

# C6 ABM DISCUSSION PAPER

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# OVERVIEW OF DISCUSSION PAPER TOPICS

		EBS shelf trawl survey index (t)	
		Low < 130,000	High ≥ 130,000
IPHC setline survey index in Area 4ABCDE (WPUE)	High ≥ 11,000	Medium 1,745 mt  (current limit)	High 2,207 – 2,325 mt  (15% above current limit or 2015 limit)
	Medium 8,000 – 10,999	Low 1,309 – 1,483 mt  (15-25% below current)	Medium 1,745 mt  (current limit)
	Low < 8,000	Very Low 1,047 – 1,222 mt  (30-40% below current)	Low 1,309 – 1,483 mt  (15-25% below current)

3 items requested by Council  
(February 2020)

1. Evaluation of lookup table for setting PSC limits
2. Consideration of performance standard tied to status quo limit
3. CDQ compensation concept



# LOOK UP TABLE FOR SETTING PSC LIMITS

**Table 2-1 Council's proposed look-up table for the A80 halibut PSC limit. IPHC Setline survey values in weight-per-unit-effort (WPUE) while EBS trawl survey is in metric tons (t)**

		EBS shelf trawl survey index (t)	
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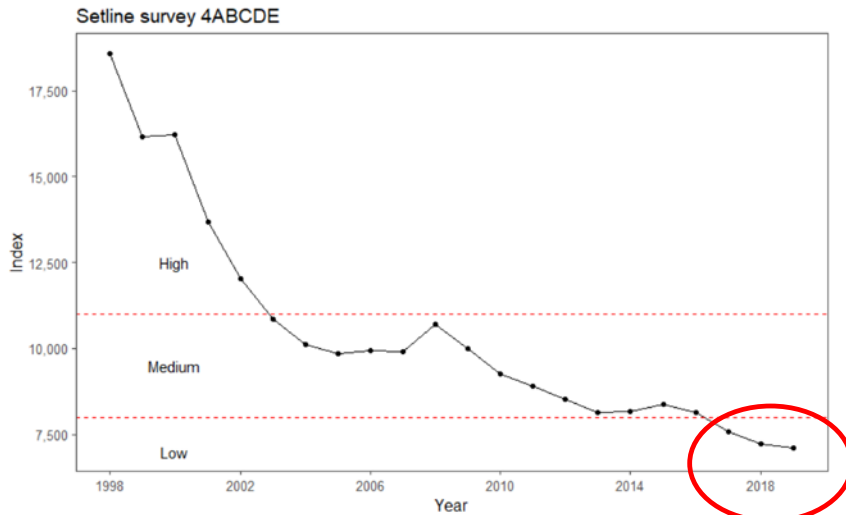


Figure 2-3 Setline survey 4ABCDE Index 1998-2019 (as reported in February 2020). Red line indicates breakpoints of Low, Medium, and High states as proposed in look-up table.

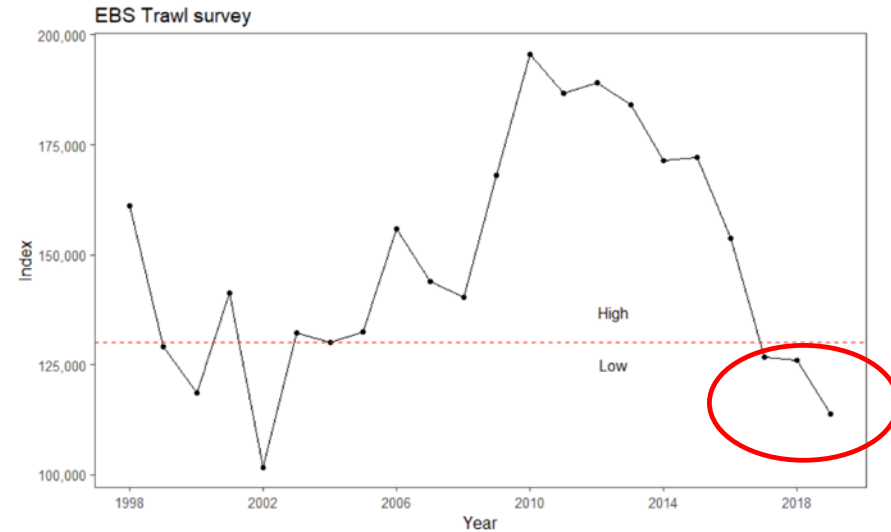


Figure 2-2 EBS trawl survey index 1998-2019 (as reported in February 2020). Red line indicates breakpoint between Low and High states as proposed in look-up table.



# HISTORICAL CALCULATION OF LIMITS AND MORTALITY BASED ON LOOK UP TABLE AND SURVEYS

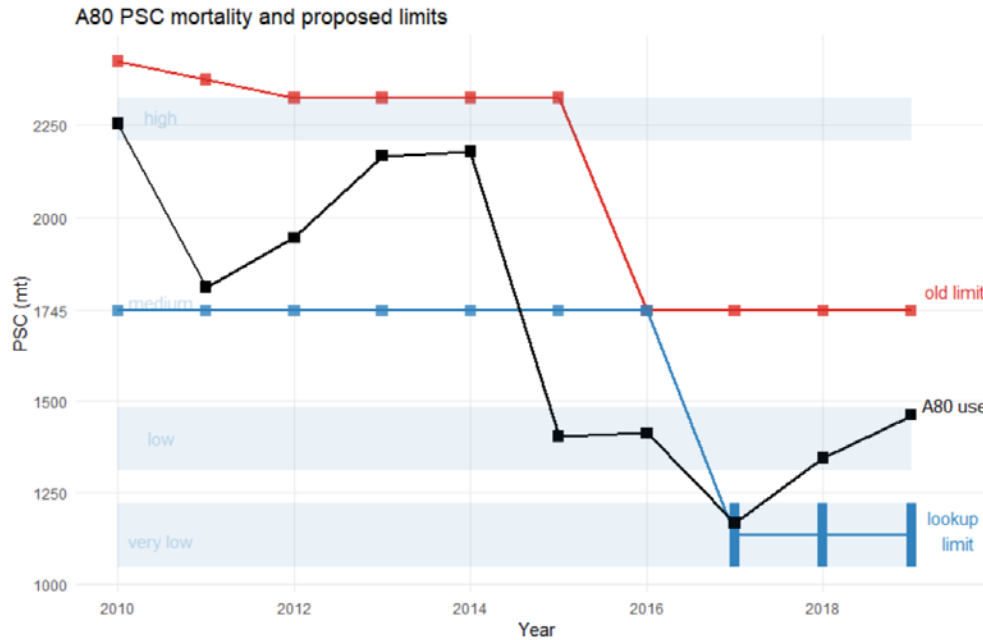


Figure 2-4 A80 PSC mortality ('A80 use'), existing PSC limits ('old limit'), and new limits that would have been applied based on survey indices as proposed in look-up table. Light blue bands show look-up table states for reference.

