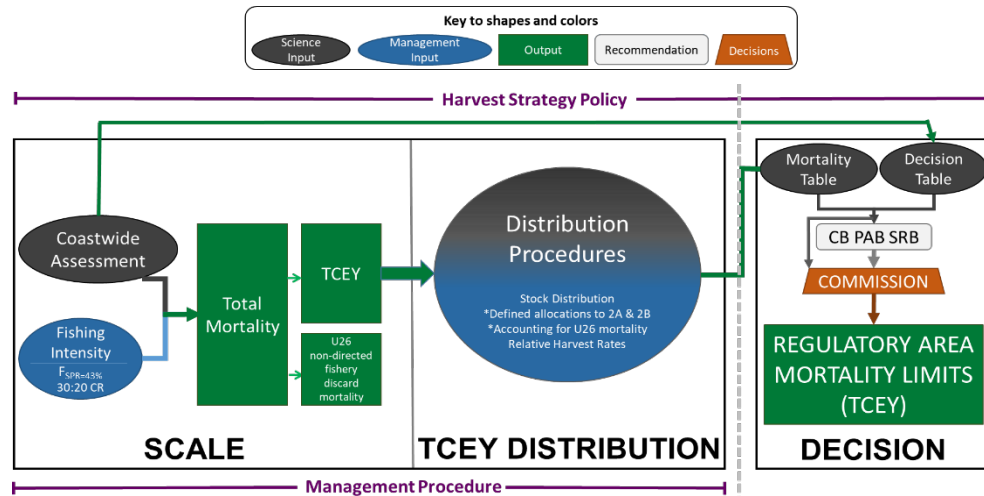
Coastwide Scale (fishing intensity)

- SPR
 - Various values
- Control rule
 - 30:20
- Constraint
 - Maximum change in TCEY of 15%
 - Slow-up, fast-down



IPHC Harvest Strategy Policy

1. Coastwide target fishing intensity (science-based & management-derived)
2. Regional Stock Distribution (science-based & management-derived)
3. Regulatory Area Allocation (science-based & management-derived)
4. Annual Regulatory Area Adjustment (policy-based)

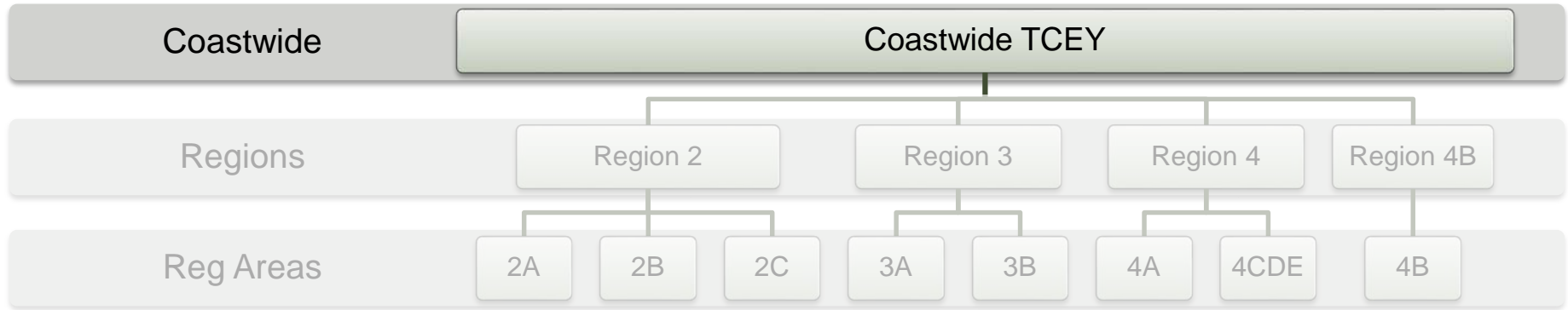


A procedure for distributing the TCEY (2)

1. Coastwide Target Fishing Intensity

Required

- Determine coastwide Total Mortality from Scale MP
- Separate TM into O26 (TCEY) and U26 components

