C4 Bering Sea Chum Salmon Bycatch

(Preliminary Review Analysis)

Council, October 2023

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Council timeline for the current Bering Sea chum salmon bycatch action

1 Salmon Bycatch Committee

- Initiated in June 2022
- Convened for three meetings
- Recommendations on concepts for alternatives finalized in March 2023

2 April 2023 Council meeting

- Received annual update on scientific and industry reports
- Council adopted Purpose and Need statement as well as preliminary set of alternatives

3 October 2023 Council meeting

We are here

- Council will review preliminary analysis on alternative feasibility
- Finalizes alternatives for analysis of potential impacts

4 Initial Review

- Council will review an initial analysis of the potential impacts resulting from proposed management alternatives Recommend a Preliminary Preferred Alternative

5 Final Action

- Council selects and recommends a Preferred Alternative

National Marine Fisheries Service begins rulemaking process

The Council is currently considering management measures to minimize chum salmon bycatch in the Bering Sea

- Purpose and need statement is in section 1.2, pg. 37-38
- The purpose of this action is to minimize chum salmon bycatch to the extent practicable in the Bering Sea pollock fishery
- The Council's priority is to minimize the bycatch of chum salmon of Western Alaska (WAK) origin
  - Do so while maintaining the priority objective of the Chinook bycatch avoidance program

Year	*Bering Sea pollock fishery*	*All Bering Sea groundfish fisheries*	*Bering Sea pollock fishery as % of total*
2013	125,316	126,463	99.09%
2014	219,442	223,867	98.02%
2015	237,752	241,491	98.45%
2016	343,001	346,000	99.13%
2017	467,678	469,769	99.55%
2018	295,092	307,367	96.01%
2019	348,023	354,681	98.12%
2020	343,626	344,849	99.65%
2021	546,042	548,752	99.51%
2022	242,375	243,695	99.46%
Average	316,835	320,693	98.70%

Table ES 1 Comparison of the number of chum salmon caught as bycatch in the Bering Sea pollock fishery compared to all groundfish fisheries in the Bering Sea, 2013-2022, pg. 6

Chum salmon bycatch is accounted for in the "non-Chinook" catch accounting category

- The National Marine Fisheries Service (NMFS) monitors salmon bycatch under the "Chinook" and "non-Chinook" catch accounting categories
- "Non-Chinook" category for bycatch accounting includes sockeye, coho, pink, and chum, but consistently over 99% of the salmon are chum

Table 2-5 Annual composition of species in the non-Chinook catch accounting category, 2011-2022, pg. 48

Year	Sockeye	Coho	Pink	Chum	Total	% Chum
2011	27	32	202	191,174	191,435	99.86%
2012	16	9	42	22,116	22,183	99.70%
2013	9	39	94	125,174	125,316	99.89%
2014	22	24	50	219,346	219,442	99.96%
2015	89	37	988	236,638	237,752	99.53%
2016	34	34	99	342,422	342,589	99.95%
2017	150	53	926	466,549	467,678	99.76%
2018	90	10	138	294,841	295,079	99.92%
2019	181	170	1,586	345,928	347,865	99.44%
2020	228	125	385	342,887	343,625	99.79%
2021	48	60	385	545,549	546,042	99.91%
2022	16	34	47	242,278	242,375	99.96%

The Council is considering this action in light of recent Western Alaska chum salmon declines

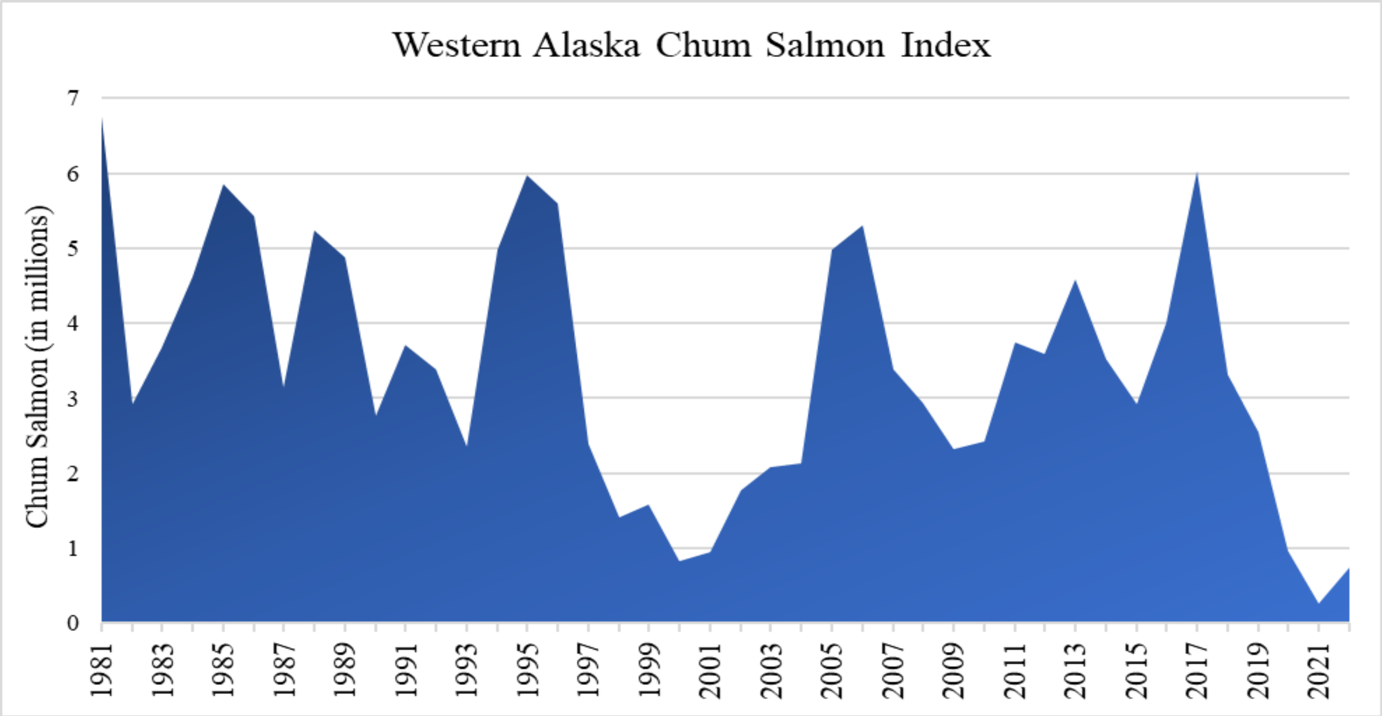
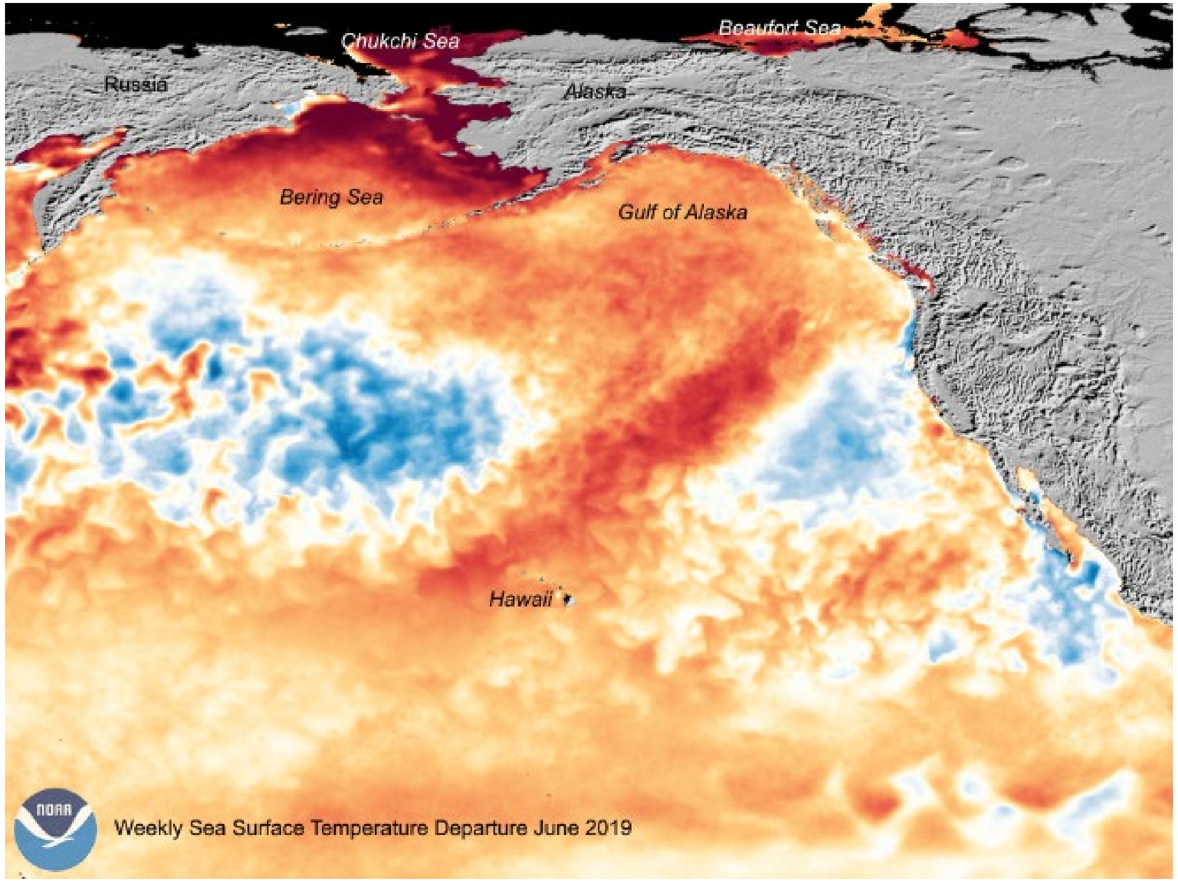


Figure A1 2 Chum salmon index of abundance estimates for Western Alaska stocks, pg. 105
Notes: Summed index of abundance for WAK chum salmon stocks where the abundance is consistently measure. Includes Yukon River summer and fall chum salmon, Kogrukluk River Weir, and Kwiniuk River information.