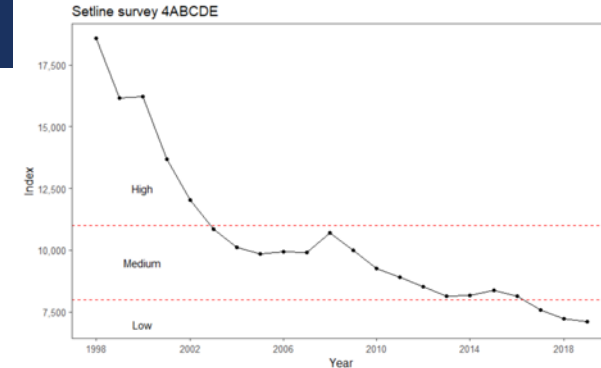


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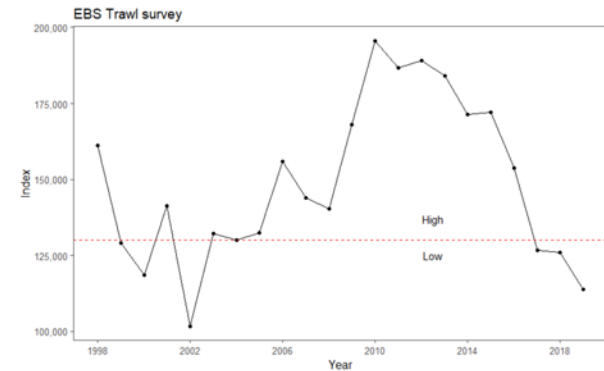


Figure 2-2 EBS trawl survey index 1998-2019 (as reported in February 2020). Red line indicates breakpoint between Low and High states as proposed in look-up table.



**Table 2-2 Historical survey indices and corresponding PSC limit states (High/Medium/Low/VeryLow) based on “Look-up Table,” PSC limits, and A80 PSC use (highlighted cells = A80 sector would/could have reached the limit)**

Year	Setline Survey 4ABCDE		EBS Trawl Survey		Look-up Table State	“New” PSC Limit			
	Index (WPUE)	State	Index (mt)	State			Limit	Encounter	Mortality
1998	18,577	High	161,256	High	High	2,207 – 2,325			
1999	16,155	High	129,116	Low	Medium	1,745			
2000	16,207	High	118,677	Low	Medium	1,745			
2001	13,681	High	141,219	High	High	2,207 – 2,325			
2002	12,037	High	101,706	Low	Medium	1,745			
2003	10,862	Medium	132,151	High	Medium	1,745			
2004	10,128	Medium	130,075	High	Medium	1,745			
2005	9,856	Medium	132,518	High	Medium	1,745			
2006	9,932	Medium	155,964	High	Medium	1,745			
2007	9,922	Medium	143,903	High	Medium	1,745			
2008	10,714	Medium	140,247	High	Medium	1,745			
2009	9,989	Medium	168,102	High	Medium	1,745			
							<b>Amendment 80 PSC (mt)</b>		
							<b>Limit</b>	<b>Encounter</b>	<b>Mortality</b>
2010	9,271	Medium	195,535	High	Medium	1,745	2,425	2,823	2,254
2011	8,896	Medium	186,666	High	Medium	1,745	2,375	2,277	1,810
2012	8,539	Medium	189,000	High	Medium	1,745	2,325	2,469	1,944
2013	8,133	Medium	183,989	High	Medium	1,745	2,325	2,677	2,166
2014	8,173	Medium	171,427	High	Medium	1,745	2,325	2,667	2,178
2015	8,385	Medium	172,237	High	Medium	1,745	2,325	1,719	1,404
2016	8,134	Medium	153,704	High	Medium	1,745	1,745	1,965	1,412
2017	7,583	Low	126,684	Low	Very Low	1,047 – 1,222	1,745	1,976	1,167
2018	7,228	Low	125,957	Low	Very Low	1,047 – 1,222	1,745	2,555	1,343
2019	7,104	Low	113,855	Low	Very Low	1,047 – 1,222	1,745	3,067	1,461



**Table 2-3 Comparison of survey index statistics with proposed breakpoints**

Survey	Years	Survey Index Statistics				Proposed Breakpoints		
		Average	25th percentile	Median	75th percentile	Low	Medium	High
Setline	1998-2019	10,432	8,226	9,889	10,825	< 8,000	8,000 – 10,999	≥ 11,000
	2010-2019	8,145	7,721	8,154	8,501			
EBS Trawl	1998-2019	148,818	129,356	142,561	170,596	< 130,000	NA	≥ 130,000
	2010-2019	161,905	133,439	171,832	185,997			

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	Medium 8,000 – 10,999	Low 1,309 – 1,483 mt  (15-25% below current)	Medium 1,745 mt  (current limit)
	Low < 8,000	Very Low 1,047 – 1,222 mt  (30-40% below current)	Low 1,309 – 1,483 mt  (15-25% below current)





# SURVEY DATA UPDATES AND PSC LIMIT VOLATILITY

Table 2-5 Relative changes in the IPHC setline survey 'state' when using 2019 data versus 2018 data for use in the proposed look-up table (Table 2-1)

