

C-2 BSAI HALIBUT ABM OF A80 PSC LIMIT

Presenters: Diana Stram, Anna Henry, Mike Downs

Advisory Panel
December 2, 2021



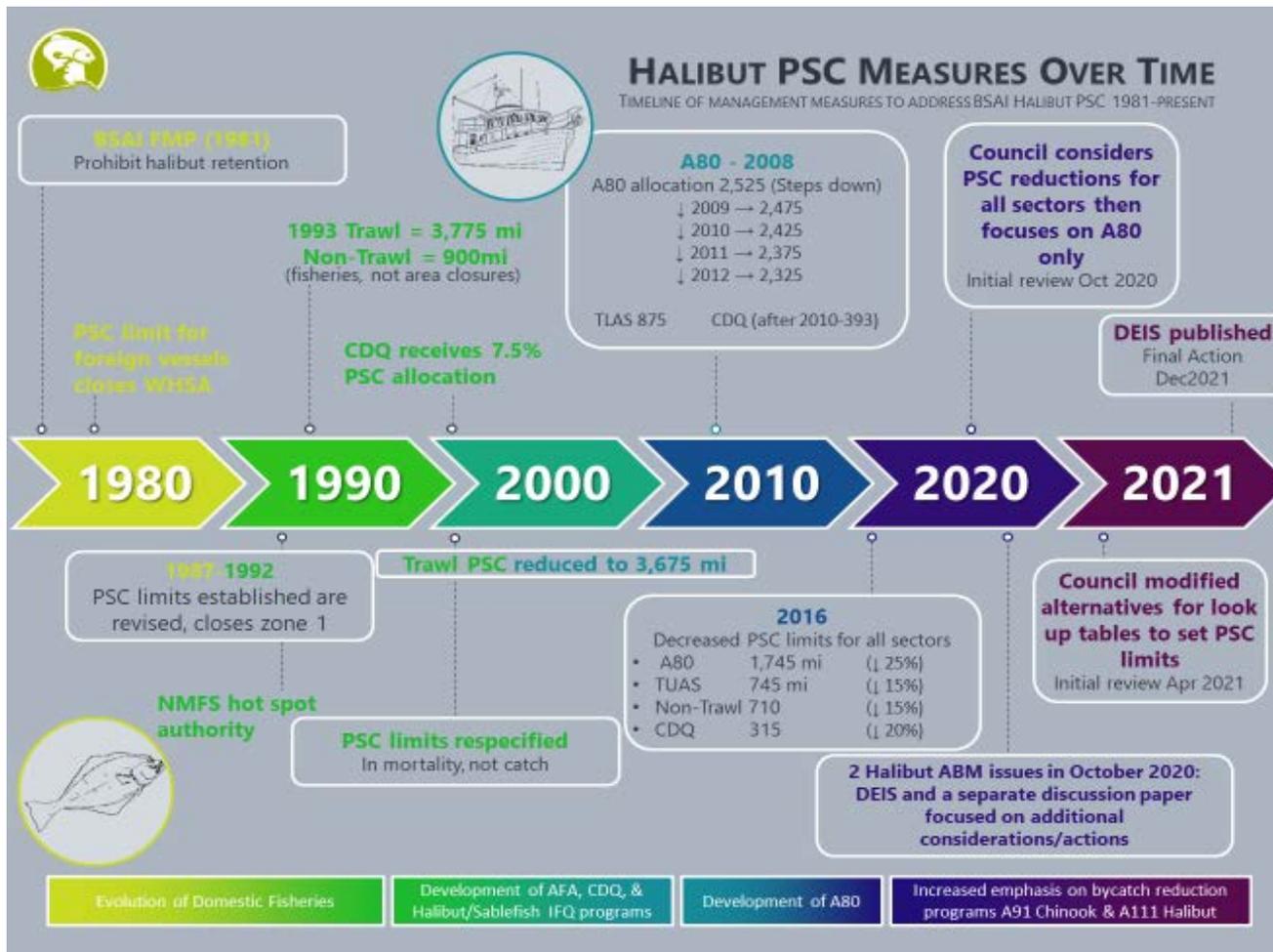
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AFSC: Carey McGilliard, Jim Ianelli, Dana Hanselman
NMFS RO: Anne Marie Eich, Joseph Krieger, Bridget Mansfield
IPHC: Allan Hicks

OUTLINE OF PRESENTATION

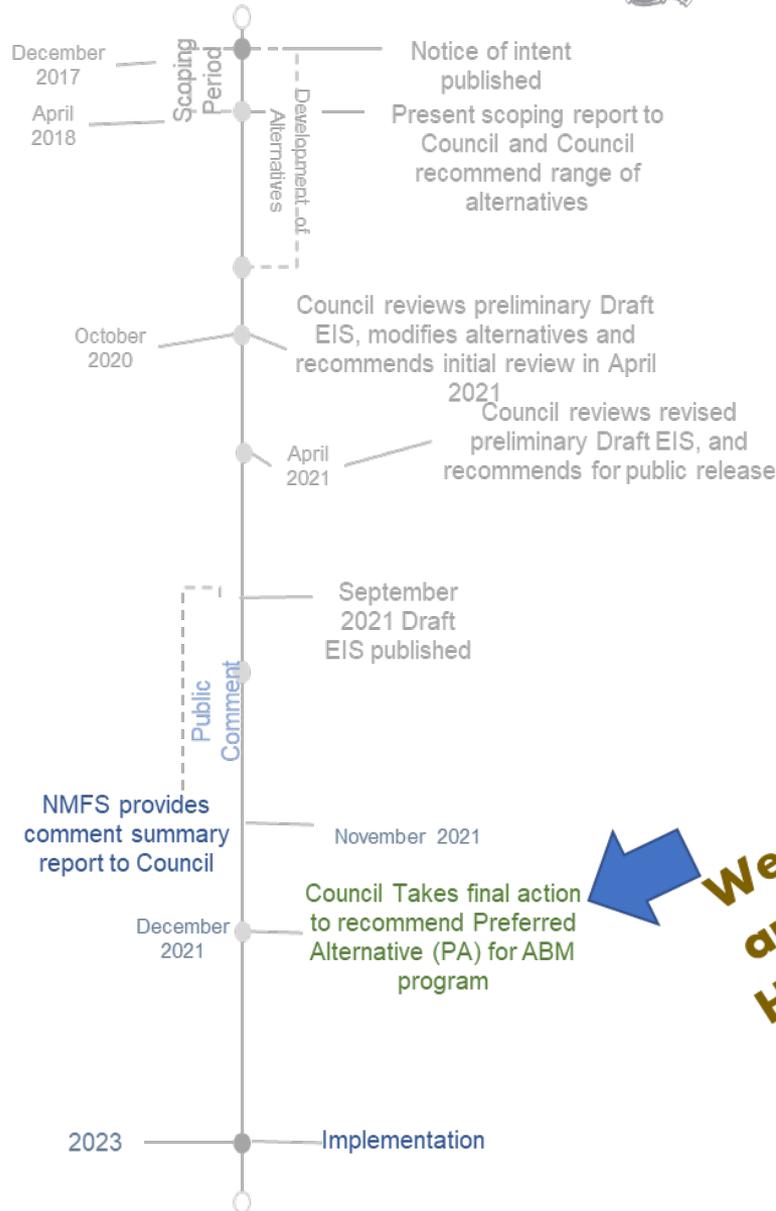
1. Overview of timeline and action at this meeting
2. Description of relative authorities for NPFMC, NMFS and IPHC
 - Specifications, PSC regulations and IPHC catch setting process
 - Direct and indirect effects framework based on directly regulated entities
3. Purpose and Need for this action
4. Alternatives and options under consideration
5. Direct and indirect impacts on halibut SSB, groundfish stocks and groundfish and halibut fishery participants –changes from previous review and responses to SSC comments (April 2021)
6. Social Impact Assessment –changes from previous review
7. Wrap up
8. *Separate NMFS presentation on public comments received on DEIS during official NEPA comment period, tribal consultations and implementation update*



HALIBUT PSC MEASURES OVER TIME



Potential Schedule for EIS



TIMING OF ACTION AT THIS MEETING

We are HERE



RELATIVE AUTHORITIES: NPFMC, NMFS AND IPHC

SECTION 1.2.1

NPFMC AND NMFS

- Management of groundfish fisheries in the BSAI under the authority of the MSA (16 U.S.C. 1801-1884), and through a Fishery Management Plan for the Groundfish of the BSAI Management Area (BSAI FMP).
- National Standard 9 of the MSA requires that fishery conservation and management measures shall, to the extent practicable:
 - (1) minimize bycatch; and (2) to the extent bycatch cannot be avoided, minimize the mortality of such bycatch.
 - Bycatch, as defined by the MSA, “means fish which are harvested in a fishery, but which are not sold or kept for personal use and includes economic discards and regulatory discards.” 16 U.S.C. 1802(2). The term “regulatory discards” means “fish harvested in a fishery which fishermen are required by regulation to discard whenever caught, or are required by regulation to retain, but not sell.” 16 U.S.C. 1802(38).