Marine heatwaves in the eastern Bering Sea affect chum salmon survival



- ❖ WAK chum salmon use the Bering Sea as habitat during their first summer and migrate to the Gulf of Alaska
  - ❖ 2016 and 2019 WAK chum were subject to heat waves in both their major marine habitats
- ❖ Juvenile chum salmon observed to consume less nutritious foods and had lower amounts of stored energy

Chum salmon bycatch is encountered in the Bering Sea in the B season (summer months) pollock fishery

Table 2-6 Annual total chum salmon bycatch (A and B pollock seasons) compared to the chum salmon bycatch in the B season Bering Sea pollock fishery, 2011 through 2022, pg. 48

Year	Annual Total	B season total	B season as % of total
2011	191,435	191,317	99.94%
2012	22,183	22,172	99.95%
2013	125,316	125,114	99.84%
2014	219,442	218,886	99.75%
2015	237,752	233,085	98.04%
2016	342,589	339,236	99.02%
2017	467,678	465,848	99.61%
2018	295,079	294,705	99.87%
2019	347,865	346,812	99.70%
2020	343,625	343,095	99.85%
2021	546,042	545,901	99.97%
2022	242,375	242,309	99.97%

The Council adopted four preliminary alternatives, section 1.2 pg. 39-40

1. Alternative 1 – Status quo
2. Alternative 2 – Overall chum salmon PSC limit
   A. Option 1: limit based on historical bycatch numbers, apportioned among the fishing sectors and further apportioned among the inshore cooperatives and CDQ groups; pollock fishing would cease if reached
   B. Option 2: weighted step-down PSC limit triggered by a 3-area chum index linked to Western Alaska chum abundance/Amounts Reasonably Necessary for Subsistence/Escapement
3. Alternative 3 – PSC limit for Western Alaska chum salmon
   A. Option 1: same as option 1 of Alternative 2
   B. Option 2: same as option 2 of Alternative 2
4. Alternative 4 – Additional regulatory requirements for Incentive Plan Agreements (IPAs) to be managed by either NMFS or the IPAs
   A. Option 1: require a chum salmon reduction plan be in place in the B season to prioritize avoidance of WAK chum in genetic cluster area 1 and 2 when two triggers are met (an established bycatch rate and proportion of WAK to non WAK chum)
   B. Option 2: require IPAs to use the most refined genetics information available to further prioritize times and areas of high WAK chum proportions

Alt/option	Decision points before the Council at this meeting to finalize the alternatives	Section for reference
2.1 (Overall chum salmon PSC limit)	• What is the range of values that should be analyzed as potential chum PSC limits? • Does the Council want to link chum salmon bycatch management measures to ocean temperature data? • If so, what would be the temperature measure (sea surface or bottom), the threshold for determining a warm or cold year, and the associated management measures? • What allocation approaches should be analyzed (i.e., using historical bycatch numbers, AFA allocation, a pro rata approach, or some other option)? • Would the chum PSC limit allocations be transferable?	3.2
2.2/3.2 (3-area index for WAK chum abundance)	• Would Yukon River fall and summer chum be included in the Yukon portion of the 3-area index? • How does the Council want to define low chum abundance for each area (i.e., Yukon, Kuskokwim, Norton Sound)? • If the Council would like to use historical chum abundance information for each area to determine low abundance, what year set would be used for each area to determine the numerical threshold? • Does the Council want to include other criteria (ANS and escapement goals) to determine low abundance? • If yes, what method for assessment does the Council want to use? • Does the Council want to “weight” (i.e., prioritize) the areas or consider them equally? • What would be the step-down provisions and associated chum PSC limits?	3.2.2
3.1 (WAK PSC limit)	• Would the Council want to consider a standalone WAK chum performance threshold or one that is linked to an overall chum PSC limit? • What would be the numerical value of the WAK chum performance threshold? • How does the Council want to use genetic information to determine values for a WAK chum performance threshold (i.e., based on the prior year, an average over a defined year set, or a rolling average)? • How would the uncertainty in the point estimate or average be treated? • Does the Council want to link the WAK chum performance threshold with management measures? • If yes, what would those measures be?	3.3
4.1 (Additional regulatory provisions for WAK chum avoidance)	• What entity would be responsible for managing the measures implemented under a chum salmon reduction plan (i.e., NMFS or the IPAs)? • Who determines the trigger values (i.e., the Council or IPAs)? • If the Council would like to determine the trigger values, what would be the temporal (i.e., rates and proportions based annual, early/late period, or some other approach) and spatial scale (i.e., rates and proportions based on grounds-wide information or only that from genetic cluster area 1 and 2) of the triggers? • Would the triggers be assessed individually for genetic cluster area 1 and 2 or be combined?	3.4.1

BACKGROUND ON THE BERING SEA POLLOCK FISHERY

Bering Sea Pollock total allowable catch (TAC)

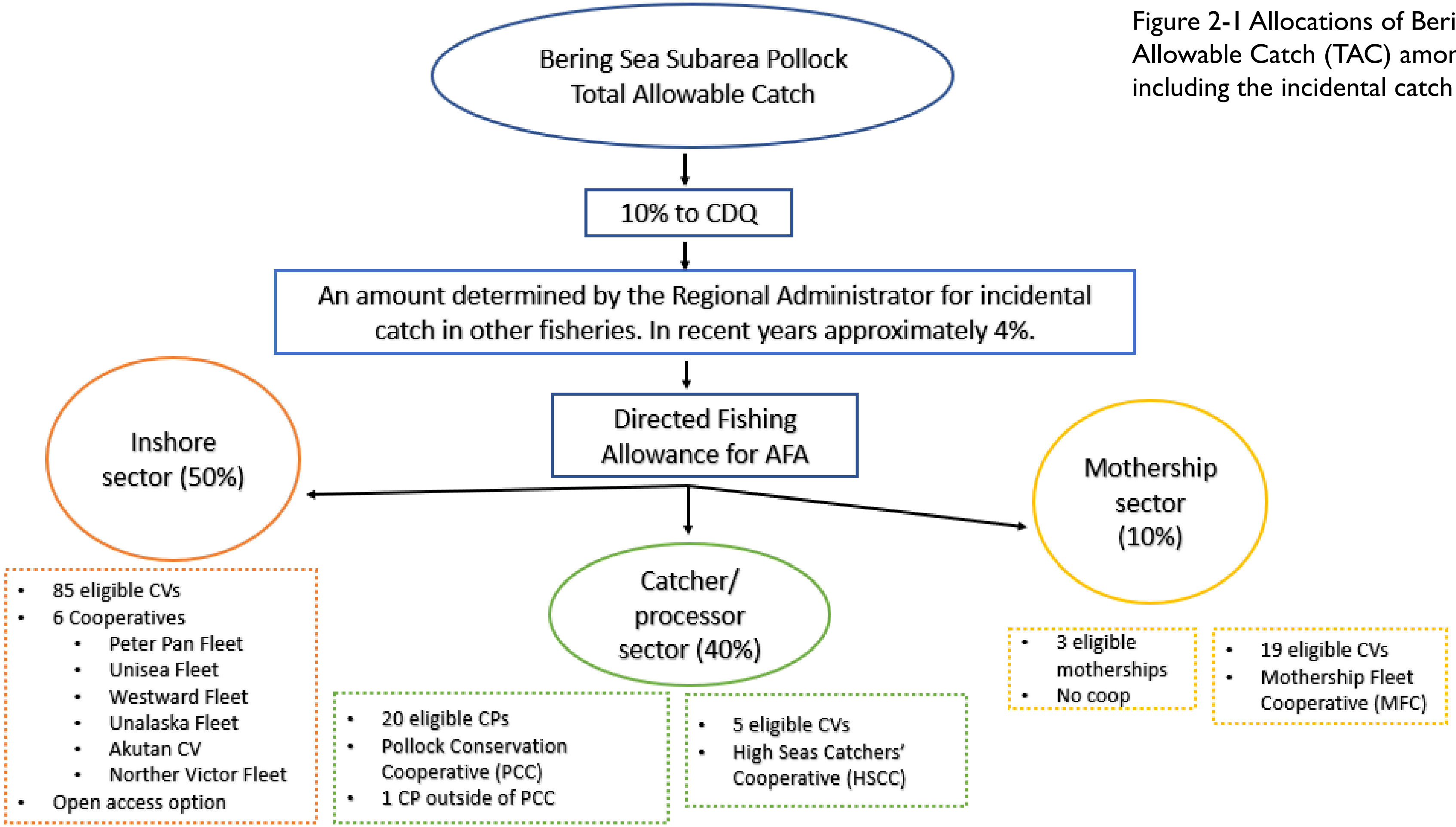
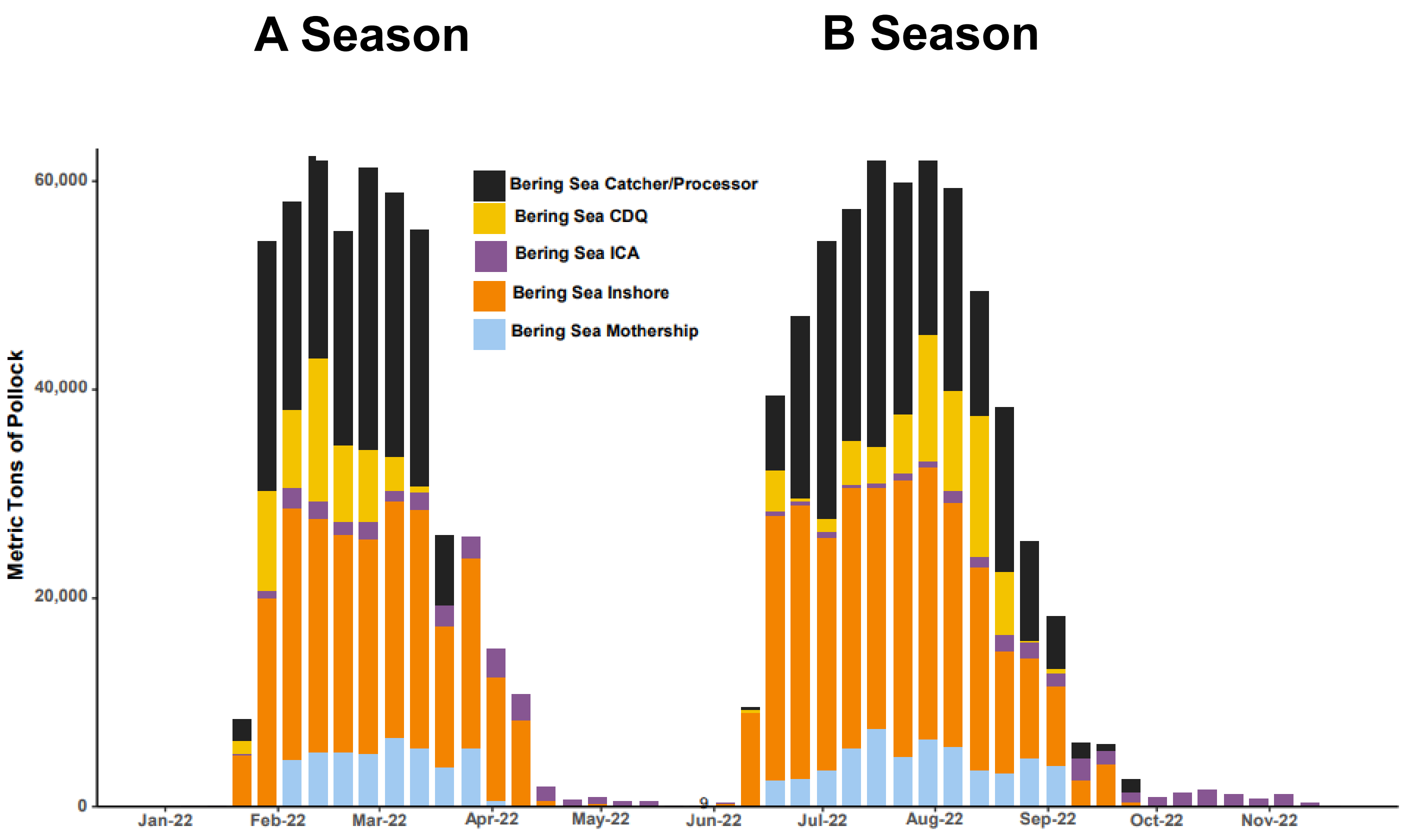