Year	Setline Survey 4ABCDE (2019)		EBS Trawl Survey		Using 2019 setline index		Setline Survey 4ABCDE (2018)		Using 2018 setline index	
	Index (mt)	Category	Index (mt)	Category	Combined Category	New Limit	Index (mt)	Category	Combined Category	New Limit
1998	18,577	High	161,256	High	High	2,207-2,325	18,502	High	High	2,207-2,325
1999	16,155	High	129,116	Low	Medium	1,745	16,201	High	Medium	1,745
2000	16,207	High	118,677	Low	Medium	1,745	16,203	High	Medium	1,745
2001	13,681	High	141,219	High	High	2,207-2,325	13,780	High	High	2,207-2,325
2002	12,037	High	101,706	Low	Medium	1,745	12,104	High	Medium	1,745
2003	10,862	Medium	132,151	High	Medium	1,745	10,866	Medium	Medium	1,745
2004	10,128	Medium	130,075	High	Medium	1,745	9,987	Medium	Medium	1,745
2005	9,856	Medium	132,518	High	Medium	1,745	9,550	Medium	Medium	1,745
2006	9,932	Medium	155,964	High	Medium	1,745	9,802	Medium	Medium	1,745
2007	9,922	Medium	143,903	High	Medium	1,745	9,673	Medium	Medium	1,745
2008	10,714	Medium	140,247	High	Medium	1,745	10,264	Medium	Medium	1,745
2009	9,989	Medium	168,102	High	Medium	1,745	9,834	Medium	Medium	1,745
2010	9,271	Medium	195,535	High	Medium	1,745	9,146	Medium	Medium	1,745
2011	8,896	Medium	186,666	High	Medium	1,745	8,669	Medium	Medium	1,745
2012	8,539	Medium	189,000	High	Medium	1,745	8,403	Medium	Medium	1,745
2013	8,133	Medium	183,989	High	Medium	1,745	7,989	Low	Low	1309-1483
2014	8,173	Medium	171,427	High	Medium	1,745	7,995	Low	Low	1309-1484
2015	8,385	Medium	172,237	High	Medium	1,745	8,130	Medium	Medium	1,745
2016	8,134	Medium	153,704	High	Medium	1,745	7,826	Low	Low	1309-1483
2017	7,583	Low	126,684	Low	Very Low	1,047-1,222	7,250	Low	Very_Low	1,047
2018	7,228	Low	125,957	Low	Very Low	1,047-1,222	7,141	Low	Very_Low	1,047
2019	7,104	Low	113,855	Low	Very Low	1,047-1,222				



# PSC LIMIT VOLATILITY

2011-2016: larger survey differences = same PSC

8,896 - 8,134=762  
Medium

186,666 - 153,704 =32,962  
High

Year	Setline Survey 4ABCDE (2019)		EBS Trawl Survey		Using 2019 setline index	
	Index (mt)	Category	Index (mt)	Category	Combined Category	New Limit
2011	8,896	Medium	186,666	High	Medium	1,745
2012	8,539	Medium	189,000	High	Medium	1,745
2013	8,133	Medium	183,989	High	Medium	1,745
2014	8,173	Medium	171,427	High	Medium	1,745
2015	8,385	Medium	172,237	High	Medium	1,745
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2018	7,228	Low	125,957	Low	Very Low	1,047-1,222
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PSC=1,745



# PSC LIMIT VOLATILITY

2011-2016: larger survey differences = same PSC

2016-2017: smaller survey differences = different PSC

8,896 - 8,134=762  
Medium

186,666 - 153,704 =32,962  
High

8,134 - 7,583=551  
Medium → Low

153,704 - 126,684=27,020  
High → Low

Year	Setline Survey 4ABCDE (2019)		EBS Trawl Survey		Using 2019 setline index	
	Index (mt)	Category	Index (mt)	Category	Combined Category	New Limit
2011	8,896	Medium	186,666	High	Medium	1,745
2012	8,539	Medium	189,000	High	Medium	1,745
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2017	7,583	Low	126,684	Low	Very Low	1,047-1,222
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2019	7,104	Low	113,855	Low	Very Low	1,047-1,222

PSC=1,745

PSC=1,047-1,222



# EFFECT OF TERMINAL SURVEY YEAR

**Table 2-5 Relative changes in the IPHC setline survey 'state' when using 2019 data versus 2018 data for use in the proposed look-up table (Table 2-1)**

Year	Setline Survey 4ABCDE (2019)		EBS Trawl Survey		Using 2019 setline index		Setline Survey 4ABCDE (2018)		Using 2018 setline index	
	Index (mt)	Category	Index (mt)	Category	Combined Category	New Limit	Index (mt)	Category	Combined Category	New Limit
2012	8,539	Medium	189,000	High	Medium	1,745	8,403	Medium	Medium	1,745
2013	8,133	Medium	183,989	High	Medium	1,745	7,989	Low	Low	1309-1483
2014	8,173	Medium	171,427	High	Medium	1,745	7,995	Low	Low	1309-1484
2015	8,385	Medium	172,237	High	Medium	1,745	8,130	Medium	Medium	1,745
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2019	7,104	Low	113,855	Low	Very Low	1,047-1,222				

- Setline index changed when 2019 data added
- New index values would have changed the survey 'state' and PSC limit in 2013, 2014, 2016 (highlighted in yellow)



# POLICY CHOICES IN LOOK UP TABLE

- Dimensions of look-up table
- Breakpoints
- PSC limit values



# PSC LIMITS EMPLOYING BREAKPOINTS IN BSAI

- **Chinook salmon bycatch management program (A91/110)**
  - Lower limits in years of 'low Chinook abundance'
  - Threshold for determination based on natural break in data (3-River Index and western AK adult equivalents)
  - 2 issues when re-examined in 2018:
    - Natural break in data less obvious when updated AEQ are included
    - New model for Kuskokwim run which when updated historically indicated different perception of low years then when A110 final action taken
- **Bristol Bay red king crab and EBS Tanner crab PSC limits**
  - BBRKC
    - Stairsteps set based on threshold in the State harvest strategy
  - Tanner crab
    - Stairsteps negotiated by industry workgroup based on historical bycatch levels