NPFMC AND NMFS (CONT)

- “prohibited species” in the groundfish fisheries.
 - capture is required to be avoided, and their retention is prohibited except when retention is required or authorized by other applicable law, such as for the Prohibited Species Donation Program.
- Halibut PSC limits, in the BSAI groundfish fisheries are to minimize halibut bycatch and bycatch mortality. The BSAI FMP specifies that when a halibut PSC limit is reached in an area, further groundfish fishing with specific types of gear or modes of operation is prohibited by those who take their halibut PSC in that area.
 - Halibut PSC limits impose an upper limit on bycatch.



HALIBUT PSC MORTALITY AND DMRS

- This analysis primarily addresses halibut PSC, i.e., the subset of halibut bycatch that is assumed to be dead because of interactions with the groundfish fisheries.
- Mortality calculations are made for all halibut bycatch in the groundfish fisheries to estimate halibut PSC, using discard mortality rates adopted annually by the Council as part of the harvest specifications process.
- The Council and NMFS have the authority to set and adjust halibut PSC limits in the BSAI groundfish fisheries through FMP and regulatory amendments.
 - However, only the IPHC can make determinations on annual catch limits for halibut in the directed fisheries.



SPECIFICATIONS AND REGULATIONS

- BSAI Halibut PSC limits are in regulation (and in FMP) currently as a fixed amount for all 4 sectors (A80, TLAS, non-trawl and CDQ).
- The apportionment of halibut PSC limits to targets within the TLAS and non-trawl is part of groundfish specifications process
- OFL, ABC and TAC for target groundfish stocks under BSAI FMP are set annually in BSAI groundfish specifications
 - Sum of TACs \leq 2.0 mmt (OY 'cap')
- Any modification to the A80 PSC limit as a result of this action would be in regulation (and in FMP) and the resulting annual limit based upon value of the look up table selected would not be available to be modified during the annual specifications process
 - E.g. Chinook PSC limit for the EBS pollock fishery



OY AS DEFINED IN THE BSAI GROUND FISH FMP

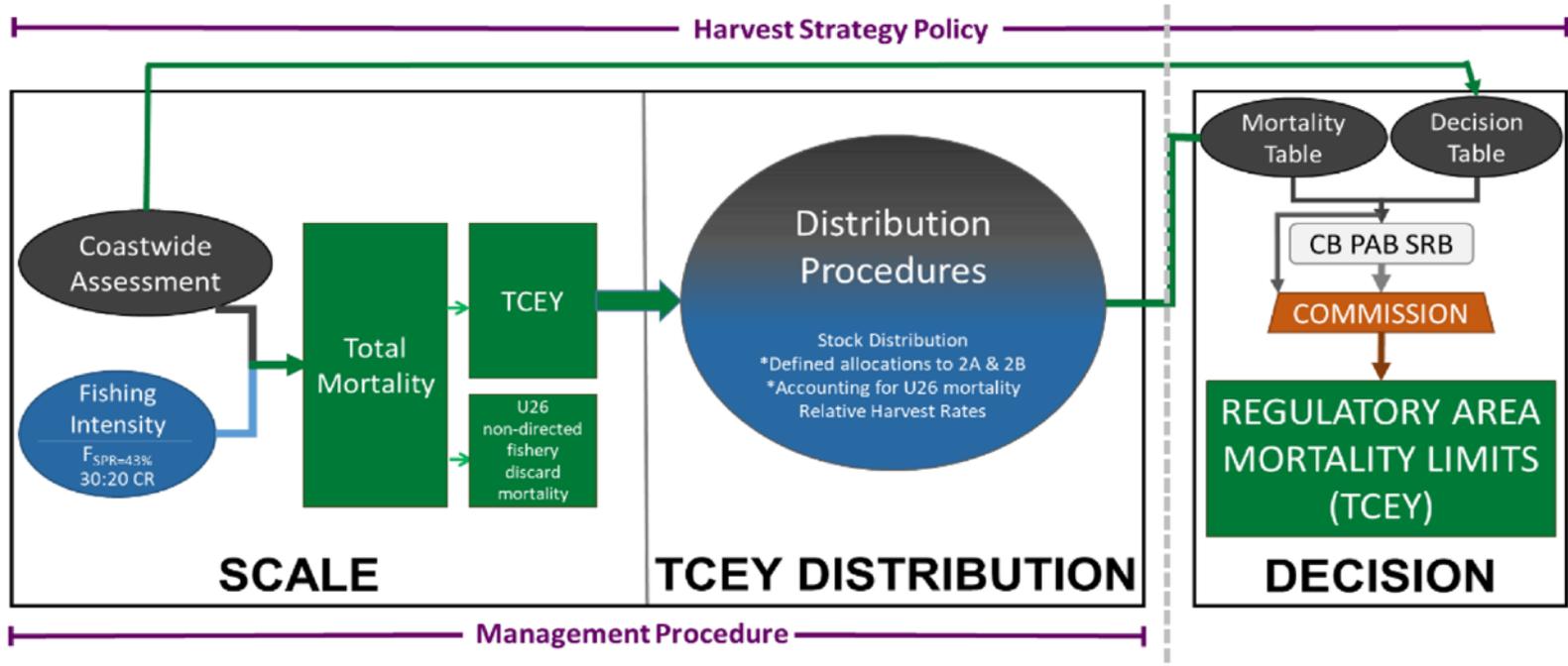
- BSAI FMP: OY of the BSAI groundfish complex ('target stocks' as listed in the FMP) = 85% of the historical estimate of MSY (MSY based upon average catch over 1968-1977). Amd1 to BSAI Groundfish FMP (1981)
 - Specified as a range: 1.4 to 2.0 million mt.
- Programmatic supplemental environmental impact statement (PSEIS) June 2004. Analyzed impacts of groundfish fishery harvests on prohibited species as well as other species and habitats. Important social and economic factors summarized in the PSEIS as it relates to OY:
 - OY range is not likely to have any significant detrimental impact on the industry. Specification of OY as a constant range helps to create a stable management environment in which the industry can plan its activities consistently, with an expectation that each year's total groundfish catch will be at least 1.4 million mt.
 - The OY range encompasses the annual catch levels taken in the period immediately before its implementation, during which the fishery operated profitably.
- Sum of the BSAI TACs \leq 2.0 mmt





IPHC HARVEST POLICY AND DECISION MAKING

IPHC Interim Harvest Strategy Policy



Baseline TCEY distribution

Interim Management Procedure: baseline

	<u>2A</u>	<u>2B</u>	<u>2C</u>	<u>3A</u>	<u>3B</u>	<u>4A</u>	<u>4B</u>	<u>4CDE</u>	<u>Total</u>
O32 Stock Distribution	1.8%	12.0%	11.3%	33.6%	18.8%	6.9%	5.7%	10.0%	100%
HR	1.0	1.0	1.0	1.0	0.75	0.75	0.75	0.75	NA
TCEY Distribution	2.0%	13.4%	12.6%	37.5%	15.7%	5.8%	4.8%	8.3%	100%

2021 observed stock distribution → 2022 TCEY distribution



Baseline and adjustments

Interim Management Procedure: adjustments

	2A	2B	2C	3A	3B	4A	4B	4CDE	Total
O32 Stock Distribution	1.8%	12.0%	11.3%	33.6%	18.8%	6.9%	5.7%	10.0%	100%
HR	1.0	1.0	1.0	1.0	0.75	0.75	0.75	0.75	NA
TCEY Distribution	2.0%	13.4%	12.6%	37.5%	15.7%	5.8%	4.8%	8.3%	100%
Adjusted	1.65	18.0%	<i>Depends on total TCEY</i>						
Final % from total TCEY	4.0%	18.3%	11.5%	34.4%	14.4%	5.3%	4.4%	7.6%	100%
TCEYs	1.65	7.56	4.75	14.19	5.94	2.18	1.80	3.15	41.22

2B includes 0.14 Mlb accounting for U26 non-directed discards in AK



Decision step (looking at the past)
 [note information in DEIS table 4-3 Pg 164]

