Abundance-based management of Pacific halibut in the Bering Sea

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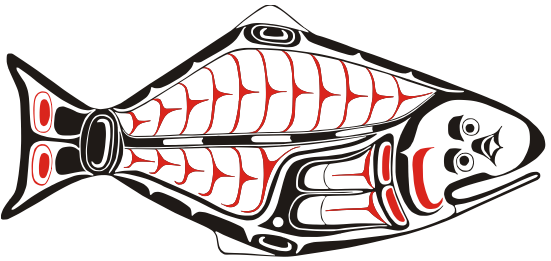
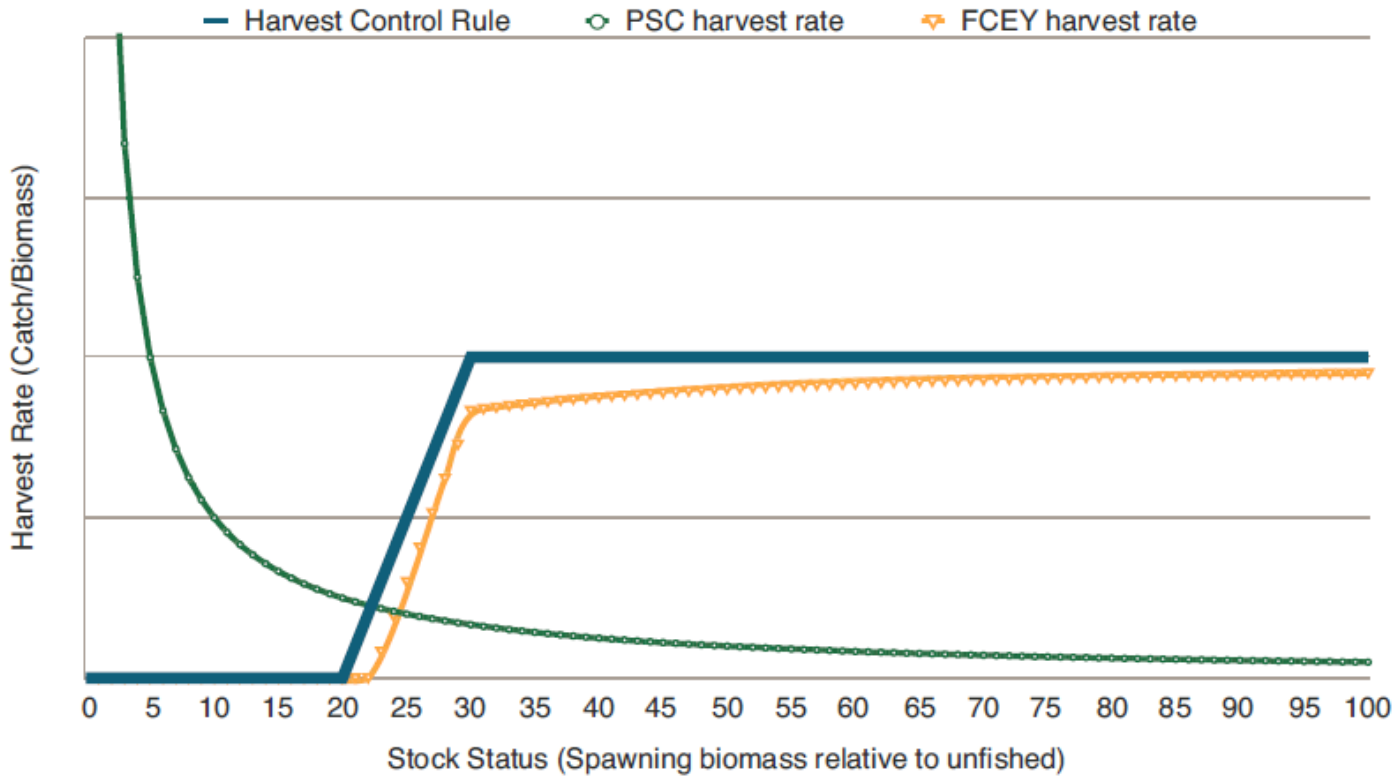