# PSC LIMIT FROM LOOK UP TABLE IMPLEMENTATION ISSUES

- Timing issues with specifications process
  - October/December Council specifications
  - November interim/January annual IPHC meetings and data availability
- Setting annual PSC limits in the absence of 1 or more years of survey data
  - Council would need to indicate what data (or average thereof) should be used in the absence of a survey year(s)



# A80 SECTOR HALIBUT CATCH (ENCOUNTER), MORTALITY (PSC)

- Both surveys display downward abundance trends
- Halibut catch and mortality (PSC) follow similar trajectories from 2010 through 2015
- Since 2015 halibut catch has increased at a greater rate than mortality
  - changes in catch accounting and fish handling procedures described in the DEIS

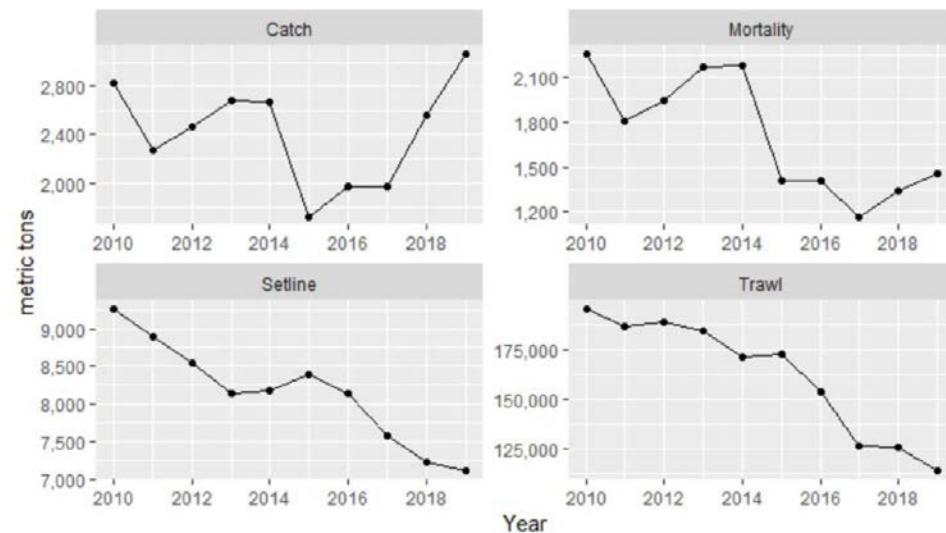


Figure 2-5 A80 halibut catch and mortality (top panels) and setline and trawl survey indices (bottom panels), 2010 through 2019