Reference TCEYs

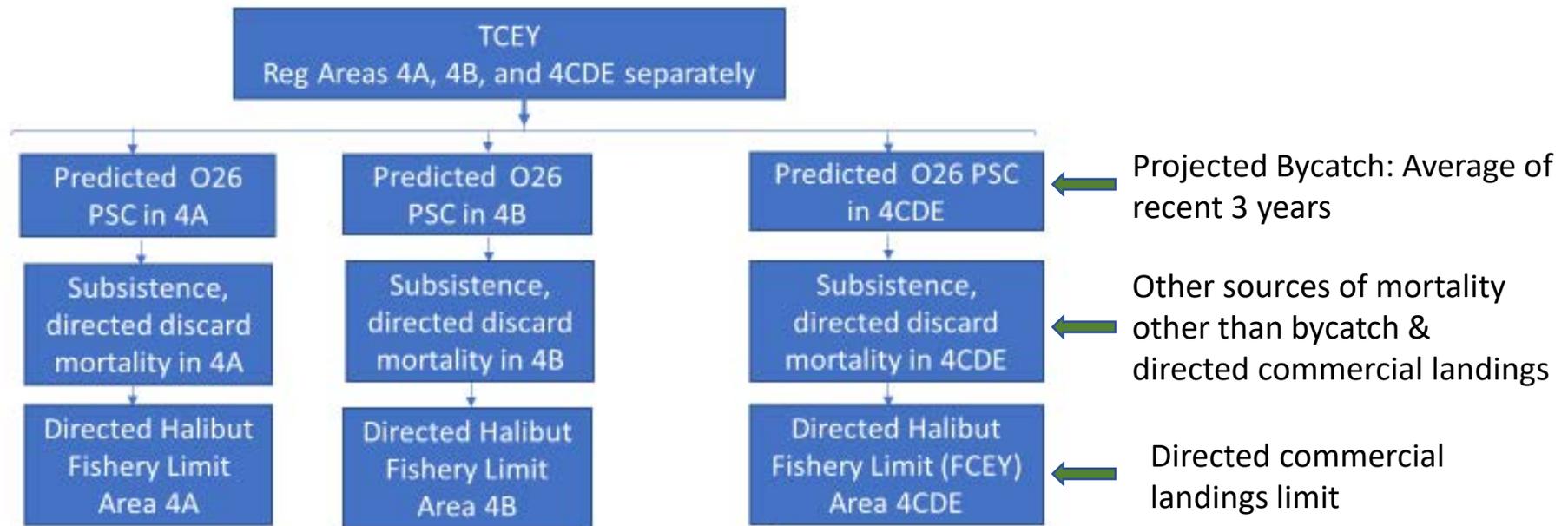
	<u>2A</u>	<u>2B</u>	<u>2C</u>	<u>3A</u>	<u>3B</u>	<u>4A</u>	<u>4B</u>	<u>4CDE</u>	<u>Total</u>
2019	0.78	4.91	6.26	16.35	2.97	2.21	1.95	4.59	40.00
2020	1.65	5.80	4.97	9.80	2.94	2.26	1.27	3.22	31.90
2021	1.65	7.00	5.16	14.12	3.12	2.51	1.47	3.98	39.00
2022	1.65	7.56	4.75	14.19	5.94	2.18	1.80	3.15	41.22

Adopted TCEYs

2019	1.65	6.83	6.34	13.50	2.90	1.94	1.45	4.00	38.61
2020	1.65	6.83	5.85	12.20	3.12	1.75	1.31	3.90	36.60
2021	1.65	7.00	5.80	14.00	3.12	2.05	1.40	3.98	39.00



Directed commercial mortality limits

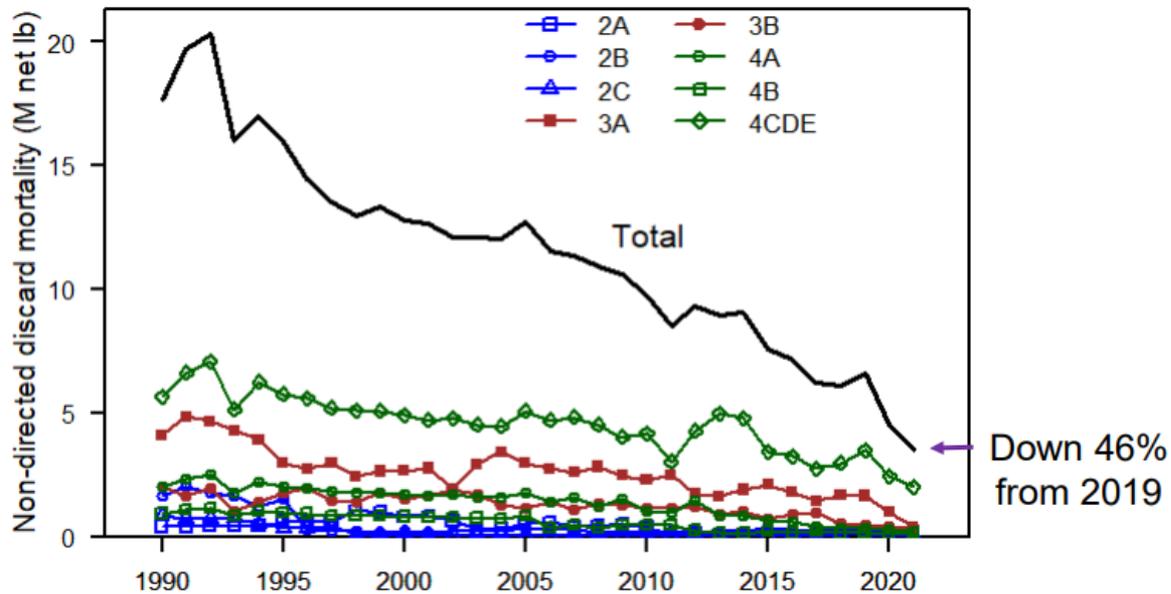


U26 non-directed discard mortality is separate from the TCEY

Projected bycatch

Recent non-directed discard mortality

- Use an average of the recent 3 years



Preliminary mortality table for 2022

Interim Management procedure: detailed results

	2A	2B	2C	3A	3B	4A	4B	4CDE	Total
Commercial discards	0.07	0.21	NA	NA	0.29	0.07	0.06	0.02	0.73
O26 Non-directed discards	0.09	0.21	0.07	0.72	0.34	0.23	0.11	1.93	3.69
Recreational	NA	0.03	1.09	1.58	0.01	0.01	0.00	0.00	2.71
Subsistence	NA	0.41	0.29	0.18	0.01	0.01	0.00	0.04	0.94
Total non-FCEY	0.16	0.86	1.45	2.47	0.66	0.32	0.18	1.99	8.07
Commercial discards	NA	NA	0.10	0.40	NA	NA	NA	NA	0.50
Recreational	0.60	1.01	0.60	2.05	NA	NA	NA	NA	4.26
Subsistence	0.03	NA	NA	NA	NA	NA	NA	NA	0.03
Commercial landings	0.86	5.70	2.60	9.28	5.28	1.86	1.63	1.16	28.35
Total FCEY	1.49	6.70	3.30	11.72	5.28	1.86	1.63	1.16	33.15
							4C FCEY	0.54	
							4D FCEY	0.54	
							4E FCEY	0.08	
TCEY	1.65	7.56	4.75	14.19	5.94	2.18	1.80	3.15	41.22
U26 Non-directed discards	0.00	0.03	0.00	0.29	0.07	0.07	0.01	0.72	1.20
Total	1.65	7.59	4.75	14.48	6.01	2.25	1.82	3.87	42.42

DIRECT AND INDIRECT IMPACTS TO FISHERIES: FRAMEWORK FOR ANALYSIS

- Catch and revenue estimates for directly regulated entity (A80) under range of alternatives
- Indirect potential for impacts to directed halibut fishery of PSC reductions:
 - Reduced U26 portion of PSC could lead to longer term benefits to the commercial halibut fisheries through the distribution of the stock
 - Bering Sea and elsewhere depending upon migration and recruitment
 - IPHC harvest policy subtracts the O26 component of non-directed discard mortality from TCEY when calculating fishing limits





PURPOSE AND NEED AND ALTERNATIVES

PURPOSE AND NEED SECTION 1.1 P34

Halibut is an important resource in the Bering Sea and Aleutian Islands (BSAI), supporting commercial halibut fisheries, recreational fisheries, subsistence fisheries, and groundfish fisheries. The International Pacific Halibut Commission (IPHC) is responsible for assessing the Pacific halibut stock and establishing total annual catch limits for directed fisheries and the North Pacific Fishery Management Council (Council) is responsible for managing prohibited species catch (PSC) in U.S. commercial groundfish fisheries managed by the Council. The Amendment 80 sector is accountable for the majority of the annual halibut PSC mortality in the BSAI groundfish fisheries. While the Amendment 80 fleet has reduced halibut mortality in recent years, continued decline in the halibut stock requires consideration of additional measures for management of halibut PSC in the Amendment 80 fisheries.