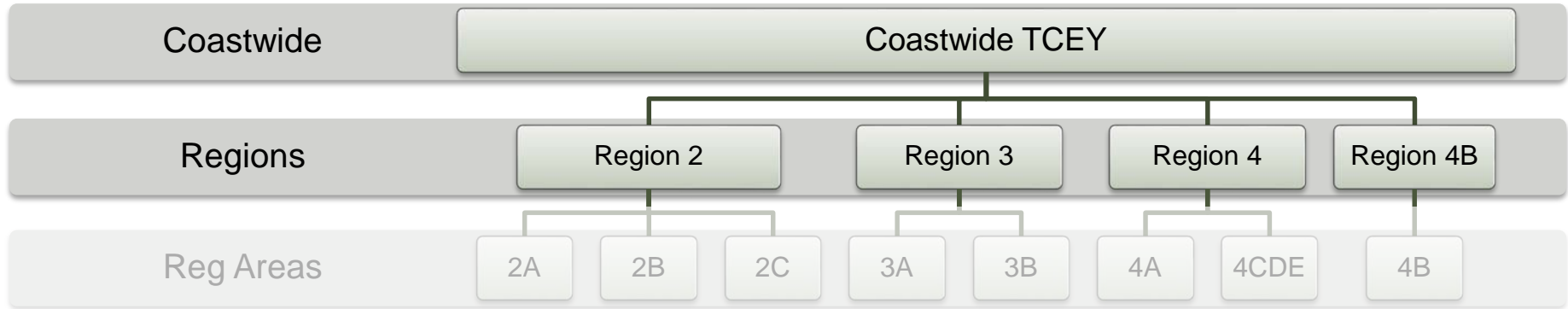


A procedure for distributing the TCEY (3)

2. Regional Stock Distribution

Optional

- Stock distribution using proportion of the stock estimated from the WPUE index.
- Relative fishing intensity to adjust the distribution in account of migration, productivity, etc...
- Regional Allocation adjustment to account for other factors.

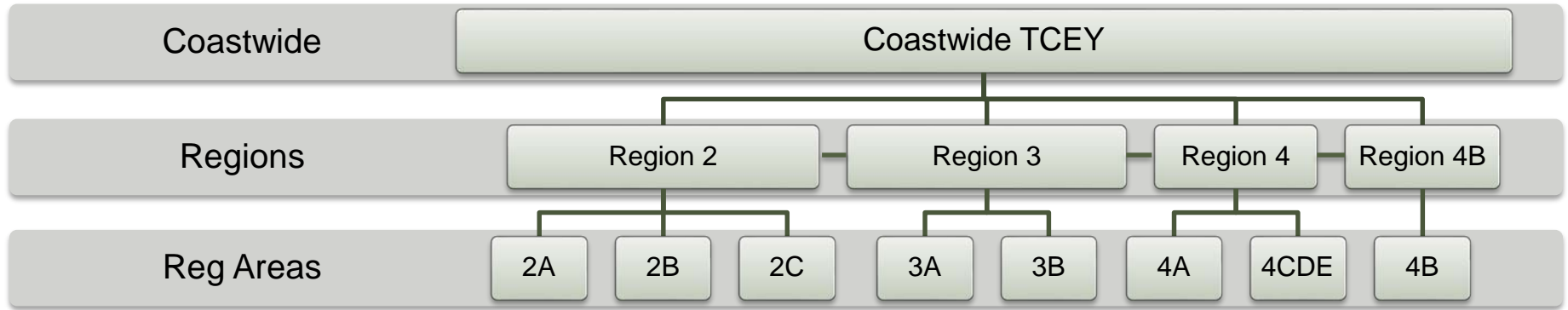


A procedure for distributing the TCEY (4)

3. Regulatory Area Allocation

- Stock distribution using proportion of the stock estimated from the WPUE index.
- Relative harvest rates

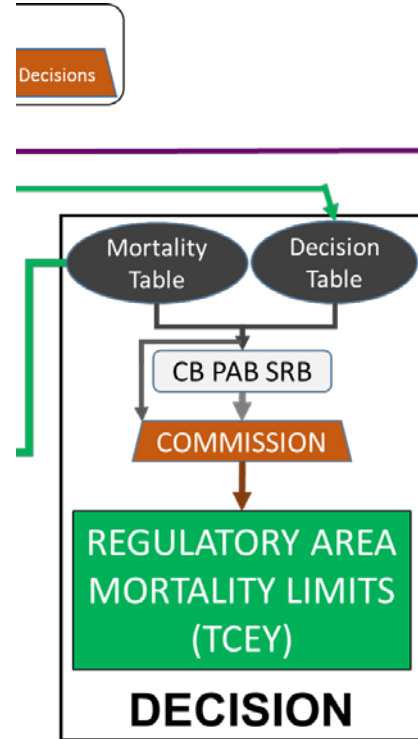
Required



A procedure for distributing the TCEY (5)