# PSC ENCOUNTER BY TARGET

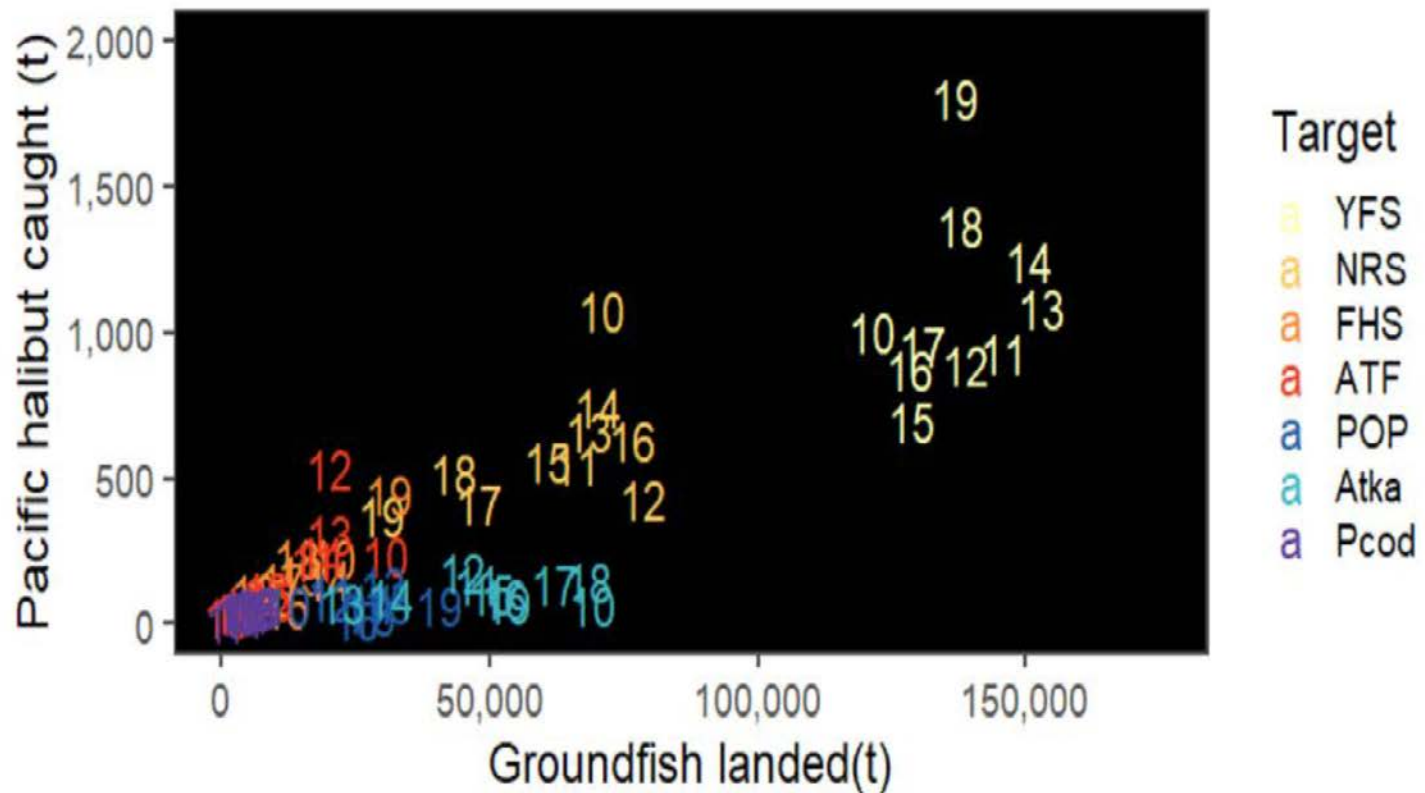
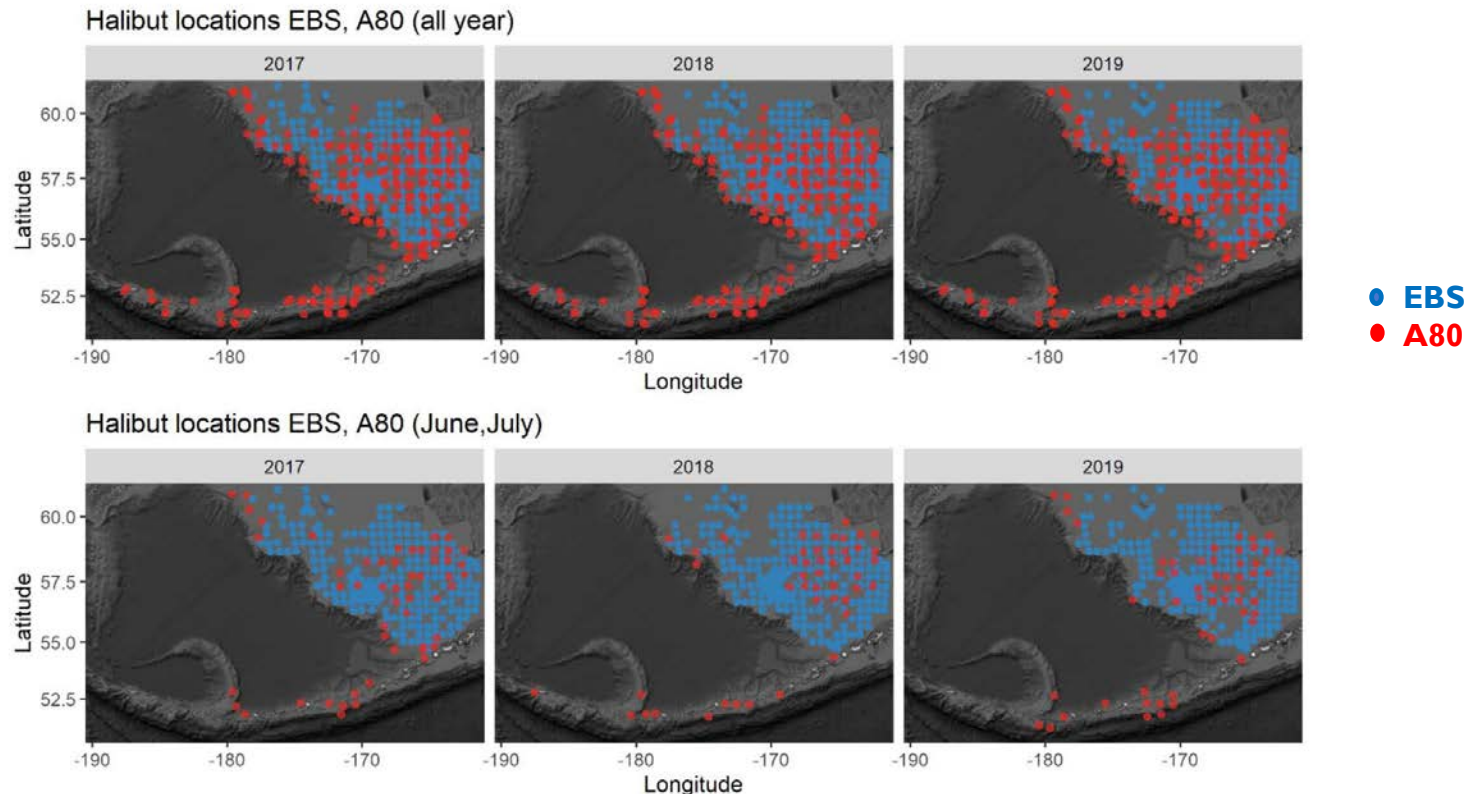


Figure 2-7 A80 sector bycatch of Pacific halibut (t) versus groundfish catch by target species, 2010 through 2019

# SPATIAL OVERLAP: A80 FISHERY, EBS SURVEY



**Figure 2-9** ADF&G statistical areas where halibut PSC occurred in the A80 fishery overlaid on areas where the EBS trawl survey (EBS) encountered halibut, 2017 through 2019. Top panel shows areas with A80 halibut catch throughout the year; bottom panel show areas with A80 halibut catch for the months during which the EBS trawl survey typically occurs.



# PERFORMANCE STANDARD

- Static “base” PSC limit of 1,745 t (status quo)
- Performance standard thresholds
  - Option 1: 80% of 1,745 t (1,396 t)
  - Option 2: 90% of 1,745 t (1,571 t)
- If threshold met in 3 of most recent 5 years
  - Full PSC limit 1,745 t available
- If threshold not met, available PSC is
  - Option 1: 80% (1,396 t)
  - Option 2: 90% (1,571 t)
- Performance standard applies only when IPHC Area 4CDE directed fishery catch limit <2 mil lbs



# PERFORMANCE STANDARD

## Option 1: 80% of 1,745 t (1,396t)

- Performance standard not met in any years
  - but does not apply in 2019 (catch limit > 2 mil lbs)