*When BSAI halibut abundance declines, PSC in Amendment 80 fisheries can become a larger proportion of total halibut removals in the BSAI, particularly in Area 4CDE, and can reduce the proportion of halibut available for harvest in directed halibut fisheries. The Council intends to establish **an abundance-based halibut PSC management program in the BSAI for the Amendment 80 sector** that meets the requirements of the Magnuson-Stevens Act, particularly **to minimize halibut PSC to the extent practicable under National Standard 9** and **to achieve optimum yield in the BSAI groundfish fisheries** on a continuing basis under **National Standard 1**. The Council is considering a program that links the Amendment 80 sector PSC limit to halibut abundance and **provides incentives for the fleet to minimize halibut mortality at all times**. This action **could also promote conservation of the halibut stock** and **may provide additional opportunities for the directed halibut fishery**.*



ALTERNATIVES

ALTERNATIVE I: NO ACTION. BSAI HALIBUT AMENDMENT 80 PSC LIMIT IS 1,745 T.

A80 Sector	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
PSC limit	2,425	2,375	2,325	2,325	2,325	2,325	1,745	1,745	1,745	1,745	1,745
Halibut encounters	2,823	2,277	2,469	2,677	2,667	1,719	1,965	1,976	2,555	3,067	2,031
Halibut mortality	2,254	1,810	1,944	2,166	2,178	1,404	1,412	1,167	1,343	1,461	1,097

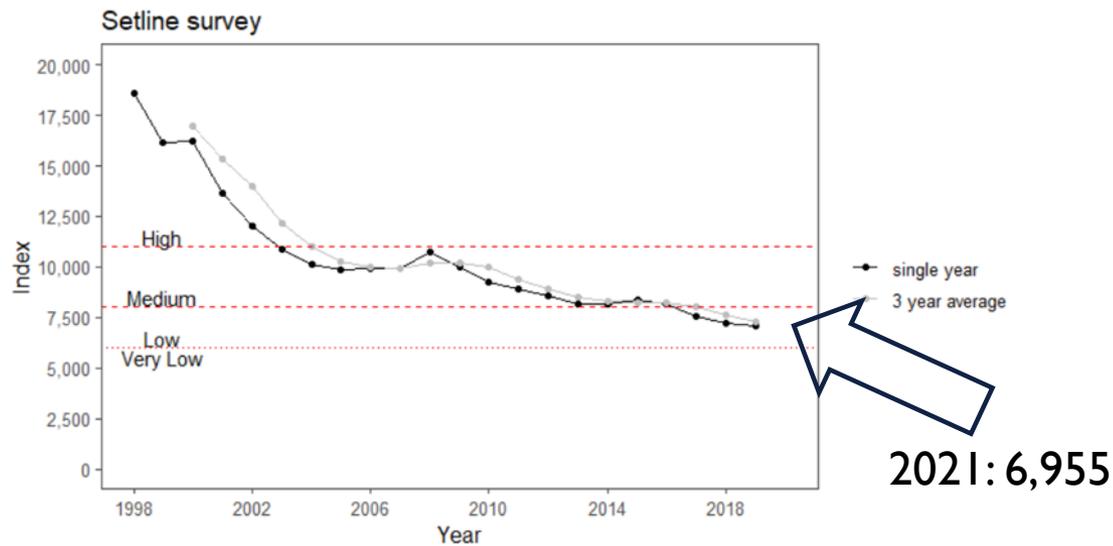
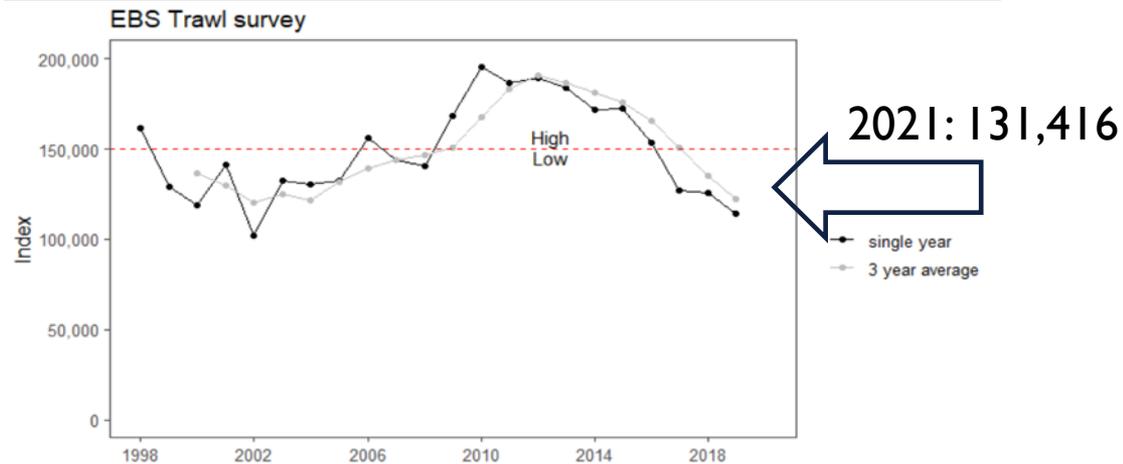
2021(12/1/21):

Halibut encounters 1,589

Halibut mortality 967

ALTERNATIVES 2-4

USE COMBINATION OF SURVEY STATES TO DETERMINED PRE-SPECIFIED PSC LIMITS IN LOOK UP TABLES



Alternative 2		EBS shelf trawl survey index (t)	
		Low < 150,000	High ≥ 150,000
IPHC setline survey index in Area 4ABCDE (WPUE)	High ≥ 11,000	1,571 mt (10% below current)	1,745 mt (current limit)
	Medium 8,000 – 10,999	1,483 mt (15% below current)	1,571 mt (10% below current)
	Low < 8,000	1,396 mt (20% below current)	1,483 mt (15% below current)

Alternative 3		EBS shelf trawl survey index (t)	
		Low < 150,000	High ≥ 150,000
IPHC setline survey index in Area 4ABCDE (WPUE)	High ≥ 11,000	1,745 mt (current limit)	2,007 mt (15% above current)
	Medium 8,000 – 10,999	1,396 mt (20% below current)	1,745 mt (current limit)
	Low 6,000-7,999	1,309 mt (25% below current)	1,396 mt (20% below current)
	Very Low < 6,000	1,222 mt (30% below current)	1,309 mt (25% below current)

Alternative 4		EBS shelf trawl survey index (t)	
		Low < 150,000	High ≥ 150,000
IPHC setline survey index in Area 4ABCDE (WPUE)	High ≥ 11,000	1,396 mt (20% below current)	1,745 mt (current limit)
	Medium 8,000 – 10,999	1,222 mt (30% below current)	1,396 mt (20% below current)
	Low 6,000-7,999	1,047 mt (40% below current)	1,222 mt (30% below current)
	Very Low < 6,000	960 mt (45% below current)	1,047 mt (40% below current)

ALTERNATIVES 2-4 LOOK UP TABLES

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**ALTERNATIVE
PSC LIMITS
RESULTING
FROM 2021
SURVEY STATES**

TABLE 2-9 STATUS QUO PSC LIMITS COMPARED ACROSS SECTORS WITH ACTION ALTERNATIVES

Minimum and maximum PSC limits by alternative for Amendment 80 as compared with fixed limits for others sectors not impacted by this action

Groundfish Sector	A80	A80	A80	A80	BSAI TLAS	Non-Trawl	CDC
Alternative	1	2	3	4	All	All	All
Minimum PSC Limit	1745	1396	1222	960	745	710	315
Maximum PSC Limit	1745	1745	2007	1745	745	710	315





OPTIONS 1-3

TABLE 5-9

- Option 1: Rolling survey average to determine PSC limits (Table 2-6)

Option 1: 3-yr rolling average

PSC Limits from Look up tables

PSC limit year	Alt 2.1	Alt 3.1	Alt 4.1
2001	1745	2007	1745
2002	1571	1745	1396
2003	1571	1745	1396
2004	1571(1483)	1745(1396)	1396 (1222)
2005	1571(1483)	1745(1396)	1396 (1222)
2006	1483	1396	1222
2007	1483(1571)	1396(1745)	1222(1396)
2008	1483	1396	1222
2009	1571	1745	1396
2010	1483	1396	1222
2011	1483	1396	1222
2012	1571	1745	1396
2013	1571	1745	1396
2014	1571	1745	1396
2015	1571	1745	1396
2016	1571	1745	1396
2017	1571	1745	1396
2018	1571(1396)	1745(1309)	1396(1047)
2019	1571	1745	1396
2020	1396	1309	1047

OPTION 2: PSC VARIABILITY

- *PSC limit varies no more than a selected percentage **in the first year of implementation***
 - *Suboptions:*
 - 10%
 - 15%
- Reduce the initial inter-annual variability in the PSC limit in the first year of implementation (2023).
 - Regardless of the PSC limit determined from the look up table, the PSC limit in the first year of implementation must fall within the range 1,483 to 2,006
 - = variability of +/- maximum 15% change from status quo 1,745 mt

OPTION 3 ANNUAL LIMIT

80% OR 90% OF ANNUAL PSC LIMIT.