Figure 2-1 Allocations of Bering Sea pollock Total Allowable Catch (TAC) among fishery sectors including the incidental catch allowance, pg. 42

Bering Sea pollock fishing seasons



Notes: This figure shows the 2022 Bering Sea pollock catch by week and sector

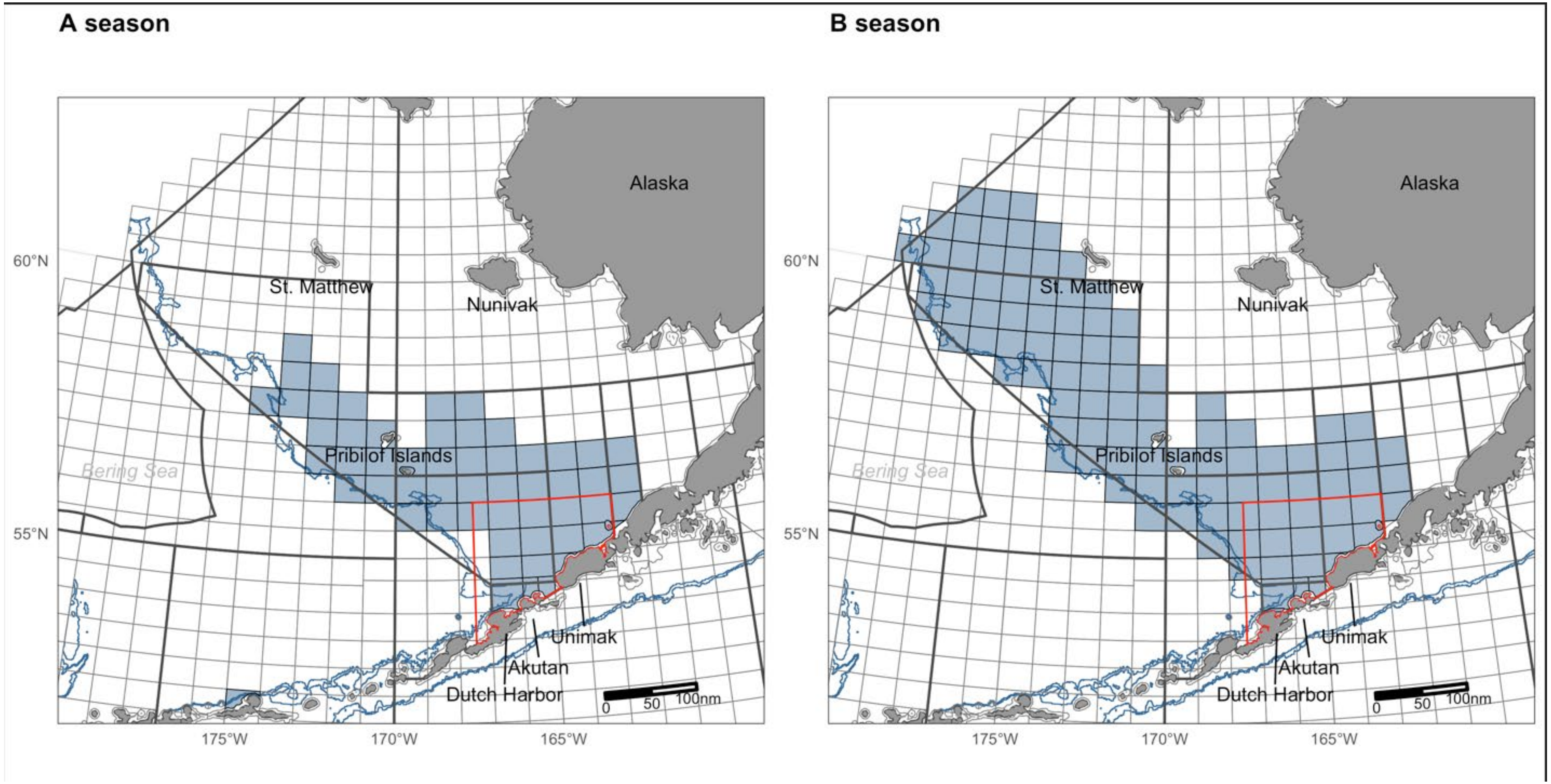
A season is open January 20 to June 10

- 45% of total allowable catch
- Fleet targets roe –bearing females in the A season
- Typically done fishing by mid-April

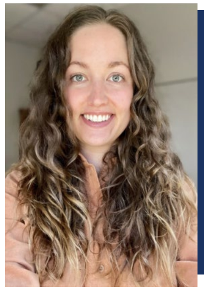
B season is open June 10 to November 1

- 55% of total allowable catch
- Targets pollock for filet and surimi markets
- Typically done fishing by the end of September

The location of pollock fishing effort varies by fishing season



ALTERNATIVE 1 – STATUS QUO



Chum Salmon Savings Area

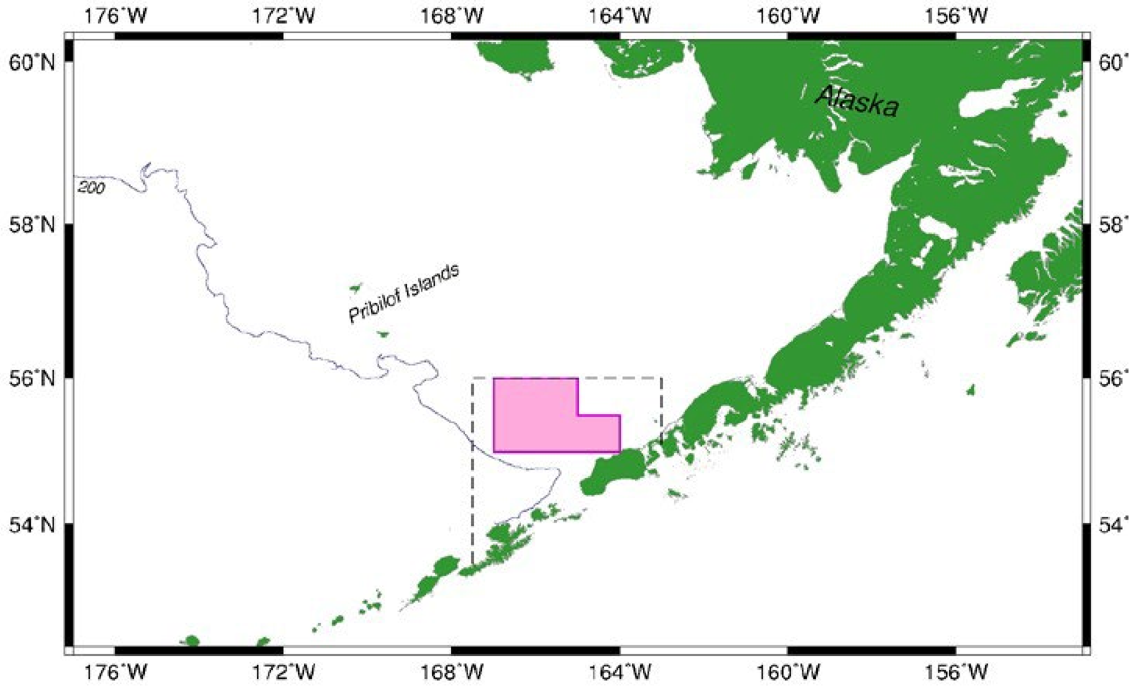
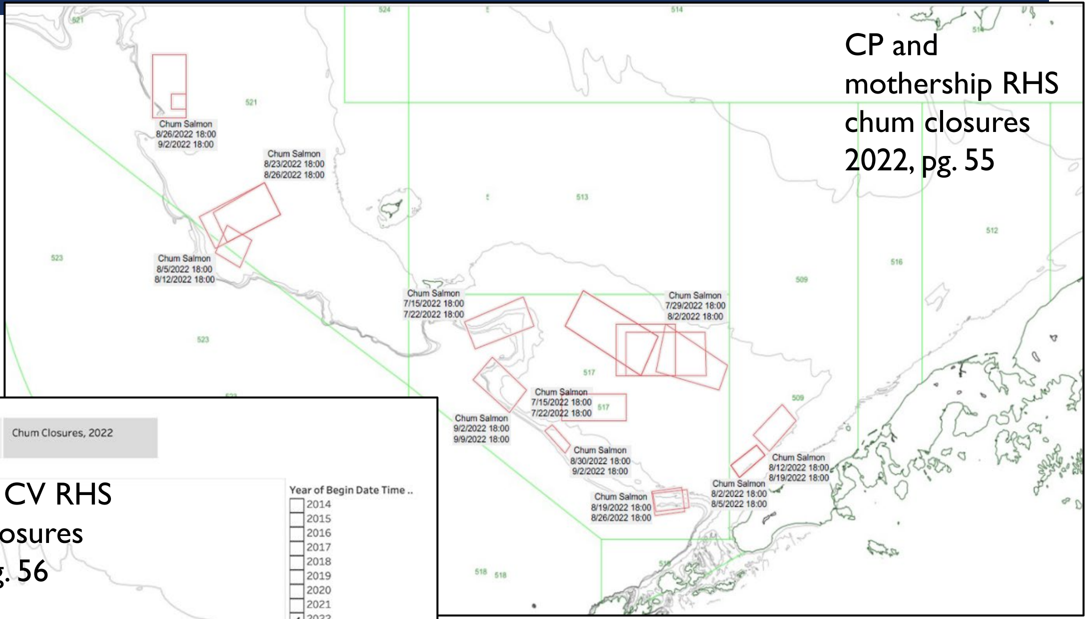