A80 PSC Mortality, limit and performance standard

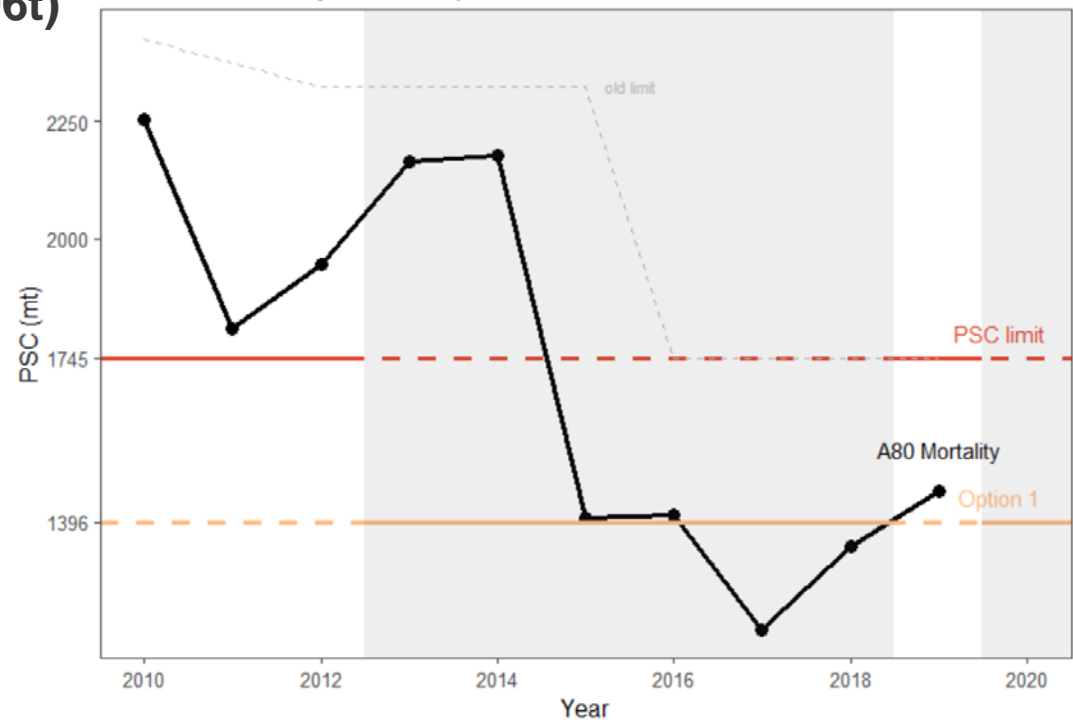


Figure 3-2 A80 PSC mortality and potential PSC limits under performance standard annual threshold Option 1. Grey box indicates years when 4CDE TAC was less than 2 million pounds (performance standard could apply). Solid red and orange lines indicate PSC limit that would have been applied based on the performance standard.



# PERFORMANCE STANDARD

## Option 2: 90% of 1,745 t (1,571 t)

- Performance standard met 2015-2019
  - Full limit applies in 2018-2020

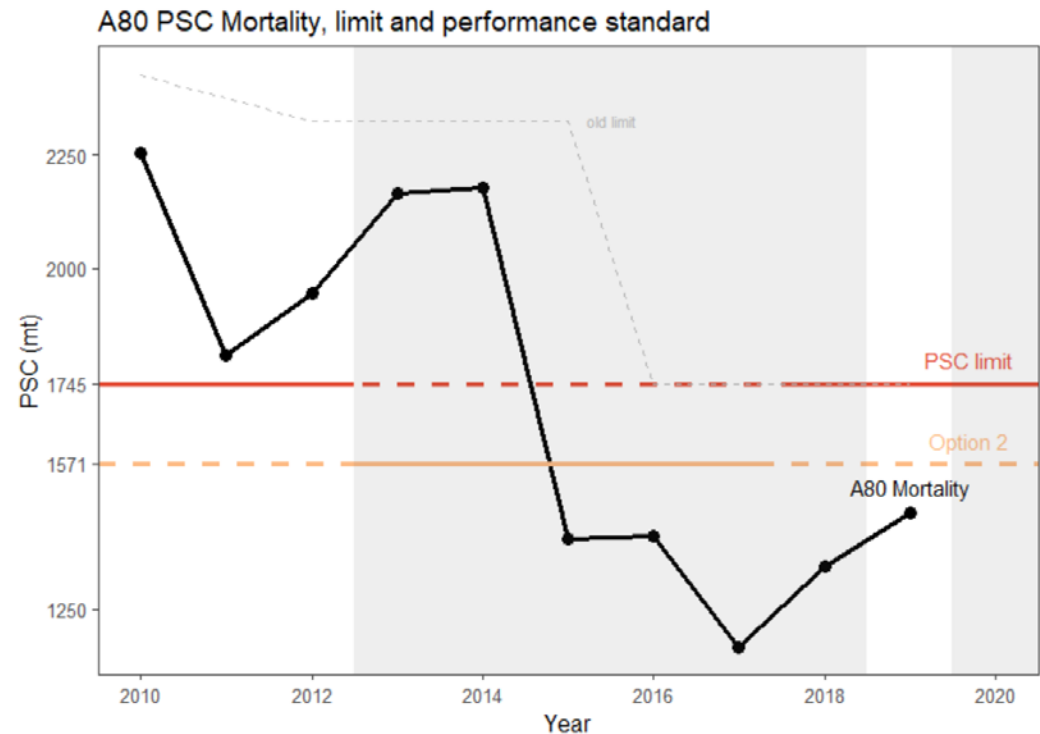


Figure 3-3 A80 PSC mortality and potential PSC limits under performance standard annual threshold Option 2. Grey box indicates years when 4CDE TAC was less than 2 million pounds (performance standard could apply). Solid red and orange lines indicate PSC limit that would have been applied based on the performance standard.



# PERFORMANCE STANDARD

- Threshold could effectively codify recent achievements or drive further reductions

**Table 3-2 A80 Halibut PSC mortality (t) and total groundfish catch (1,000 t), 2010 through 2020\***

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020*
A80 PSC	2,254	1,810	1,944	2,166	2,178	1,404	1,412	1,167	1,343	1,461	646
% of 80% Std.	161%	130%	139%	155%	156%	101%	101%	84%	96%	105%	46%
% of 90% Std.	143%	115%	124%	138%	139%	89%	90%	74%	85%	93%	41%
A80 GF Catch	305.2	302.2	307.4	306.8	308.0	289.2	298.4	278.8	290.2	288.3	-

\* 2020 year to date through August 4, 2020

- Limitations of using past performance to project future PSC use
- Heterogeneous effects within sector



# CHINOOK SALMON PERFORMANCE STANDARD IN EBS POLLOCK FISHERY

- Overall sector level PSC limits and an annual threshold  $<$ PSC limit
  - Annual threshold intended to reduce bycatch at all levels of encounters
  - To access full PSC limit cannot exceed the annual threshold  $>$  2x in a rolling 7 years [**Performance Standard**]
  - If a sector fails this performance standard it's PSC limit in all years will be fixed at the lower level
- Performance standard is defined in regulation and tied to operation under the Incentive Plan Agreements (IPA) proposed by industry.
- IPAs are required to report annually to the Council on specific performance related to measures that are intended to be included within the structure of each IPA
  - Including salmon excluders, vessel level incentives, rolling hot spots etc.