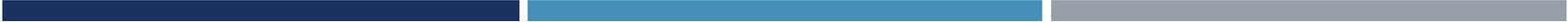
IF PSC USE > A.L. IN > 3 OF 7 YEARS = HARD CAP

TABLE 2-6

Hypothetical synopsis of application of annual limit under Option 3 and the interplay between when it is imposed as a hard cap and for how long. A year specified as **bold** is prosecuted under a hard cap in that year.

Year	Annual Limit exceeded	Annual Limit imposed as a Hard cap	Years Over Limit
2021	Y	N	1 of 1
2022	N	N	1 of 2
2023	N	N	1 of 3
2024	Y	N	2 of 4
2025	Y	N	3 of 5
2026	NA	Y	3 of 6
2027	N	N	3 of 7
2028	Y	N	3 of 7
2029	NA	Y	3 of 7
2030	N	N	3 of 7



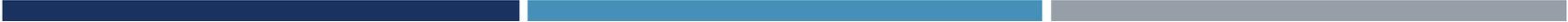


IMPACTS ON HALIBUT SSB

IMPACTS OF ALTERNATIVES ON HALIBUT SSB

- Impacts to the halibut biomass under all of the alternatives are expected to be similar and result in no impact to SSB.
- IPHC's SPR-based management approach is expected to conserve spawning biomass across differing patterns in fishery selectivity and/or allocation among different fisheries.
- Likely to be little difference among the average future halibut spawning biomass under levels of PSC anticipated across all of the alternatives including status quo.
- Closed loop simulation results from previous analyses are consistent with the conclusion that given the IPHC's SPR management policy there are no expected impacts to SSB.
- SSC concurred in April 2021 and noted that the estimated model uncertainty may be underestimated due to the limited treatment of recruitment scenarios related to the Pacific Decadal Oscillation and of historical variability of body weight-at-age projected forward.
- April 2021 SSC report 'Although a closed loop simulation is helpful to understand the effects of potential lags in information use and observation uncertainty, even without this information, the SSC supports the general conclusion that there is likely to be little difference among the average future halibut spawning biomass under different levels of PSC..'





GROUND FISH: STOCK CONSIDERATIONS AND ENCOUNTER RATES [CH 3]

IMPACTS TO GROUND FISH STOCKS

- Focus on no change in management, assessment cycle and TAC-setting processes
- TACs for flatfish remain well below ABCs for a variety of reasons
 - Harvesting constraints due to both bycatch and market considerations
- Recent focus on NBS and connectivity to EBS for BSAI stocks

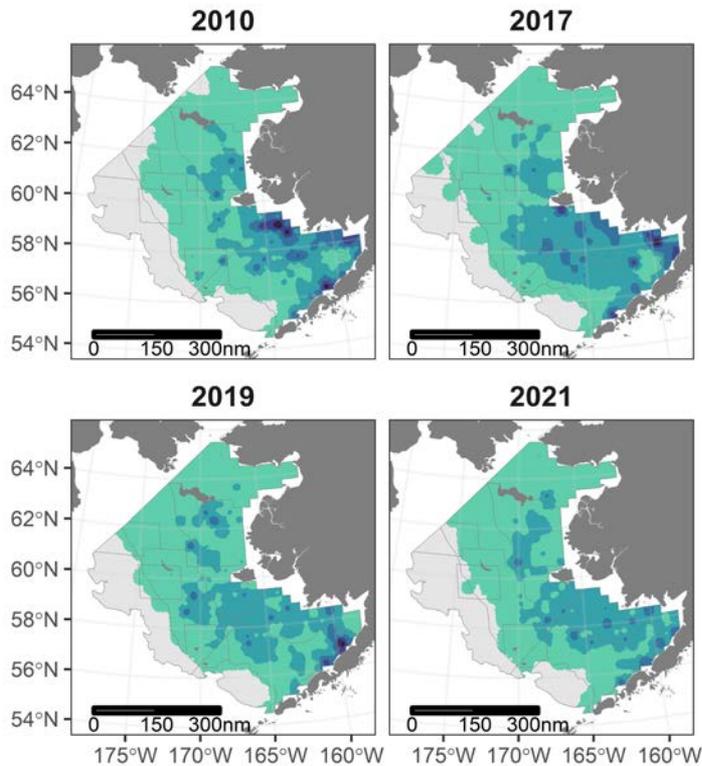


FLATFISH STOCKS RESPONSE TO TEMPERATURE (BSAI 2021 SAFE)

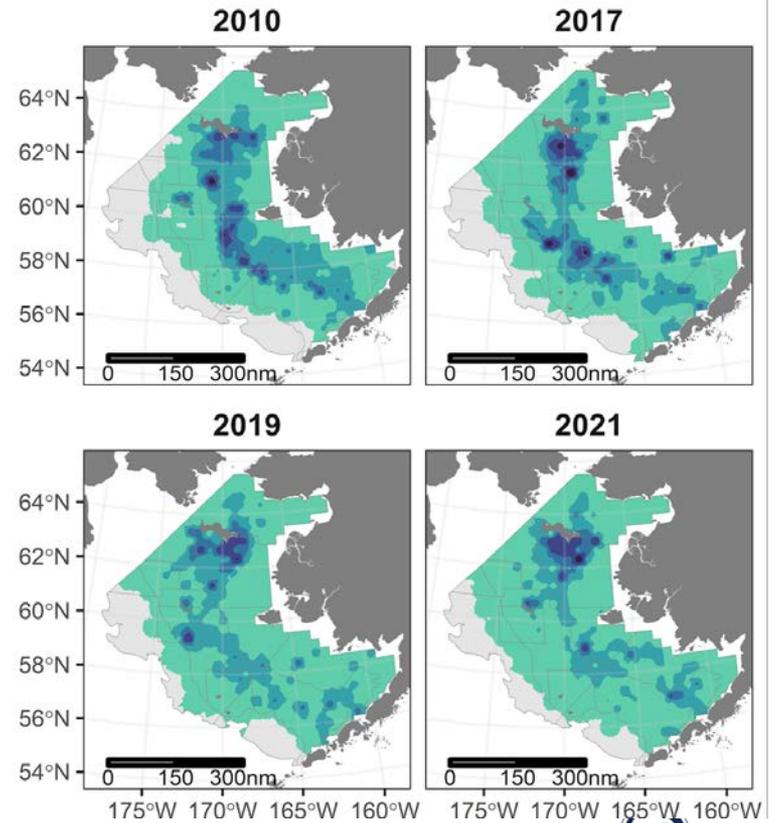
- Inconclusive evidence of connectivity between the EBS and NBS across flatfish stocks
- Plan Team discussions on survey trends across stocks (in particular observed differences among YFS and AK Plaice) and population responses to temperature (YFS)
- Further exploration prior to the BSAI Plan Team recommending including the NBS and EBS for all FF stock assessments
- Additional information to summarize recent survey trends and research topics to be addressed in FEIS



CURRENT CONSIDERATIONS OF CONNECTIVITY



YFS



AK Plaiice



3.4.4 COMPARISON OF A80 PSC AND SURVEY TRENDS

- New section to DEIS in response to SSC recommendation including information that was previously presented in discussion papers
- Factors other than halibut population size that may lead to increased encounter rates include mixing with target species, variable groundfish aggregation behavior across years, and targeting of different species by the various fleets/companies within the sector.
- Halibut population size and distribution certainly plays some role in the abundance:mortality relationship but total PSC mortality is likely also driven by fleet behavior in response to management.
- A lack of correlation between surveyed abundance and A80 encounter does not discount the underlying assumption of abundance-based management of halibut PSC limits; however, it may affect the potential impacts



5.3-5.4 NEW SECTIONS, CHANGES SINCE APRIL 2021

- 5.3.2.3 Practicability of bycatch avoidance/meeting PSC limits by the A80 sector
 - 5.3.2.4 Impacts at the firm level
- 5.4 Impacts on BSAI halibut commercial catch
 - 5.4.1 Impacts within IPHC Regulatory Area 4



5.3.2.3 PRACTICABILITY OF BYCATCH AVOIDANCE/MEETING PSC LIMITS BY THE A80 SECTOR

- New to this latest version of the document, contributed by Darrell Brannan
- Gathered information through informal interviews, review of relevant literature and available data
- Addresses the practicability of further bycatch reduction under the action alternatives considered
- Considers this under the mandate to address competing National Standards (1 and 9) in the purpose and need statement
- Exogenous and endogenous factors that impact A80 companies' ability to reduce halibut mortality.