4. Annual Regulatory Area Adjustment

- Adjust Regulatory Area TCEY's to account for other factors as needed
- May deviate from the management procedure
 - Will have unpredictable consequences



MPs for evaluation in 2020

MP	Coastwide	Regional	IPHC Regulatory Area	Priority
MP 15-A	SPR 30:20		<ul style="list-style-type: none"> O32 stock distribution Proportional relative harvest rates (1.0 for 2-3A, 0.75 for 3B-4) 1.65 Mlbs floor in 2A Formula percentage for 2B 	1
MP 15-B	SPR 30:20 MaxChange15 %		<ul style="list-style-type: none"> O32 stock distribution Proportional relative harvest rates (1.0 for 2-3A, 0.75 for 3B-4) 1.65 Mlbs floor in 2A Formula percentage for 2B 	1
MP 15-C	SPR 30:20 MaxChange15 %	O32 stock distn Rel HRs: R2, R3=1, R4, R4B=0.75,	<ul style="list-style-type: none"> O32 stock distribution Relative harvest rates not applied 1.65 Mlbs floor in 2A Formula percentage for 2B 	2
... K				

<https://www.iphc.int/uploads/pdf/msab/msab015/iphc-2020-msab015-r.pdf>



MSAB015

- *IPHC-2020-MSAB015-R, para. 42. The MSAB **AGREED** that the following elements of interest for defining constraints on changes in the TCEY, and distribution procedures be considered for the Program of Work in 2020:*
 - *constraints on the change in the TCEY* can be applied annually or over multiple years at the coastwide or IPHC Regulatory Area level. Constraints on the change in TCEY currently considered include a maximum annual change in the TCEY of 15%, a slow-up fast down approach, multi-year mortality limits, and multi-year averages on abundance indices;
 - *indices of abundance in Biological Regions or IPHC Regulatory Area* (e.g. O32 or All sizes from modelled survey results);
 - a *minimum TCEY* for an IPHC Regulatory Area;
 - *defined shares* by Biological Region, Management Zone, or IPHC Regulatory Area;
 - *maximum coastwide fishing intensity* (e.g. SPR equal to 36% or 40%) not to be exceeded when distributing the TCEY;
 - *relative harvest rates* between Biological Regions or IPHC Regulatory Areas.



MP comparison

Element	MP-A	MP-B	MP-C	MP-D	MP-E	MP-F	MP-G	MP-H	MP-I	MP-J	MP-K
maxChange15%		■	■	■	■	■	■	■	■	■	■
max FI buffer (36%)				■							
O32 stock distribution	■	■	■	■	■	■	■	■			
O32 stock distribution (5-year moving avg)										■	
All sizes stock distribution									■		
5-year shares form O32 stock distribution									■		■
Relative harvest rates 1 for 2-3A, 0.75 for 3B-4	■	■		■	■	■	■		■	■	
Relative harvest rates 1 for 2-3, 4A, 4CDE, 0.75 for 4B								■			
1.65 Mlbs floor in 2A	■	■	■	■	■						
Formula percentage for 2B	■	■	■	■							
National Shares (2B=20%)						■					

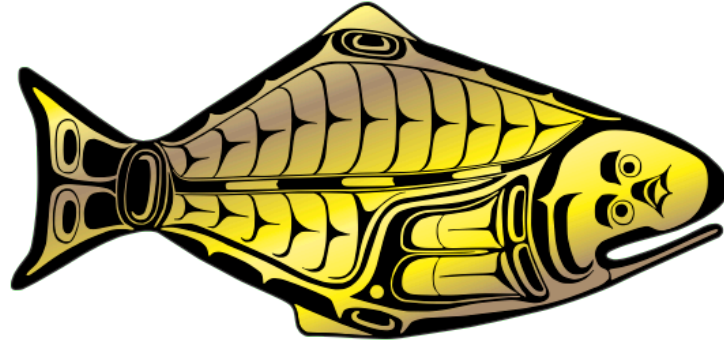


Potential Additional MPs

- Different constraints:
 - MPA and MPG already examine maxChange15%
 - SUFD
 - Fixed 3 years TCEY
 - Combinations
 - At IPHC Regulatory Area level
- MPC modification
 - balancing agreement within region 2 only
- Distribution to Biological Regions using all sizes or O32, and then use fixed proportions for IPHC Reg Areas
- Data-based MPs (i.e. FISS data only)



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