# GOA NON-POLLOCK CHINOOK PERFORMANCE STANDARD

$$7,500 \text{ Chinook} = 3,600 \text{ CP} + (2,700 \text{ NRPCV} + 1,200 \text{ RPCV})$$

48%
36%
16%

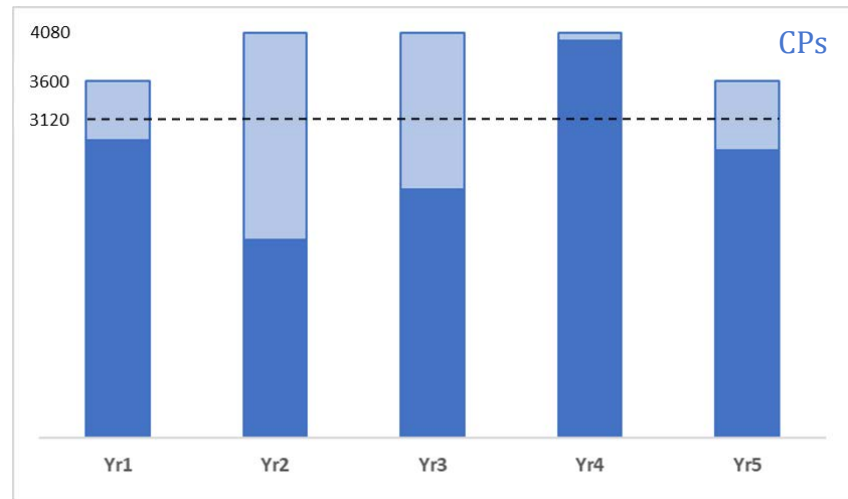
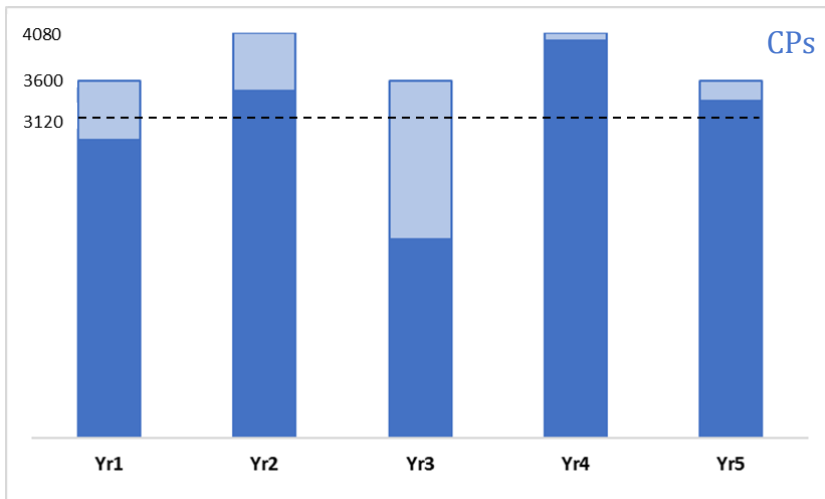
Threshold: @ 6,500 Chinook = 3,120 + (2,340 + 1,200)

Δ480
Δ360

Limit w/Buffer: **CP = 4,080**    **NRPCV = 3,060**

Example: If Yr1 PSC < 3,120 then Yr2 Limit = 4,080

Not possible for avg. over 2 consecutive yrs to exceed 3,600:  $\frac{3,119 + 4,080}{2} < 3,600$





# PERFORMANCE STANDARD: IMPLEMENTATION

- Motion proposes structure as static limit (1,745 t) and reductions from there
- Might not modify A80 PSC limit until some years post-implementation
- Should not impair IPHC's ability to set 4CDE catch limits
- Not likely to substantially alter NMFS inseason management or A80 sector operations during the first month of the A80 year
- *If combined with a Look-Up Table*, analysts assume that historical attainment RE: "3 out of 5 years" would not be revised if later abundance indices dictate that the Look-Up Table has shifted to a different state