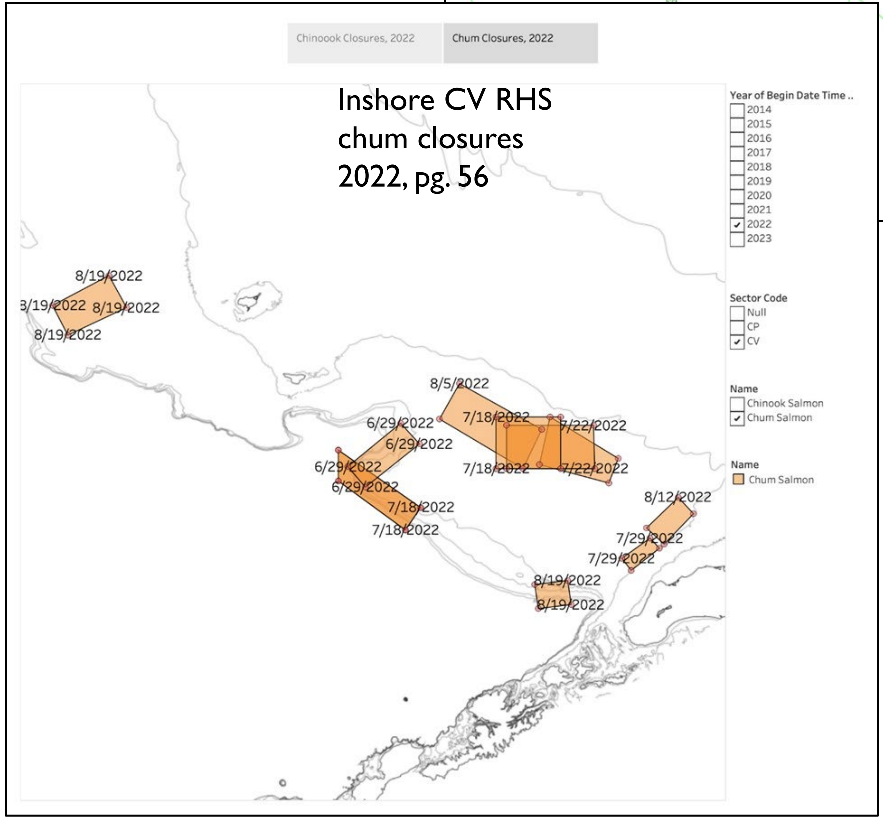
Figure 3-1 Chum Salmon Savings Area, shaded in pink and the Catcher Vessel Operational Area (CVOA), dotted line, pg. 50

- Static time/area closure in the southeastern Bering Sea
- Directed fishing for pollock is prohibited from August 1 through August 31
- Would remain closed through October 14 if the bycatch limit of 42,000 non-Chinook (i.e., chum salmon) was reached within the CVOA
- Current regulations exempt pollock vessels from Chum salmon Savings Area if they are governed by an Incentive Plan Agreement (IPA) that includes a rolling hotspot system for chum avoidance

Rolling hot spot (RHS) system for chum salmon avoidance (section 3.1.1.1)

- RHS for chum avoidance operates in the B season
- Use real time catch and observer data to identify bycatch "hot spots" and move the fleet away from them
- Hot spots are identified by comparing bycatch rates at different spatial scales (among other criteria)
- Eligible hot spot areas are closed weekly or biweekly, moving the fleet away from areas with high bycatch encounters





Incentive Plan Agreements (IPAs)

- RHS for chum avoidance (among other bycatch avoidance measures) are managed under IPAs
- Private contractual agreements among pollock fishing vessels and CDQ organizations, approved by NMFS
- Establish **incentives** to avoid Chinook and chum salmon bycatch while fishing for pollock
  - Example: pollock fishermen are incentivized to avoid salmon bycatch to avoid triggering a hotspot closure
- Implemented alongside the Chinook PSC limit "hard cap" in 2011 (see section 3.1.2)
- Three IPAs in place since 2011 and all pollock fishery participants are members to one

Inshore Salmon Savings Incentive Plan Agreement

Mothership Salmon Savings Incentive Plan Agreement

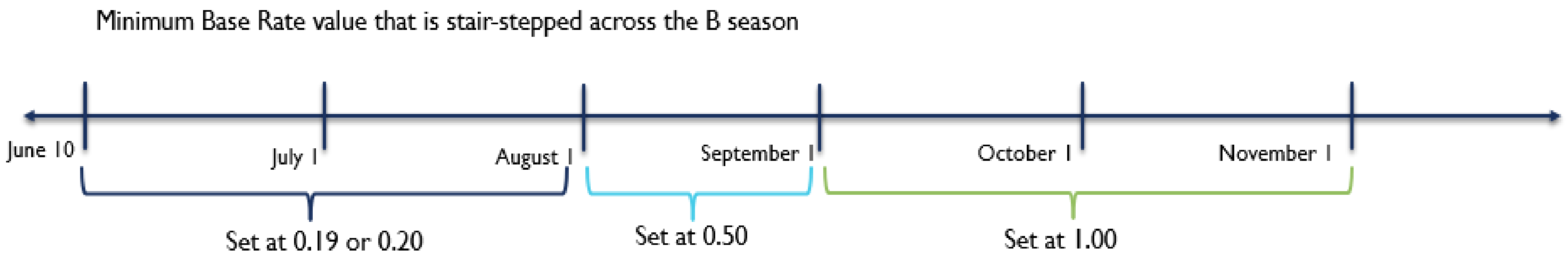
AFA Catcher Processor Sector Chinook and Chum Salmon Incentive Plan Agreement

Regulations require IPAs to describe how vessels will avoid areas and times where WAK chum are more likely to be present

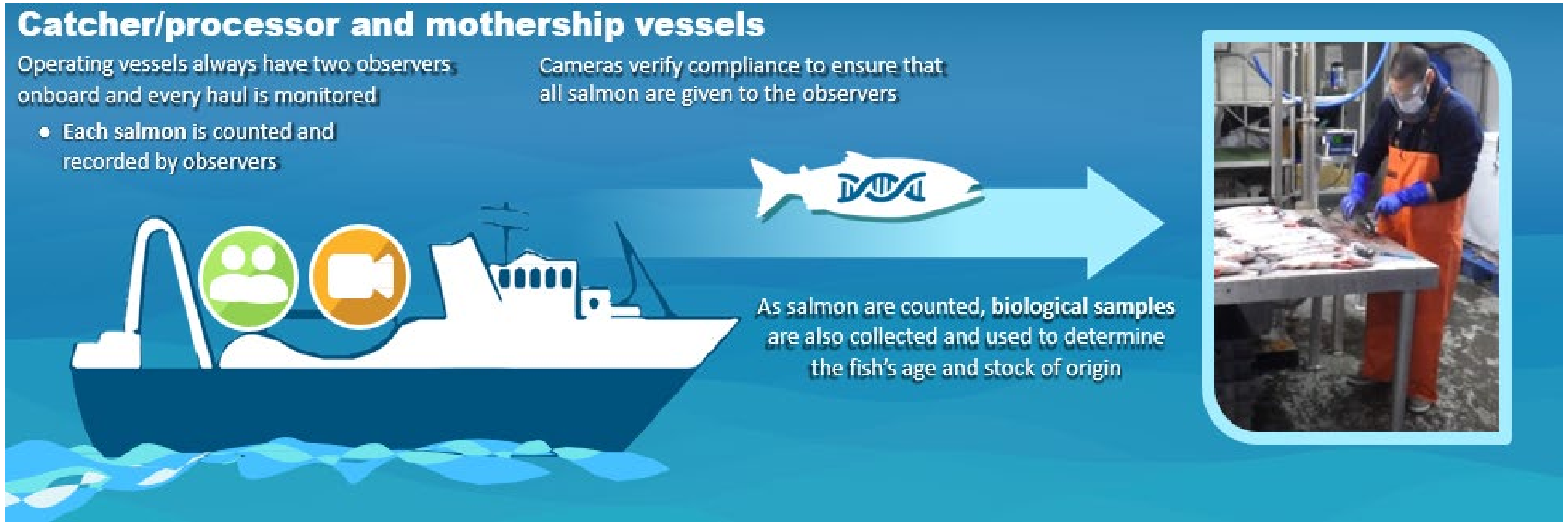
Combined size limits of RHS closure areas are largest East of 168 degrees West longitude during June and July

- June and July: combined size of all chum salmon avoidance areas east of 168 are limited to 3,000 square miles and west of 168 are limited to1,000 square miles
- August, September, and October: the combined size of all chum salmon avoidance areas east of 168 are limited to 1,500 square miles and west of 168 are limited to and 500 square miles, respectively

Base Rate "floor" is lowest in June and July

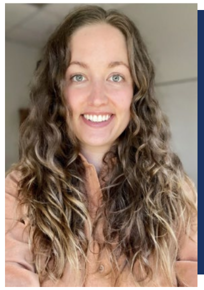


Status quo observer coverage and monitoring requirements (section 3.1.3)



- ❖ Complete enumeration of all bycaught salmon
  - ❖ how many Chinook and chum salmon caught
  - ❖ where those fish came from
  - ❖ whether or not a potential violation of laws occurred
- ❖ Biological data
- ❖ Reliable genetic sampling
- ❖ Preliminary alternatives would not result in changes

ALTERNATIVE 2 – OVERALL CHUM SALMON PSC LIMIT



Chum salmon bycatch data from 2011-2022 (section 3.2.1)

Chum salmon bycatch data by year from 2011-2022

Year	CDQ	CP	Mothership	Inshore	Total
2011	3,758	44,299	24,399	118,861	191,317
2012	200	1,928	977	19,067	22,172
2013	554	10,229	3,835	110,496	125,114
2014	2,407	63,066	8,091	145,322	218,886
2015	4,650	40,046	14,046	174,343	233,085
2016	16,342	134,750	43,262	144,882	339,236
2017	87,058	207,355	16,825	154,610	465,848
2018	26,586	99,447	21,303	147,369	294,705
2019	15,726	113,428	44,860	172,798	346,812
2020	8,582	77,138	19,743	237,632	343,095
2021	55,663	97,917	50,542	341,779	545,901
2022	6,365	71,786	32,262	131,896	242,309
Average	18,991	80,116	23,345	158,255	280,707

Table 3-1 B season chum salmon bycatch (number of chum salmon) by Bering sea pollock sector and total, 2011-2022, pg. 62

3-, 5-, and 10-year average levels of bycatch from 2011-2022

Sector	3- year avg. (2020-2022)	5-year avg. (2018-2022)	10-year avg. (2013-2022)
CDQ	23,537	22,584	22,393
CP	82,280	91,943	91,516
Mothership	34,182	33,742	25447
Inshore	237,102	206,295	176,113
Total	377,102	354,564	315,449

Table 3-2 3-, 5-, and 10-year average levels of B season chum salmon bycatch (number of chum salmon) by pollock sector as well as fishery total, 2011 through 2022, pg. 62

2023 B season chum salmon bycatch

Pollock sector	CDQ	CP	Inshore	Mothership	Total
Chum salmon bycatch	3,358	22,499	66,546	17,371	109,774