5.3.2.3.3 CURRENT BYCATCH AVOIDANCE/MITIGATION STRATEGIES

- Cooperative Fishing Strategy
- Halibut Avoidance Plans (HAP)
- Standard Bycatch Rates
- Communication
- Small Test Tows
- Reduce Night Fishing
- Tow Duration
- Excluder Use
- Deck Sorting



5.3.2.3.3 CURRENT BYCATCH AVOIDANCE/MITIGATION STRATEGIES

- Cooperative Fishing Strategy
- Halibut Avoidance Plans (HAP)
- Standard Bycatch Rates
- Communication
- Small Test Tows
- Reduce Night Fishing
- Tow Duration
- Excluder Use
- Deck Sorting
- Firm's decisions driven by estimated halibut mortality
- All of the tools utilized to avoid halibut or reduce mortality of halibut increase total costs associated with fishing
- A fleet's last response to constraining halibut PSC limits is to reduce total groundfish harvest.



5.3.2.4 IMPACTS AT THE FIRM LEVEL

- PSC limits are managed and enforced by NMFS at the sector level.
- The apportionment of PSC limits to firms is done within the cooperative.
- Based on information provided by A80 coop reps, the cooperative distributes the PSC limit to each firm based on a percentage of the overall limit.
 - The result is that each firm has its own PSC limit within the cooperative
 - Because each firm's PSC limit is based on a percentage of the total sector limit, it increases or decreases proportionally to the overall sector limit.
- Firm level division of the PSC limit has differential impacts on firms that may not be obvious from simply reviewing sector level PSC use relative to the proposed limits



5.3.2.4 IMPACTS AT THE FIRM LEVEL

- Individual firms would be impacted differently depending on the size of the PSC limit and in different years

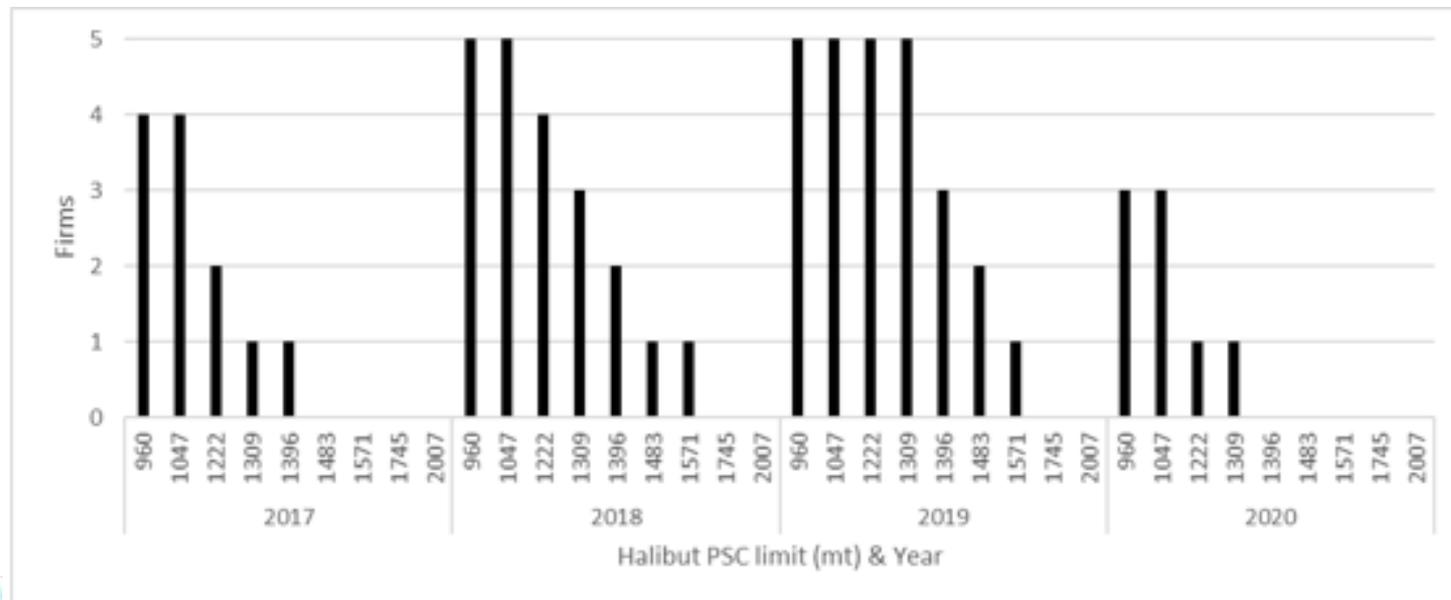


Figure 5-11 Count of A80 firms that would have exceeded the proposed halibut PSC limits 2017 through 2020

Source: AKFIN summary of CAS data and A80 sector supplied initial PSC limits by firm



5.3.2.5 CONCLUSIONS

- Because of the efforts and expenditures already undertaken by the sector, dramatic increases in halibut avoidance or reductions in mortality are not expected with the tools that are currently available to the fleet.
- Some marginal improvements are anticipated to continue to be realized, especially if halibut limits are further reduced and the fleet forgoes some amount of profitability to reduce halibut mortality further.
- Reductions in halibut mortality that are realized are expected to result from the sector increasing costs or reducing efficiency
- As halibut limits become more constraining it could potentially result in more consolidation of the A80 sector



5.3.1 APPROACH TO REVENUE ESTIMATES

- The revenue estimates for the A80 fishery and the directed halibut fishery sectors are estimated separately, using different methodologies and are meant to help compare impacts across alternatives *within* each sector and **should *not* be used to compare impacts across sectors**
- *“The SSC concurs with the analysts’ assessment of the inappropriateness of comparing revenue impacts across the two sectors and recommends that estimated revenue impacts only be used for comparing across alternatives for a given sector, and not for comparing across sectors.”*
(April 2021 SSC minutes)
- Revenue estimates do not incorporate economic multipliers to estimate the total economic contributions of the A80 fishery or the directed halibut fishery in terms of output, income, employment or other economic measures.



5.5.1 GROUND FISH REVENUE IMPACT ESTIMATION

Table 5-6 Estimated status quo revenues (millions wholesale \$2018) and percent difference from status quo by Alternative and PSC limit based on survey states. Percent differences are calculated across the rows (comparing estimates using same methods and datasets)