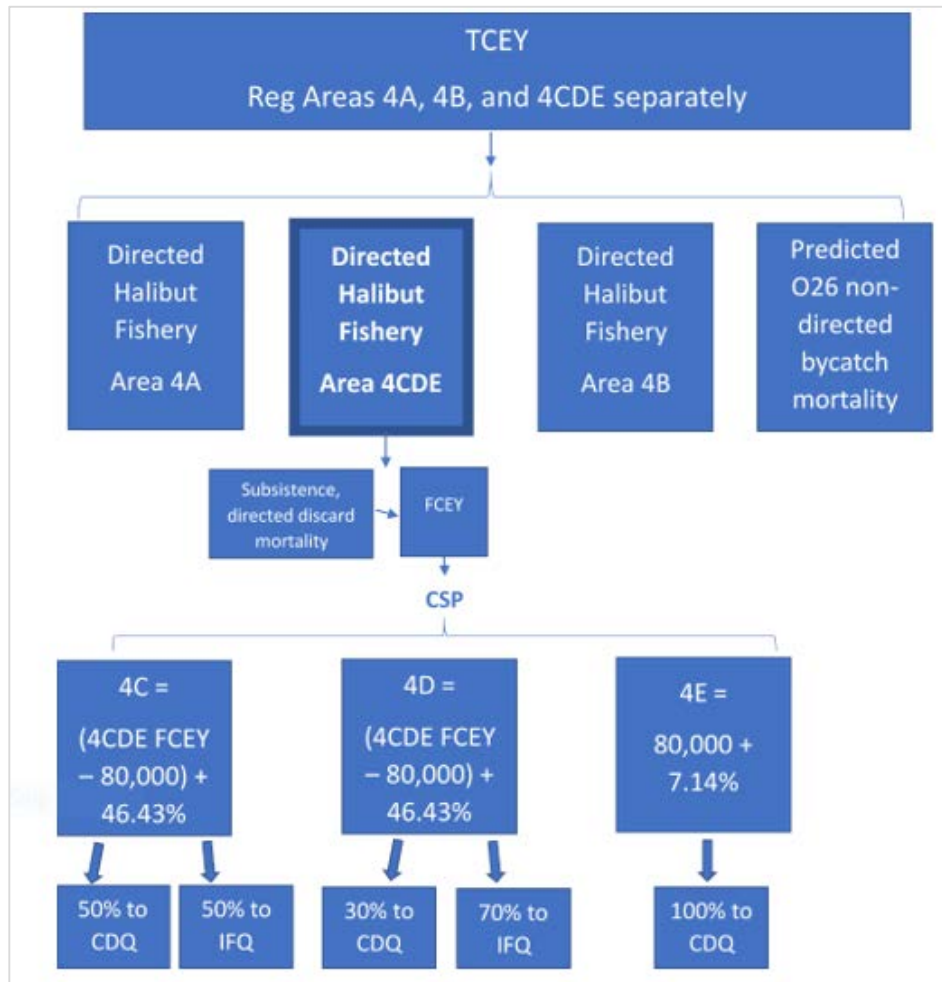


# CDQ COMPENSATION

- Intent to shift A80 PSC to Area 4CDE CDQ directed halibut as directly as possible, under certain circumstances
- Proposal maintains a static “base” PSC limit of 1,745 mt
- Assumed that proposed A80 PSC limit reduction per amount 4CDE is below 1 million pounds is “progressive”



# CDQ COMPENSATION



Year	% O26 bycatch by weight	
	Straight	Weighted
2010	55.6%	34.2%
2011	64.7%	43.0%
2012	62.5%	50.9%
2013	61.6%	52.4%
2014	63.3%	51.5%
2015	50.0%	38.4%
2016	65.7%	28.2%
2017	70.2%	46.3%
2018	62.5%	49.6%
2019	75.8%	60.5%
Average 2010-2019	69.5%	52.1%

Table 4-3

Figure 4-I



# CDQ COMPENSATION

**Table 4-1 Area 4CDE catch limit and amount allocated to CDQ groups (1,000 lbs.), 2010 through 2019**

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
4CDE Catch Limit	3,580	3,720	2,465	1,982	1,285	1,285	1,660	1,700	1,580	2,040	1,730
4CDE CDQ Reserve	1,630	1,692	1,136	951	569	569	780	798	700	948	811
% CDQ	46%	45%	46%	48%	44%	44%	47%	47%	44%	46%	47%

**Table 4-2 Area 4CDE halibut catch limits (total, CDQ) under proposed transfer mechanism when IPHC sets 4CDE at or below 1 million net pounds**

Scenario		Adjusted (lbs.)		A80 PSC Usage	
4CDE Limit (lbs.)	A80 PSC Limit (t)	4CDE Limit +	4CDE CDQ Reserve	Year	Tons
1,000,000	1,745	1,000,000	460,000	2010	2,254
900,000	1,695	950,000	437,000	2011	1,810
800,000	1,645	900,000	414,000	2012	1,944
700,000	1,595	850,000	391,000	2013	2,166
600,000	1,545	800,000	368,000	2014	2,178
500,000	1,495	750,000	345,000	2015	1,404
400,000	1,445	700,000	322,000	2016	1,412
300,000	1,395	650,000	299,000	2017	1,167
200,000	1,345	600,000	276,000	2018	1,343
100,000	1,295	550,000	253,000	2019	1,461



# CDQ COMPENSATION

**Table 4-1 Area 4CDE catch limit and amount allocated to CDQ groups (1,000 lbs.), 2010 through 2019**

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
4CDE Catch Limit	3,580	3,720	2,465	1,982	1,285	1,285	1,660	1,700	1,580	2,040	1,730
4CDE CDQ Reserve	1,630	1,692	1,136	951	569	569	780	798	700	948	811
% CDQ	46%	45%	46%	48%	44%	44%	47%	47%	44%	46%	47%

**Table 4-2 Area 4CDE halibut catch limits (total, CDQ) under proposed transfer mechanism when IPHC sets 4CDE at or below 1 million net pounds**

Scenario		Adjusted (lbs.)		A80 PSC Usage	
4CDE Limit (lbs.)	A80 PSC Limit (t)	4CDE Limit +	4CDE CDQ Reserve	Year	Tons
1,000,000	1,745	1,000,000	460,000	2010	2,254
900,000	1,695	950,000	437,000	2011	1,810
800,000	1,645	900,000	414,000	2012	1,944
700,000	1,595	850,000	391,000	2013	2,166
600,000	1,545	800,000	368,000	2014	2,178
500,000	1,495	750,000	345,000	2015	1,404
400,000	1,445	700,000	322,000	2016	1,412
300,000	1,395	650,000	299,000	2017	1,167
200,000	1,345	600,000	276,000	2018	1,343
100,000	1,295	550,000	253,000	2019	1,461



# CDQ COMPENSATION

Other issues:

- Council/NMFS does not have the authority to accommodate the request absent Congressional action
- Implementation: May require inseason adjustment to A80 PSC limit after IPHC Annual Meeting (similar to Performance Standard)
- General considerations when linking impact of PSC reduction to directed halibut fishery catch



# ACTION FOR COUNCIL AT THIS MEETING

- DEIS
  - Consider purpose and need revisions as necessary
  - Provide input on alternatives interpretation or revisions
- Discussion paper
  - Consider incorporation of any of the concepts into the alternatives set for DEIS or as a separate analysis
  - Further development of any of the concepts as a separate action