Source: NMFS Alaska Region Catch Accounting System, data compiled by AKFIN in Comprehensive_PSC; Salmon_PSC(9-25-23)
Last updated: September 25, 2023

- Posted as an addendum to the eAgenda
- As of September 25, pollock fishery encountered 109,774 chum salmon as bycatch in the 2023 B season
- Second lowest level since 2012 and well below the period average
- Fishery total updated on September 28 – 111,659 chum salmon with 98% of pollock fishing complete

Decision point: What is the range of values that should be analyzed as potential overall chum salmon PSC limits? (section 3.2.1)

- The range of values selected to be analyzed as potential chum salmon PSC limits are not limited the 3-, 5-, or 10-year average values
- Relatively high values may not incentivize bycatch avoidance behavior changes
- Relatively low values may constrain the pollock fishery
- An overall chum PSC limit may or may not necessarily achieve the Council's goal of reducing WAK chum bycatch

Table 3-3 Summary range of B season chum salmon bycatch levels (number of chum salmon) in the Bering Sea pollock fishery B season, 2011 through 2022, pg. 63

Highest level of bycatch (2021)	545,901
3-year average (2020-2022)	377,102
5-year average (2018-2022)	354,564
10-year average (2013-2022)	315,449
12-year average (2011-2022)	280,707
Lowest level of bycatch (2012)	22,172

111,659

Chum salmon bycatch levels compared to ocean temperature (3.2.1.1)

- The Council asked for potential ranges for average chum salmon bycatch levels from 2011 through 2022
- Policy choice before the Council is to determine whether management measures would be linked to ocean temperature
- Sea surface and bottom temperature data were compared alongside chum salmon bycatch levels in the Bering Sea

Year	*Chum salmon bycatch*	*Avg. Sea surface temp*	*Avg. Bottom temp*
2011	191,317	5.19	2.31
2012	22,172	4.30	0.83
2013	125,114	4.93	1.64
2014	218,886	6.67	3.02
2015	233,085	6.36	3.13
2016	339,236	7.74	4.21
2017	465,848	6.18	3.14
2018	294,705	6.85	4.15
2019	346,812	7.63	4.73
2020	343,095	6.34	No survey
2021	545,901	6.01	3.54
2022	242,309	5.29	2.9
Average	280,706	6.12	3.05

Table 3-4 Number of chum salmon caught as B season bycatch, Bering Sea annual average sea surface temperature (degrees Celsius), and Bering Sea bottom temperature (degrees Celsius), 2011 through 2022, pg. 63

Comparing sea surface and bottom temperature to chum salmon bycatch levels

Figure 3-6 B season chum salmon bycatch in ascending order (low to high) compared to percentile ranges of annual average **sea surface temperature** (degrees Celsius), 2011-2022, pg 65

Year	Chum salmon bycatch	Annual average sea surface temperature
2012	22,172	4.30
2013	125,114	4.93
2011	191,317	5.19
2014	218,886	6.67
2015	233,085	6.36
2022	242,309	5.29
2018	294,705	6.85
2016	339,236	7.74
2020	343,095	6.34
2019	346,812	7.63
2017	465,848	6.18
2021	545,901	6.01

25th percentile

25-50th percentile

50-75th percentile

75-100th percentile

Figure 3-8 B season chum salmon bycatch in ascending order (low to high) compared to percentile ranges of annual average **bottom temperat**ure (degrees Celsius), 2011 through 2022 except for 2020

Year	Chum salmon bycatch	Annual Average bottom temperature
2012	22,172	0.83
2013	125,114	1.64
2011	191,317	2.31
2014	218,886	3.02
2015	233,085	3.13
2022	242,309	2.9
2018	294,705	4.15
2016	339,236	4.21
2019	346,812	4.73
2017	465,848	3.14
2021	545,901	3.54

25th percentile

25-50th percentile

50-75th percentile

75-100th percentile

Considerations

- Bottom temperature appears to be a better indicator of chum salmon bycatch levels year to year
- Mismatch in the timing of when bottom temperature data would be available from the survey (typically September) and the start of the B season pollock fishery which opens on June 10 each year
- For management purposes, the relationship between bottom temperature (as measured by the Bering Sea bottom trawl survey) and bycatch levels would need to be evaluated retroactively

Decision point: Allocating the overall chum salmon PSC limit (section 3.2.1.2)

- Under Alternative 2 (and Alternative 3), NMFS would issue allocations of the overall chum salmon PSC limit to the CDQ, CP, mothership, and inshore sectors
- What approaches does the Council want to see analyzed?

Different approaches to allocating the PSC limit (section 3.2.1.2)

- Council motion indicates allocations of the chum salmon PSC limit would be based on historical bycatch numbers
- Subsequent Council dialogue (April 2023) directed staff to provide information on additional ways to allocate the PSC limit

Approaches described in the analysis

1. Historical bycatch numbers
2. AFA pollock allocation
3. Pro-rata approach that would weight historical averages and pollock allocations

Example of allocating a chum salmon PSC limit, Table 3-7, pg. 68

Staff are not recommending a limit. If the overall chum salmon PSC limit were 350,000 chum salmon…

Approach	***CDQ***	***Inshore***	***Mothership***	***CP***
AFA	10% 35,000	45% 157,500	9% 31,500	36% 126,000
3-year avg.	6% 21,000	63% 220,500	9% 31,500	22% 77,000
5-year avg.	6% 21,000	58% 203,000	10% 35,000	5% 91,000
10-year avg.	7% 24,500	56% 196,000	8% 28,000	29% 101,500
2020 B season bycatch	8,582	237,632	19,743	77,138
2021 B season bycatch	55,663	341,779	50,542	97,917
2022 B season bycatch	6,365	131,896	32,262	71,786

Decision point: Apportionment options (section 3.2.1.2.1)

- What is the Council's preference for how NMFS would further apportion the chum PSC limit among the CDQ groups and inshore cooperatives?

The Council could apportion the inshore sector's chum PSC limit allocation among the cooperatives based on their pollock allocations

Inshore cooperative 2022 pollock allocations	
Akutan Catcher Vessel Assoc.	(33.788%)
Arctic Enterprise Assoc.	(0.000%)
Northern Victor Fleet Cooperative	(10.773%)
Peter Pan Fleet Cooperative	(2.512%)
Unalaska Fleet Cooperative	(11.454%)
UniSea Fleet Cooperative	(22.094%)
Westward Fleet Cooperative	(19.380%)
Inshore Open Access	(0.000%)

The Council could apportion the CDQ chum PSC limit allocation among the cooperatives based on their pollock allocations

CDQ group pollock allocations (fixed since 2005)	
APICDA	14%
BBEDC	21%
CBSFA	5%
CVRF	24%
NSEDC	22%
YDFDA	14%

Decision point: Would allocations of the chum PSC limit be transferable?

- The Council did not provide direction on whether chum PSC allocations would be transferable, but the Council may wish to consider this
- Allowing chum PSC allocations to be transferable could provide vessels, cooperatives, and fishing sectors more flexibility to utilize their B season pollock allocation
  - Inter-cooperative transfers, transfers among CDQ groups, intra-cooperative transfers, post delivery transfers
  - PSC limit allocations to the inshore open access fishery would not be transferable

ALTERNATIVE 2 OPTION 2 – 3-AREA INDEX AND STEP-DOWN PROVISIONS

Alternative 2 option 2 Weighted, Step-down PSC Limit Triggered by a Three-area Chum Index

- The range of values selected to be analyzed as an overall chum salmon PSC limit would be the same under option 1 and 2 of Alternative 2.
- Under option 2 of Alternative 2, a chum PSC limit would only be in place, and potentially step-down (i.e., decrease), based on considerations of stock status for three Western Alaska chum salmon river systems.

Three Area Chum Index

- 3 River Systems to be considered:
  - Yukon River
  - Kuskokwim River
  - Norton Sound
- Systems weighted to account for variance in stock sized across river systems and stock status linked to:
  - Overall abundance
  - Whether Amounts Reasonably Necessary for Subsistence (ANS) are met;
  - Whether escapement goals (EGs) are met

Staff to work with ADF&G to determine feasibility of this concept and suggestions on how best to weight systems

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  - Yukon River
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  - Norton Sound
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  - Overall abundance
  - Whether Amounts Reasonably Necessary for Subsistence (ANS) are met;
  - Whether escapement goals (EGs) are met

Staff to work with ADF&G to determine feasibility of this concept and suggestions on how best to weight systems

Feasibility of concept-staff recommendations

- Use of these areas is feasible **IF** the Council chooses to assess each area independently (i.e. not summed)
  - Limited run reconstructions for chum salmon rivers
  - Data for rivers differ (e.g., full run reconstruction, test fishery, weir counts, etc)
- Treat each area as an independent ‘test’ for low abundance
  - Provides some proportionality between systems as run sizes vary substantially

ABUNDANCE ESTIMATES BY RIVER SYSTEM

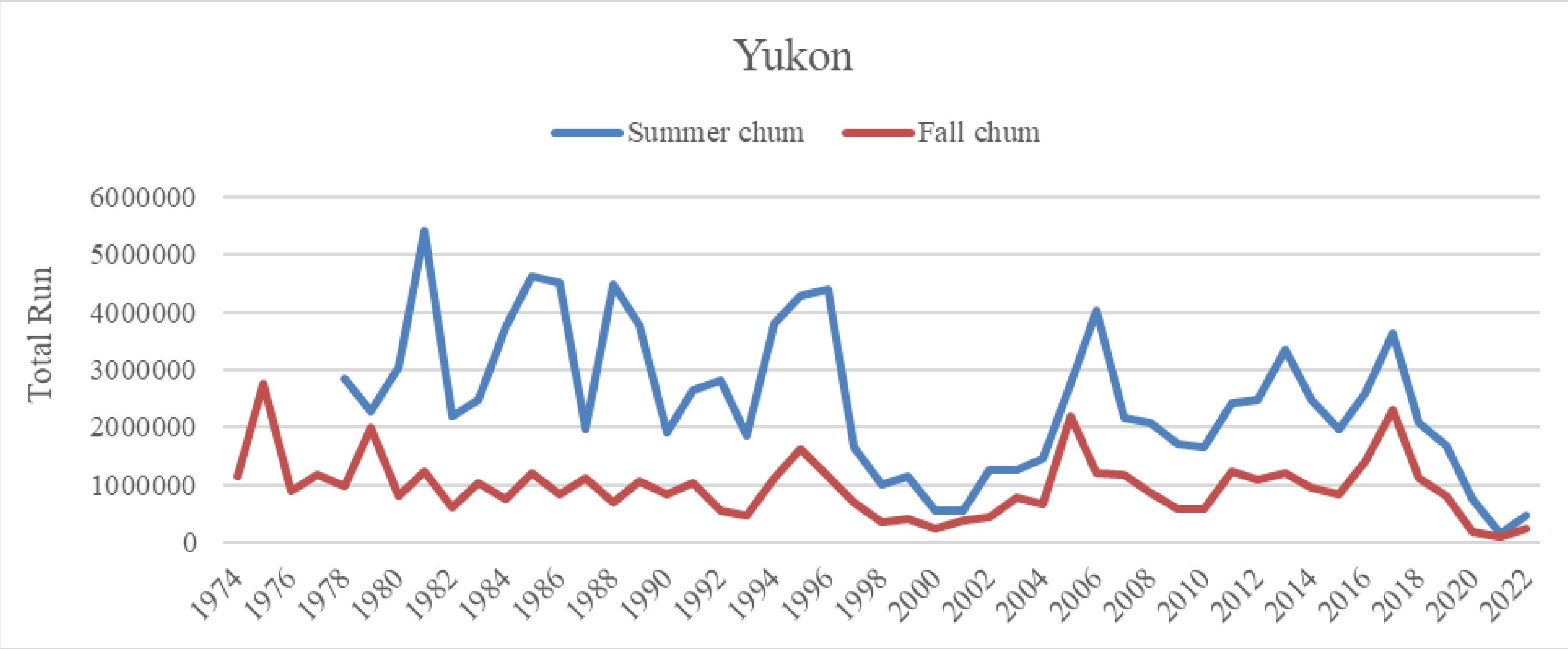
YUKON RIVER SUMMER AND FALL CHUM;