Estimation method	EBS Trawl Survey		Low		High		Low		High		Low		High		Low		High		
	Setline survey		Very Low		Very Low		Low		Low		Medium		Medium		High		High		
	PSC limit	GF limit (1,000 t)	290	310	290	310	290	310	290	310	290	310	290	310	290	310	290	310	
Random	PSC limit	1745	1396		1483		1396		1483		1483		1571		1571		1745		
	2010-14	291.338	291.603	-20%	-20%	-15%	-15%	-20%	-20%	-15%	-15%	-15%	-15%	-10%	-10%	-10%	-10%	0%	0%
	2010-19	335.887	345.264	-18%	20%	-13%	-15%	-18%	-20%	-13%	-15%	-13%	-15%	-8%	-10%	-8%	-10%	0%	0%
	2016-19	346.417	370.311	0%	-3%	0%	0%	0%	-3%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	2013-14	251.137	251.123	-20%	-20%	-15%	-15%	-20%	-20%	-15%	-15%	-15%	-15%	-10%	-10%	-10%	-10%	0%	0%
	2017-18	376.558	402.546	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	2010-14	313.799	313.520	-22%	-21%	-14%	-15%	-22%	-21%	-14%	-15%	-14%	-15%	-10%	-10%	-10%	-10%	0%	0%
	2010-19	336.782	360.053	-18%	-23%	-9%	-15%	-18%	-23%	-9%	-15%	-9%	-15%	-3%	-9%	-3%	-9%	0%	0%
	2016-19	349.034	372.499	0%	-2%	0%	0%	0%	-2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Strat.	PSC limit	1745	1222		1309		1309		1396		1396		1745		1745		2007	
2010-14		291.338	291.603	-30%	-30%	-25%	-25%	-25%	-25%	-20%	-20%	-20%	-20%	0%	0%	0%	0%	13%	15%
2010-19		335.887	345.264	-28%	-30%	-23%	-25%	-23%	-25%	-18%	-20%	-18%	-20%	0%	0%	0%	0%	0%	4%
2016-19		346.417	370.311	-10%	-15%	-3%	-9%	-3%	-9%	0%	-3%	0%	-3%	0%	0%	0%	0%	0%	0%
2013-14		251.137	251.123	-30%	-30%	-25%	-25%	-25%	-25%	-20%	-20%	-20%	-20%	0%	0%	0%	0%	15%	15%
2017-18		376.558	402.546	-4%	-11%	0%	-4%	0%	-4%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
2010-14		313.799	313.520	-31%	-31%	-27%	-27%	-27%	-27%	-22%	-21%	-22%	-21%	0%	0%	0%	0%	4%	12%
2010-19		336.782	360.053	-28%	-33%	-24%	-29%	-24%	-29%	-18%	-23%	-18%	-23%	0%	0%	0%	0%	0%	0%
2016-19		349.034	372.499	-9%	-14%	-2%	-8%	-2%	-8%	0%	-2%	0%	-2%	0%	0%	0%	0%	0%	0%
Random		PSC limit	1745	960		1047		1047		1222		1222		1396		1396		1745	
	2010-14	291.338	291.603	-45%	-45%	-40%	-40%	-40%	-40%	-30%	-30%	-30%	-30%	-20%	-20%	-20%	-20%	0%	0%
	2010-19	335.887	345.264	-44%	-45%	-38%	-40%	-38%	-40%	-28%	-30%	-28%	-30%	-18%	-20%	-18%	-20%	0%	0%
	2016-19	346.417	370.311	-29%	-33%	-22%	-27%	-22%	-27%	-10%	-15%	-10%	-15%	0%	-3%	0%	-3%	0%	0%
	2013-14	251.137	251.123	-45%	-45%	-40%	-40%	-40%	-40%	-30%	-30%	-30%	-30%	-20%	-20%	-20%	-20%	0%	0%
	2017-18	376.558	402.546	-25%	-30%	-18%	-23%	-18%	-23%	-4%	-11%	-4%	-11%	0%	0%	0%	0%	0%	0%
	2010-14	313.799	313.520	-42%	-42%	-38%	-38%	-38%	-38%	-31%	-31%	-31%	-31%	-22%	-21%	-22%	-21%	0%	0%
	2010-19	336.782	360.053	-40%	-44%	-36%	-40%	-36%	-40%	-28%	-33%	-28%	-33%	-18%	-23%	-18%	-23%	0%	0%
	2016-19	349.034	372.499	-37%	-41%	-27%	-32%	-27%	-32%	-9%	-14%	-9%	-14%	0%	-2%	0%	-2%	0%	0%
	Strat.	PSC limit	1745	960		1047		1047		1222		1222		1396		1396		1745	
2010-14		291.338	291.603	-45%	-45%	-40%	-40%	-40%	-40%	-30%	-30%	-30%	-30%	-20%	-20%	-20%	-20%	0%	0%
2010-19		335.887	345.264	-44%	-45%	-38%	-40%	-38%	-40%	-28%	-30%	-28%	-30%	-18%	-20%	-18%	-20%	0%	0%
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2013-14		251.137	251.123	-45%	-45%	-40%	-40%	-40%	-40%	-30%	-30%	-30%	-30%	-20%	-20%	-20%	-20%	0%	0%
2017-18		376.558	402.546	-25%	-30%	-18%	-23%	-18%	-23%	-4%	-11%	-4%	-11%	0%	0%	0%	0%	0%	0%
2010-14		313.799	313.520	-42%	-42%	-38%	-38%	-38%	-38%	-31%	-31%	-31%	-31%	-22%	-21%	-22%	-21%	0%	0%
2010-19		336.782	360.053	-40%	-44%	-36%	-40%	-36%	-40%	-28%	-33%	-28%	-33%	-18%	-23%	-18%	-23%	0%	0%
2016-19		349.034	372.499	-37%	-41%	-27%	-32%	-27%	-32%	-9%	-14%	-9%	-14%	0%	-2%	0%	-2%	0%	0%



5.4 IMPACTS ON BSAI HALIBUT COMMERCIAL CATCH

- Same approach as April, new ratios of 0, 0.25, 0.5, 0.75, 1.0 based on SSC recommendations
- *“The SSC recommends that the Council compare alternatives based on a range of plausible ratios (0.0-1.0) without an implicit or explicit likelihood assigned to each.” (April 2021)*
- Actual ratios of change in PSC to change in halibut fishery limits
 - Are uncertain
 - Vary over time
 - Reflect changing fishery selectivity and biological processes.



5.4 IMPACTS ON BSAI HALIBUT COMMERCIAL CATCH

- **Potential Δ BSAI directed halibut catch** * values (ex-vessel or wholesale head and gut) = potential change in revenue
- ex-vessel values are reported in 2018-dollar adjusted ex-vessel values for Area 4
- wholesale values are estimates of first wholesale production values for head and gut fish as reported in the Economic SAFE report
- Calculated based on change in PSC limit (not use estimate)
- Assume 100% usage of the additional directed halibut catch limit

Table 5-15 Potential change in revenue from status quo based on PSC limit (2018\$)

			ratio	960	1047	1222	1309	1396	1483	1571	1745	2007
ex-vessel values	2019	\$4.33	1.00	5,620,218	4,997,340	3,744,425	3,121,548	2,498,670	1,875,792	1,245,755	0	-1,875,792
			0.75	4,215,163	3,748,005	2,808,319	2,341,161	1,874,003	1,406,844	934,316	0	-1,406,844
			0.50	2,810,109	2,498,670	1,872,213	1,560,774	1,249,335	937,896	622,878	0	-937,896
			0.25	1,405,054	1,249,335	936,106	780,387	624,668	468,948	311,439	0	-468,948
	Average 2015-19	\$5.54	1.00	7,190,764	6,393,826	4,790,789	3,993,851	3,196,913	2,399,975	1,593,876	0	-2,399,975
			0.75	5,393,073	4,795,369	3,593,092	2,995,388	2,397,685	1,799,981	1,195,407	0	-1,799,981
			0.50	3,595,382	3,196,913	2,395,395	1,996,925	1,598,456	1,199,987	796,938	0	-1,199,987
			0.25	1,797,691	1,598,456	1,197,697	998,463	799,228	599,994	398,469	0	-599,994
wholesale head and gut	2019	\$6.37	1.00	8,268,080	7,351,745	5,508,543	4,592,208	3,675,873	2,759,538	1,832,670	0	-2,759,538
			0.75	6,201,060	5,513,809	4,131,407	3,444,156	2,756,904	2,069,653	1,374,503	0	-2,069,653
			0.50	4,134,040	3,675,873	2,754,271	2,296,104	1,837,936	1,379,769	916,335	0	-1,379,769
			0.25	2,067,020	1,837,936	1,377,136	1,148,052	918,968	689,884	458,168	0	-689,884
	Average 2015-19	\$7.04	1.00	9,137,721	8,125,006	6,087,934	5,075,219	4,062,503	3,049,787	2,025,431	0	-3,049,787
			0.75	6,853,291	6,093,754	4,565,951	3,806,414	3,046,877	2,287,340	1,519,073	0	-2,287,340
			0.50	4,568,861	4,062,503	3,043,967	2,537,609	2,031,251	1,524,894	1,012,716	0	-1,524,894
			0.25	2,284,430	2,031,251	1,521,984	1,268,805	1,015,626	762,447	506,358	0	-762,447



5.4.1 IMPACTS WITHIN IPHC REGULATORY AREA 4

- Response to SSC recommendation *“additional discussion be added to the document on the interannual variability in PSC use among IPHC areas and how it has and may affect directed halibut fisheries.”*
- Total A80 PSC has decreased since 2015 however the distribution within Area 4 has stayed fairly consistent with Area 4CDE accounting for between 83% and 90% of annual A80 PSC since 2015



Figure 5-14 Proportion of A80 PSC by IPHC Regulatory Area from 2010 to 2020.