INTERNATIONAL PACIFIC HALIBUT COMMISSION

Background

- Non-directed Pacific halibut capture falls under prohibited species catch (PSC) in NMFS groundfish management
- Has been a fixed amount for many years
  - Taken off the top of the coast-wide TCEY so reduces yield to the directed halibut fisheries
  - As halibut abundance declines, the PSC harvest rate increases
- Inconsistent with NPFMC and IPHC abundance-based management (ABM)



Framework

- IPHC halibut management and NPFMC PSC management in the BSAI FMP operate at different spatial scales because of the distribution and movement of halibut
- The primary issues of ABM PSC management are:
  - The objectives of both groundfish and halibut management
  - The sharing agreement for relative harvest among sectors
  - The starting point for scaling and assessing future changes in the relative levels of harvest sectors
  - The index to which the PSC limits are scaled
  - The harvest control rules used to enact the PSC limit

Council motions

- Retention of halibut bycatch has been prohibited since the BSAI FMP was implemented
- Feb 2014: Council requested a discussion paper
  - Understanding of the status of the BSAI halibut resource
  - Impact of halibut PSC in BSAI on stock, reproductive potential, and short- and long-term yields to directed fishery
  - Sampling and regulatory changes needed for deck sorting
- June 2014:
  - all industry sectors undertake voluntary efforts to reduce halibut mortalities in BSAI by 10% from current 5-year average
  - Amendment 80 sector to develop deck sorting procedures

Council motions

- June 2015:

	2014 PSC limit	PSC limit reduction	2016 PSC limit
Amendment 80 cooperatives	2,325 mt	-25%	1,745 mt
BSAI trawl limited access fisheries	875 mt	-15%	745 mt
Longline fisheries	833 mt	-15%	710 mt
CDQ fisheries	393 mt	-20%	315 mt
TOTAL	4,426 mt	-21%	3,515 mt

- December 2015
  - "a workgroup with Council, NMFS, and IPHC staff to identify and evaluate alternative methods to index halibut PSC limits based on halibut abundance"
- April 2016
  - Provide an updated discussion paper at October 2016 meeting

ABM Working Group (past work)

- Candidate abundance indices
  - Compared bycatch to various indices
  - Compared lengths from various sources
- Identified potential control rules
- Timeline
  - Alternatives by February 2017
  - Then initiate analyses

Index	Strengths	Weaknesses
IPHC coastwide assessment	Comprehensive, annual	One-year lag, Poor index for young halibut
EBS bottom trawl survey	Indexes younger halibut in BS, Annual	A portion of recruitment to the coastwide stocks
Combined surveys	More information that may better index coastwide stock	Some components not annual, Requires development
Integrated model-based index	Combines important aspects of each element	Requires more development and understanding of components

ABM Working Group (Current tasks)

1. Look at historical SPR rates and fishery footprints
2. Can the age 2-4 index from BS survey be combined with older age indices from another survey?
3. Geostatistical model of young fish from GOA and EBS trawl surveys
4. Evaluate combined index from GOA and EBS
5. Investigate integrated index
6. MORE that are being developed

Relation to IPHC harvest policy

- A goal of ABM is to mitigate effects of bycatch mortality on the coastwide spawning stock and directed fisheries
- The current harvest policy is concerned with O26 fish
- Framing this in Spawning Potential Ratio (SPR) would put this in the framework of spawning output
  - And SPR can be partitioned into fisheries footprints
    - The proportion of each fishery on the reduction of spawning potential and reproductive value

Two important aspects to consider

1. Selectivity
   - PSC is often composed of smaller fish (U26)
   - May change with incorporation of technology (e.g., excluders) or behavioral changes by harvesters
   - Important to understand selectivity of PSC in relation to coastwide stock
2. Allocation
   - ABM is getting at this by specifying a PSC limit based on abundance
   - How can this be more integrated with the coastwide IPHC harvest policy
   - How can we evaluate changes among fisheries
     - How much catch from 1 fishery equals one unit of catch from another?
     - Effect on reproductive value (fisheries footprint)
   - MSE would be helpful to better understand allocation

IPHC interests in ABM

- Effect on coastwide stock
- Effect on directed fishery
- Interaction with harvest policy

- The MSE will be a useful tool to investigate PSC limit options