KUSKOKWIM RIVER;

NORTON SOUND AREA

YUKON RIVER

Recommendation to use full run reconstructions for stock status for both Summer and Fall chum



Total accounting of catch and escapement within the drainage area

Council decision points for Yukon River

- Use of both Summer and Fall chum salmon stocks?
- Summer stocks → Coastal West Alaska (CWAK) and upper/middle Yukon genetic groups
- Fall stocks → only Upper/Middle Yukon
- Revised genetic baseline(more closely aligned to how assessed and managed):
  - will allow for all Summer stocks to be included in CWAK
  - Standalone Yukon River Fall chum grouping

Staff recommendation to use full run reconstructions for both Summer and Fall Yukon River chum stocks

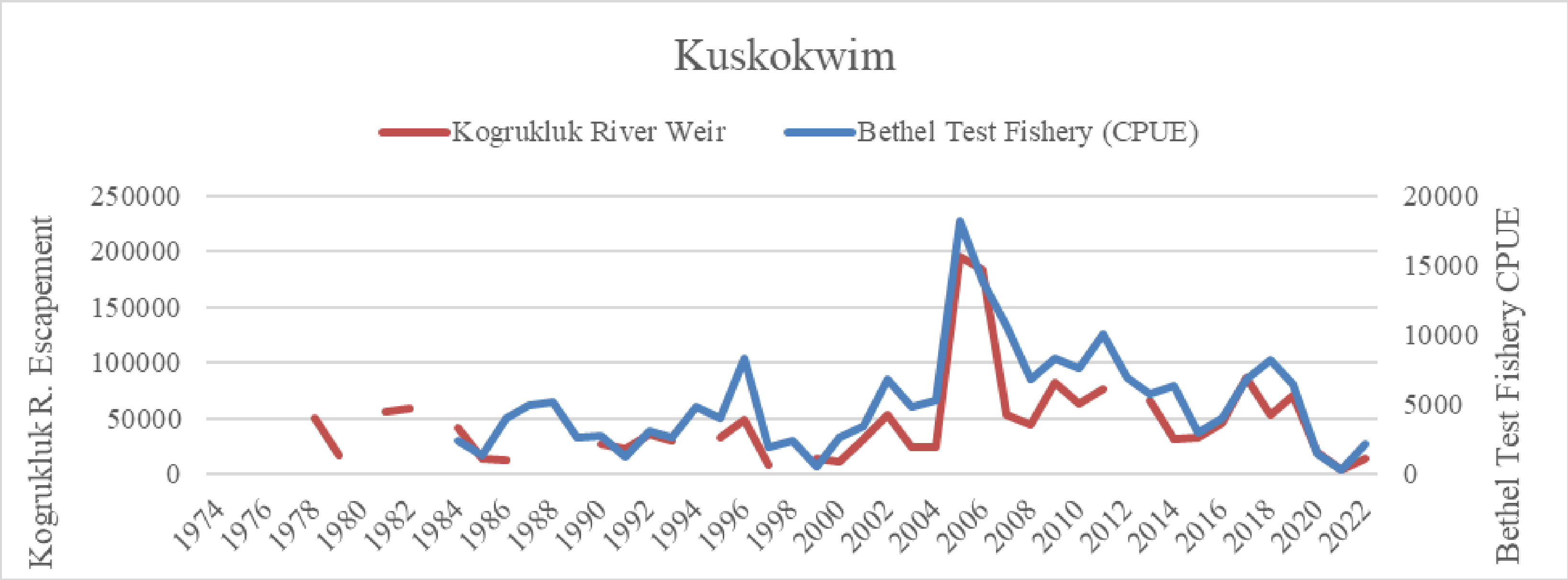
Staff did not indicate whether these should be treated together or as independent tests

Timing of availability of Yukon River data

- Preliminary estimates available early fall (e.g., 2023) following conclusion of salmon season
- Include best estimate of subsistence harvest before the final subsistence harvest estimate is completed in winter/spring of following year (e.g., 2024)

KUSKOKWIM RIVER

Recommendation to use annual CPUE data from Bethel test fishery



Why Bethel CPUE over other data sources for Kuskokwim?

- Only readily available information on total run abundance
- Less impacted by weather conditions compared to weir assessments
- Independently confirmed and used to provide a consistent indicator of relative run abundance
- Used by salmon managers
- Readily available to the public (public reports on ADF&G website)
- Timing will work with Council specifications process

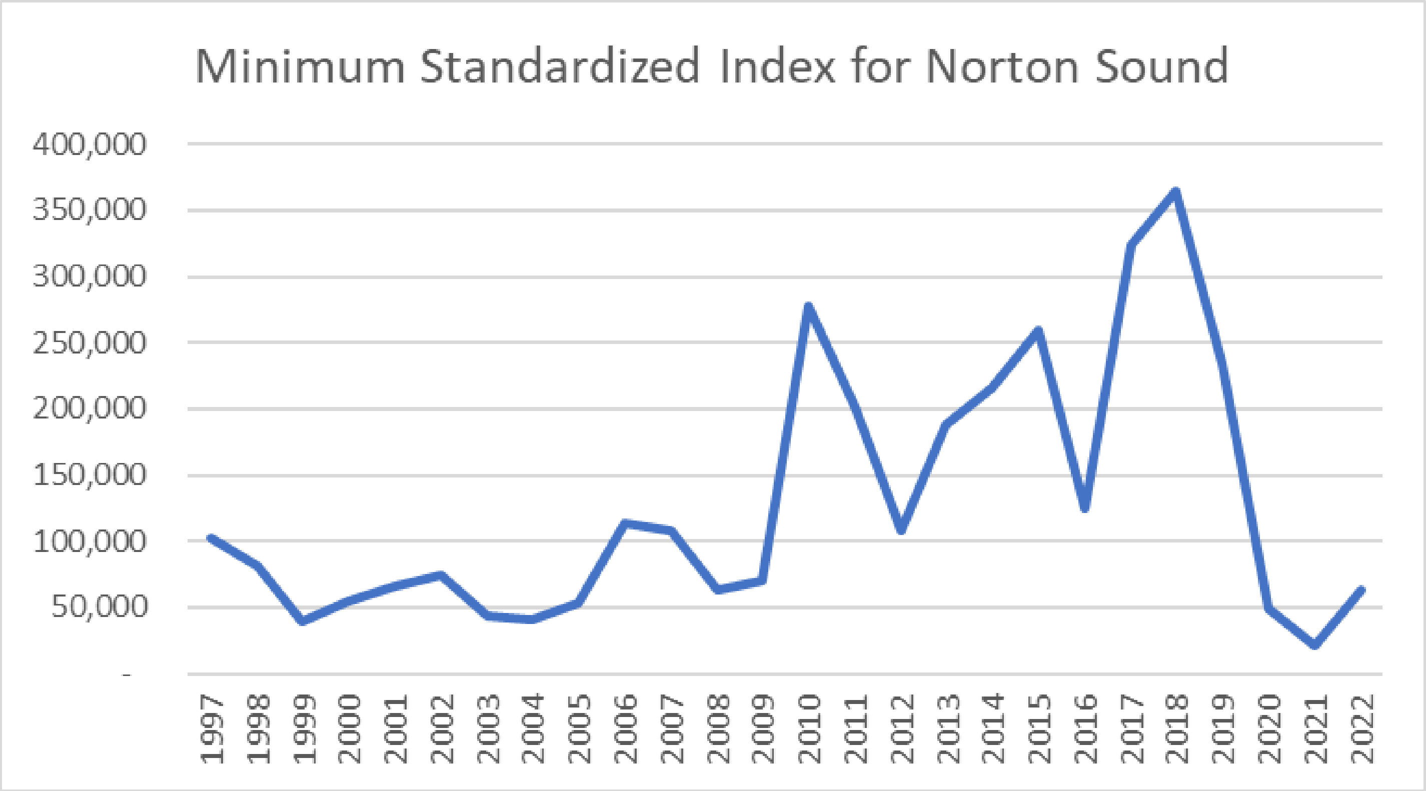
Timing for availability of Bethel CPUE data

- Preliminary CPUE data available in-season on ADF&G website
- Final data available after the conclusion of the salmon season in ADF&G published reports and online

NORTON SOUND

Recommendation to use a minimum standardized index for Norton Sound:

- Sum of escapements to Snake, Nome, Eldorado, Kwiniuk, North rivers (consistently enumerated through weir and tower counts)
- + Total Norton Sound Harvest



Why not just the Kwiniuk as an indicator for Norton Sound?