5.4.1 IMPACTS WITHIN IPHC REGULATORY AREA 4

- NMFS methodology to apportion PSC to IPHC area changed after 2015
- Some statistical areas overlap two IPHC Regulatory Areas
- With changes in the age structure of the halibut population and movement of target fish species between areas, a particular year may show a relatively higher amount of PSC, or possibly an increasing trend in PSC in an IPHC Regulatory Area.
- This type of variability may result in unexpected changes in the directed halibut catch and the impacts to the directed halibut fisheries in a particular IPHC Regulatory Area, such as 4CDE, may be greater than in the entire BSAI.

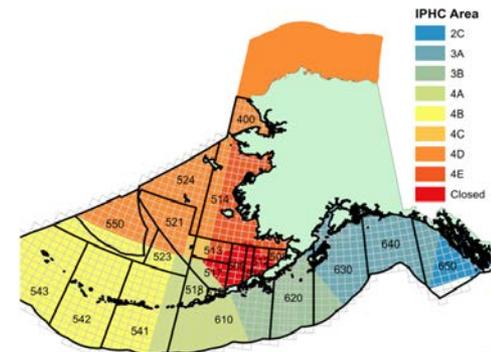


Figure 5-13 Agency reporting areas: NMFS (black lines), ADFG (small grid), and IPHC (colored blocks)

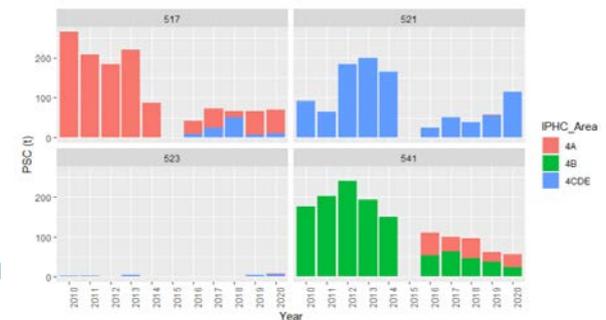


Figure 5-15 A80 PSC by NMFS reporting area and IPHC Regulatory Area

DRAFT EIS SECTION 5.5: SOCIAL AND ENVIRONMENTAL JUSTICE

- **DEIS Section 5.5 summarizes findings of the Social Impact Assessment (Appendix 1)**
 - **This portion of the presentation will focus on changes made to the SIA since it was last reviewed by the SSC, AP, and Council (April 2021)**



SOCIAL IMPACT ASSESSMENT (APPENDIX 1)

- **Revisions since April 2021 SSC/AP/Council review**
 - **None of the revisions made change the overall findings of the SIA as reviewed in April 2021**
 - **Changes made throughout the SIA**
 - Selected income variables shown in multiple tables used to identify low-income populations of potential Environmental Justice concern have been updated with 2019 American Community Survey data.
 - Minor edits have been made for clarity and to fix typographic, grammatical, and formatting errors.



SOCIAL IMPACT ASSESSMENT (APPENDIX 1)

- **Revisions since April 2021 SSC/AP/Council review (cont.)**
 - **Section 3 - Regulatory Context**
 - EO 14031, May 28, 2021, Advancing Equity, Justice, and Opportunity for Asian-Americans, Native Hawaiians, and Pacific Islanders has been added (*SIA Page 7/PDF Page 328*)
 - **Section 6 - Regional and Community Context of the Fisheries**
 - Table 26 “CDQ Group and State of Alaska Selected Demographic Indicators” (and accompanying discussion) has been added (*SIA Page 60/PDF Page 381*)
 - Information provided during April 2021 public testimony and obtained during follow-up has been added to CVRF fisheries related programs discussion (*SIA Pages 101, 104, and 105/PDF Pages 422, 425, and 426*)



SOCIAL IMPACT ASSESSMENT (APPENDIX 1)

- **Revisions since April 2021 SSC/AP/Council review (cont.)**
 - **Section 7 - Regional and Community-Level Social Impacts by Alternative**
 - Discussion of CDQ entities leasing quota to and/or acquiring ownership interest in industry partners in the Amendment 80 sector has been expanded (SIA Page 141/PDF Page 462) and an accompanying potential environmental justice concerns discussion has been added (*SIA Pages 142-143/PDF Pages 463-464*)
 - Discussion of “BSAI Groundfish Amendment 80 Fishery Dependency and Vulnerability to Community Level-Impacts of the Proposed Action Alternatives among Pacific Northwest Communities” has been expanded with information that previously appeared in DEIS Social and Environmental Justice section (*SIA Pages 143-144/PDF Pages 465-466*).
 - Updated Amendment 80 crew data, supplied by industry, also appears in this section (SIA Page 144/PDF Page 465) and in tabular format in Table 85 in Attachment C (*Section 10.3, SIA Page 185/PDF Page 506*)
 - Discussion of “Community Engagement, Dependence, Vulnerability, Resilience, and Risks to Fishing Community Sustained Participation in the Relevant BSAI Halibut Fisheries” has been expanded with information that previously appeared in DEIS Social and Environmental Justice section (*SIA Pages 145-147/PDF Pages 466-468*)



SOCIAL IMPACT ASSESSMENT (APPENDIX 1)

- **Next steps for Final SIA:**
 - Include cross-reference to or summary of the outcome of the Tribal Consultation process and revise the SIA as needed.
 - Revise SIA as needed based on selection of a Preferred Alternative and AP, Council, and public comment input as relevant.
 - Revise EIS Section 5.5 Social and Environmental Justice as needed based on revisions to the SIA.



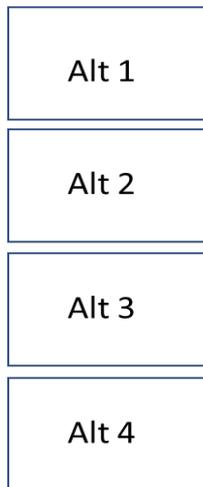
WRAP UP AND NEXT STEPS



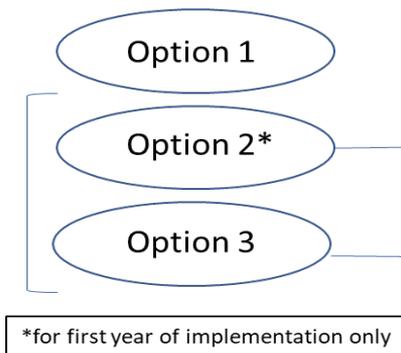
SELECTING A PREFERRED ALTERNATIVE

Selecting a Preferred Alternative

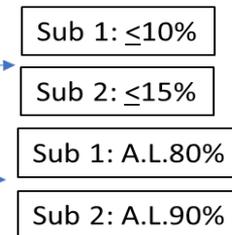
Step 1:
Select overall Alternative



Step 2:
Select options (not mandatory)



Step 3:
Select sub-options (if applicable)



BALANCING THE NATIONAL STANDARDS: POLICY TRADE-OFFS

National Standard 9:

Balance between allowing A80 to flexibility to achieve TAC and to minimizing bycatch to extent practicable

Policy Considerations

National Standards 4 and 8:

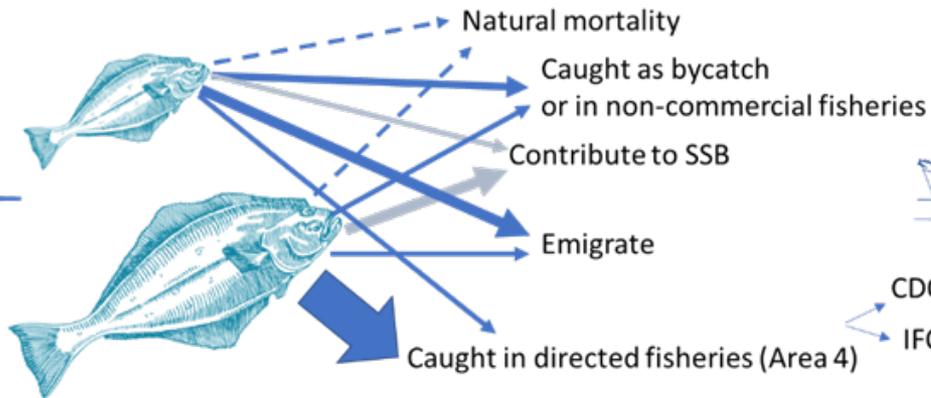
Consider indexing a fishing allocation or privilege (PSC limit) to abundance to promote conservation in a fair and equitable manner; Consider beneficial and adverse direct and indirect impacts to groundfish- and halibut-dependent fishing communities.



Fate of U26 and O26 halibut

Selection of Look-up table and PSC limit; choose options to incentivize bycatch minimization and/or flexibility to achieve TAC

Groundfish Community benefits



CDQ
IFQ
Halibut Community benefits