- Kwiniuk Run reconstruction data available through 2019 (produced through 2022 solely for Council analysis)
  - Run reconstruction is not used by ADF&G in management
- Only one of many runs in the Norton Sound region and may not be a reliable indicator for the whole system

Use of standardized index for Norton Sound

- More representative of chum salmon returns across several management subdistricts
- Include *preliminary* tributary escapements available in the fall for Council proposed specifications process
  - Total estimated chum salmon passage at each assessment project
  - Ignores minimal harvest upriver of assessment locations
- Include *preliminary* commercial, sport, subsistence harvest data
  - Commercial fish tickets
  - ADF&G staff expectation of subsistence and sport harvest based upon historical trends, amounts of fishing opportunity provided and observations of fishery participation

Final data available at a later time in Annual Management Reports published by ADF&G

Need to consider how to address missing data should data to inform index not be consistently available [note that in table 3-11 data are incomplete in recent years]

Three Area Chum Index

- 3 River Systems to be considered:
  - Yukon River
  - Kuskokwim River
  - Norton Sound

Determine criteria to define low abundance

- Systems weighted to account for variance in stock sized across river systems and stock status linked to:
  - Overall abundance
  - Whether Amounts Reasonably Necessary for Subsistence (ANS) are met;
  - Whether escapement goals (EGs) are met

Abundance by River System: Tables 3-8 through 3-11

- Years over which to define? Data availability varies for run sizes (and EGs and ANS) here we showed the most consistent (1992 and 1997-2002) but longer time series of run sizes are available:
  - Yukon Summer
    - 1978-2022
  - Yukon Fall
    - 1974-2022
  - Kuskokwim
    - 1984-2022 (Bethel CPUE)
  - Norton Sound
    - 1997-2022

Is it worth going back to earlier years and environmental regimes for some stocks?
Is it useful to look at run sizes without accompanying EGs and ANS?
What to do with consideration of 2023 value in analysis?

	System	2021 Goal Range Lower	Upper	Type	Initial Year	Escapement 2013	2014	2015	2016	2017	2018	2019	2020	2021
	CHUM SALMON													
	Kuskokwim Area													
2	Middle Fork Goodnews River	12,000		LB SEG	2005	27,692	11,518	11,475	33,671	44,876	NS	38,072	NS	NS
	Kogrukluk River	15,000	49,000	SEG	2005	65,648	30,697	33,091	45,234	85,793	52,937	71,006	19,020	4,153
	Yukon River Summer Chum													
3	Yukon River Drainage[a]	500,000	1,200,000	BEG	2016				1,866,200	2,997,200	1,432,100	1,398,400	705,880	153,120
	East Fork Andreafsky River	40,000		LB SEG	2010	61,234	37,793	48,809	50,362	55,532	36,330	49,881	NS	2,531
	Anvik River	350,000	700,000	BEG	2005	571,690	399,796	374,968	337,821	415,139	305,098	249,014	NS	18,819
	Yukon River Fall Chum													
	Yukon River Drainage[a]	300,000	600,000	SEG	2010	854,000	741,000	541,000	832,000	1,706,000	654,000	528,000	194,000	94,525
	Delta River	7,000	20,000	SEG	2019	32,000	32,000	33,000	22,000	49,000	40,000	52,000	9,900	1,613
5	Teedriinjik (Chandalar) River	85,000	234,000	SEG	2019	253,000	221,000	164,000	295,000	509,000	170,000	116,000	NS	21,162
	Fishing Branch River (Canada)[b]	22,000	49,000	agreement	2008[c]	25,000	7,000	8,000	29,000	48,000	10,151	18,000	5,000	2,413
	Yukon R. Mainstem (Canada)	70,000	104,000	agreement	2010[d]	200,000	156,000	109,000	145,000	401,000	154,000	98,000	23,500	23,170
	Norton Sound													
	Subdistrict 1 Aggregate	eliminated			2019	108,120	97,234	92,030	60,749	123,794	85,390			
	Nome River	1,600	5,300	SEG	2019	4,807	5,589	6,100	7,085	6,321	5,240	3,164	2,822	216
	Snake River	2,000	4,200	SEG	2019	2,755	3,982	4,241	3,651	4,759	3,028	2,374	842	2,352
5	Eldorado River	4,400	14,200	SEG	2019	26,131	27,038	25,549	18,938	73,882	42,361	28,427	11,333	6,283
	Kwiniuk River	9,100	32,600	SEG	2019	5,625	39,597	37,663	8,523	32,541	41,620	18,029	4,953	3,862
	Tubutulik River	3,100	9,000	SEG	2019	4,532	NS	9,835	NS	NS	NS	NS	NS	NS

ESCAPEMENT GOALS TABLE 3-13

ANS Table 3-12

- Threshold for levels of harvest deemed reasonably necessary to support subsistence needs in a particular area
- BOF made positive ANS findings for all 3 areas under consideration and management decisions and harvest opportunities consider are made considering the range

			chum salmon	Summer chum	Fall chum	All salmon
Norton Sound-Port Clarence Area		1998				96,000-160,000
	Subdistrict 1 of Norton Sound District*	1999	3,430-5,716			
Yukon Area		2001		83,500-142,192	89,500-167,900	
Kuskokwim Area		2013				
	Kuskokwim River		41,200-116,400			
	Districts 4 and 5					6,900-17,000
	Remainder of Area					12,500-14,400

ADDED INFORMATION:

AVERAGE RUN SIZE,

25-75%S

INFO ON EGS AND ANS MET (WHERE AVAILABLE)

TABLES 3-8 THROUGH 3-11 RESORTED ON RUN SIZE (ADDENDUM POSTED)

YUKON SUMMER CHUM

Run reconstruction
3 escapement goals

EGs drainage
Upper 1,200,000
Lower 500,000

ANS drainage
Upper 142,192
Lower 83,500

Year	Yukon Summer Index (run reconstruction)	Currently established ANS Met (83,500–142,192)	Met or Exceeded All Current EGs(Anvik, EF Andreafsky and Drainagewide; based on currently used EG range)
1995	4,295,000	YES	100%
1996	4,219,600	YES	100%
2006	4,012,700	YES	100%
1994	3,670,100	YES	100%
2017	3,627,300	YES	100%
2013	3,346,100	YES	100%
2005	2,760,000	YES	67%
1992	2,707,800	YES	100%
2016	2,578,100	YES	67%
2012	2,478,400	YES	100%
2014	2,463,900	YES	67%
2011	2,405,800	YES	100%
2007	2,154,700	YES	100%
2018	2,070,000	NO	33%
2008	2,065,100	YES	100%
2015	1,974,300	YES	100%
1993	1,786,500	YES	100%
2009	1,698,400	NO	33%
2019	1,682,200	NO	67%
2010	1,664,800	YES	100%
1997	1,654,200	YES	100%
2004	1,462,500	NO	100%
2002	1,273,400	YES	100%
2003	1,259,000	NO	33%
1999	1,142,800	YES	67%
1998	1,012,700	YES	100%
2020	762,520	NO	100%
2000	552,470	NO	0%
2001	541,970	NO	0%
2022	478,130	NO	0%
2021	154,370	NO	0%

YUKON SUMMER CHUM

EGs drainage
Upper 1,200,000
Lower 500,000

ANS drainage
Upper 142,192
Lower 83,500

75%	2,642,950
average	2,063,060
50%	1,974,300
25%	1,266,200

Year	Yukon Summer Index (run reconstruction)	Currently established ANS Met (83,500–142,192)	Met or Exceeded All Current EGs(Anvik, EF Andreafsky and Drainagewide; based on currently used EG range)
1995	4,295,000	YES	100%
1996	4,219,600	YES	100%
2006	4,012,700	YES	100%
1994	3,670,100	YES	100%
2017	3,627,300	YES	100%
2013	3,346,100	YES	100%
2005	2,760,000	YES	67%
1992	2,707,800	YES	100%
2016	2,578,100	YES	67%
2012	2,478,400	YES	100%
2014	2,463,900	YES	67%
2011	2,405,800	YES	100%
2007	2,154,700	YES	100%
2018	2,070,000	NO	33%
2008	2,065,100	YES	100%
2015	1,974,300	YES	100%
1993	1,786,500	YES	100%
2009	1,698,400	NO	33%
2019	1,682,200	NO	67%
2010	1,664,800	YES	100%
1997	1,654,200	YES	100%
2004	1,462,500	NO	100%
2002	1,273,400	YES	100%
2003	1,259,000	NO	33%
1999	1,142,800	YES	67%
1998	1,012,700	YES	100%
2020	762,520	NO	100%
2000	552,470	NO	0%
2001	541,970	NO	0%
2022	478,130	NO	0%
2021	154,370	NO	0%

Midpoint of (EG +ANS)
962,846

Lower end of EG + ANS
583,500

EGs for drainage:
Upper 600,000
Lower 300,000

ANS for drainage
Upper 167,900
Lower 89,500

75%	1,150,608
average	893,713
50%	801,614
25%	450,752

Year	Yukon Fall Index (run reconstruction)	Currently established ANS Met (89,500–167,900)	Met or Exceeded All Current EGs(Drainagewide, Delta, Chandalar, Fishing Branch CA, Yukon Mainstem CA; based on currently used EG range)
2017	2,288,383	NO	100%
2005	2,180,488	YES	100%
1995	1,611,534	YES	100%
2016	1,389,062	NO	100%
2011	1,238,091	NO	80%
2013	1,211,909	YES	100%
2006	1,211,273	NO	100%
2007	1,160,101	YES	100%
1996	1,141,115	YES	100%
2018	1,112,834	NO	80%
1994	1,109,572	YES	100%
2012	1,085,700	YES	100%
2014	954,769	YES	80%
2008	857,269	NO	80%
2015	823,653	NO	80%
2019	801,614	NO	80%
2003	792,025	NO	100%
1997	707,279	YES	100%
2004	653,216	NO	80%
2009	598,277	NO	100%
2010	587,091	NO	80%
1992	568,652	YES	75%
1993	473,535	NO	75%
2002	427,969	NO	80%
1999	419,480	YES	40%
2001	374,885	NO	60%
1998	351,957	NO	40%
2000	252,942	NO	40%
2022	242,480	NO	0%
2020	184,233	NO	25%
2021	95,249	NO	0%

YUKON FALL CHUM

Midpoint of (EG +ANS)
578,700

Lower end of EG +ANS

389,500

EGs based on Kogrukluk
Not Bethel Test fishery
CPUE

CPUE <2,300 typically fail to meet ANS and EGs

75%	7,275
average	5,715
50%	5,248
25%	2,772

Year	Bethel Test Fishery CPUE	Currently established ANS Met (41,200-116,400)	All Current Egs (Kogrukluk River; based on currently used
2005	18,192	YES	YES
2006	13,927	YES	YES
2007	10,655	YES	YES
2011	10,028	YES	YES
2009	8,257	YES	YES
1996	8,256	YES	YES
2018	8,205	YES	YES
2010	7,655	YES	YES
2012	6,894	YES	
2002	6,798	YES	YES
2017	6,785	YES	YES
2008	6,749	YES	YES
2019	6,429	NO	YES
2014	6,345	YES	YES
2013	5,739	YES	YES
2004	5,248	YES	YES
2003	4,819	YES	YES
1994	4,801	YES	
2016	3,998	YES	YES
1995	3,986	YES	YES
2001	3,396	YES	YES
1992	3,057	YES	YES
2015	2,945	NO	YES
2000	2,599	YES	NO
1993	2,586	YES	YES
1998	2,337	YES	
2022	2,191	NO	NO
1997	1,965	NO	NO
2020	1,443	NO	YES
1999	549	YES	NO
2021	327	NO	NO

KUSKOKWIM RIVER CHUM

NORTON SOUND AGGREGATE INDEX FOR CHUM

No aggregate EG, assessed individually

<70,000(index) frequently fail to meet EGs and often low subsistence

75%	198,842
average	128,481
50%	91,450
25%	57,029

ANS all salmon not just chum salmon

Year	Minimum Standardized Index (Sum of Snake, Nome, Eldorado, Kwiniuk, North rivers weir/tower escapement and Total NS Harvest)	Met or Exceeded Current EGs (Snake, Nome, Eldorado, Kwiniuk; based on currently used EG range - excludes Tubutulik because that system is rarely assessed)	Subdistricts 1-6 Subsistence Harvest
2018	363,939	100%	6,572
2017	324,148	100%	14,226
2010	277,401	100%	16,201
2015	259,441	100%	14,767
2019	234,270	100%	6,280
2014	215,382	100%	16,233
2011	202,421	100%	14,556
2013	188,104	75%	15,504
2016	124,397	75%	12,818
2006	113,350	100%	5,942
2007	107,719	100%	12,011
2012	107,359	50%	12,399
1997	101,934	100%	16,906
1998	80,966	100%	14,497
2002	73,710	100%	13,095
2009	69,906	25%	8,946
2001	66,123	75%	13,963
2008	63,806	75%	8,709
2022	62,657	100%	10,539
2000	55,153	75%	12,989
2005	53,034	100%	6,115
2020	49,762	50%	1,950
2003	43,407	75%	9,498
2004	41,270	75%	4,541
1999	39,217	0%	13,049
2021	21,632	50%	1663

Step-down provisions and how to weight or prioritize 3 areas?

- Council needs to indicate if all 3 regions are weighted equally or if some are a higher priority than others for indications of low abundance e.g.,
  - All 3 areas as assessed against benchmark for low abundance if all 3 are above threshold values then no PSC limit
  - If 2 out of 3 areas are above threshold than PSC limit = *[limit to be determined by Council]*
  - If 1 out of 3 areas is above threshold and below then PSC limit = *[lower limit to be determined by Council]*
  - If all 3 areas are below thresholds then PSC limit = *[more restrictive limit to be determined by Council]*
- If prioritization of one region over others is desirable then step down provisions would be implemented only if the specific area is at low abundance as specified by the Council

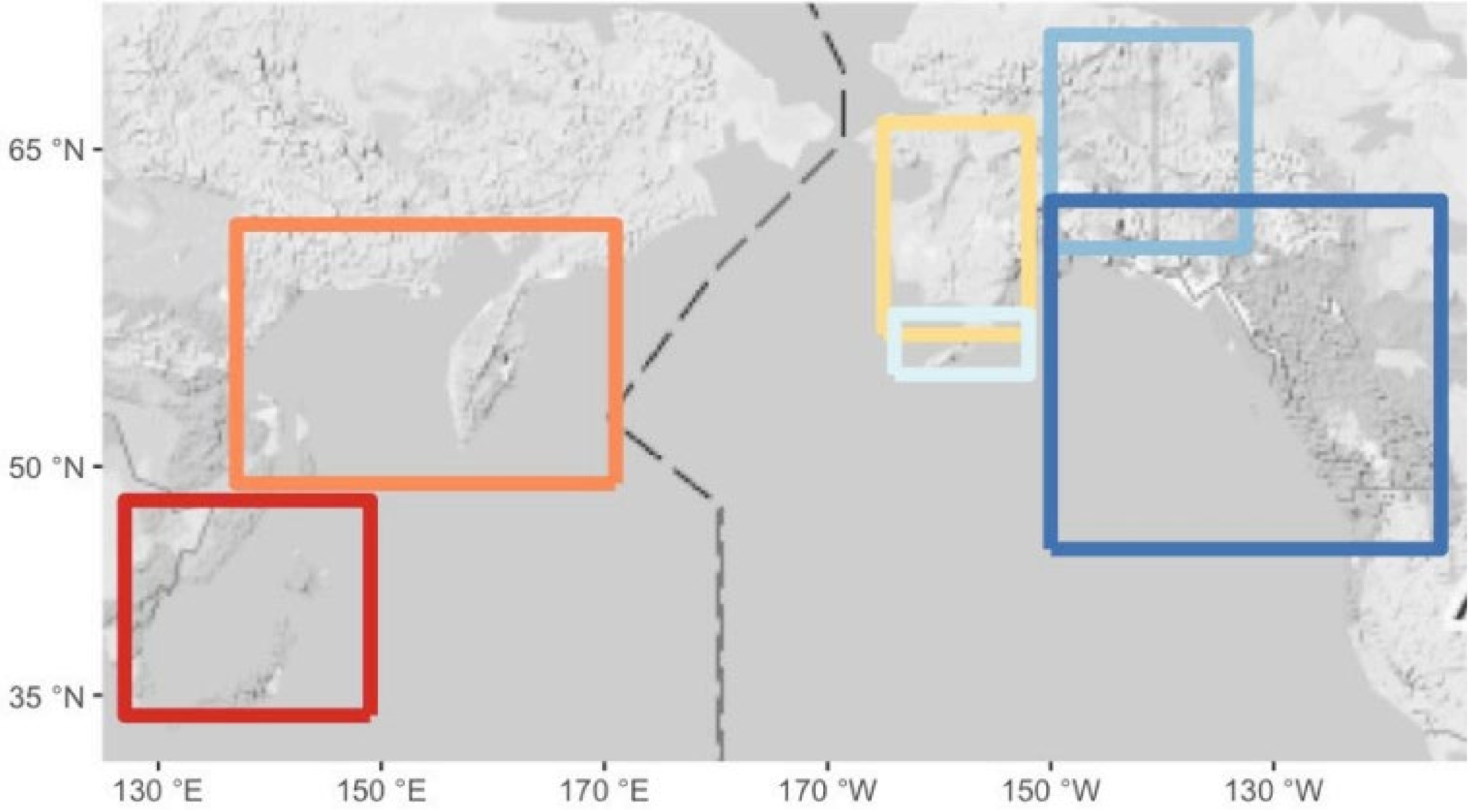
Dutch Harbor, ASMI Industry and Partner Use

ALTERNATIVE 3 – WESTERN ALASKA CHUM SALMON PSC LIMIT

PSC limit for WAK chum

- "The Council's intent with Alternative 3 is that it would establish a PSC limit specifically for WAK chum salmon, as identified through genetic sampling."
- **It is not possible to manage a PSC limit specific to only WAK chum in-season.**
  - **NMFS cannot manage a PSC limit specific to WAK chum in season**
  - **Genetics data are evaluated after the season.**
- Therefore, staff have moved forward with this concept as a 'WAK chum performance threshold'
  - Remainder of this alternative is structured around this threshold concept

Not all chum salmon caught as bycatch would return to Western Alaska river systems



Six genetic reporting groups of baseline chum salmon populations

Source: Barry et al., 2023. Genetic Stock Composition Analysis of Chum Salmon from the Prohibited Species Catch of the 2022 Bering Sea Walleye Pollock Trawl Fishery, Preliminary Report

Northeast Asia
Mix of hatchery and wild stocks from Russia

Southeast Asia
Primarily hatchery released chum from Japan

Coastal Western Alaska
River systems from Norton Sound to Bristol Bay

Upper/Mid Yukon
Yukon fall and some summer chum

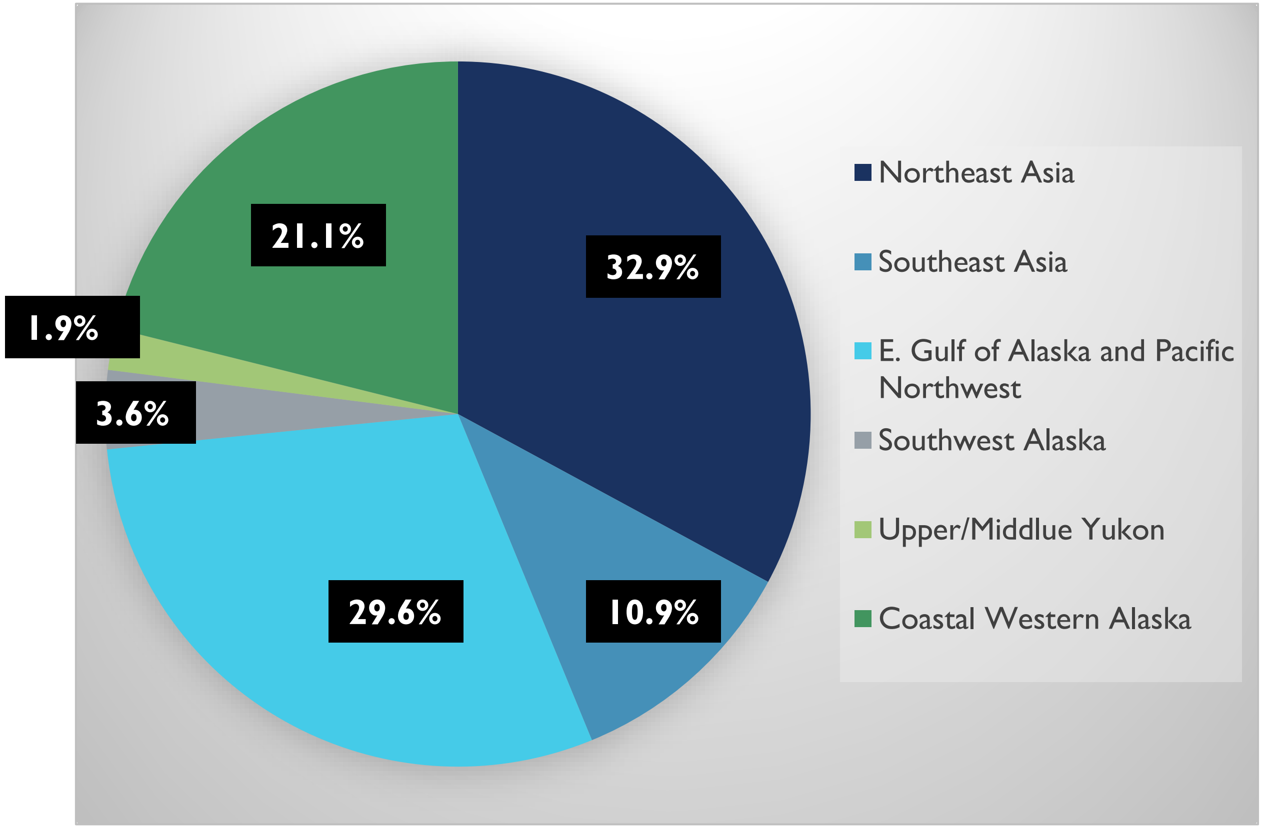
Southwest Alaska

Eastern Gulf of Alaska/Pacific Northwest

Summary of chum bycatch genetics, 2022

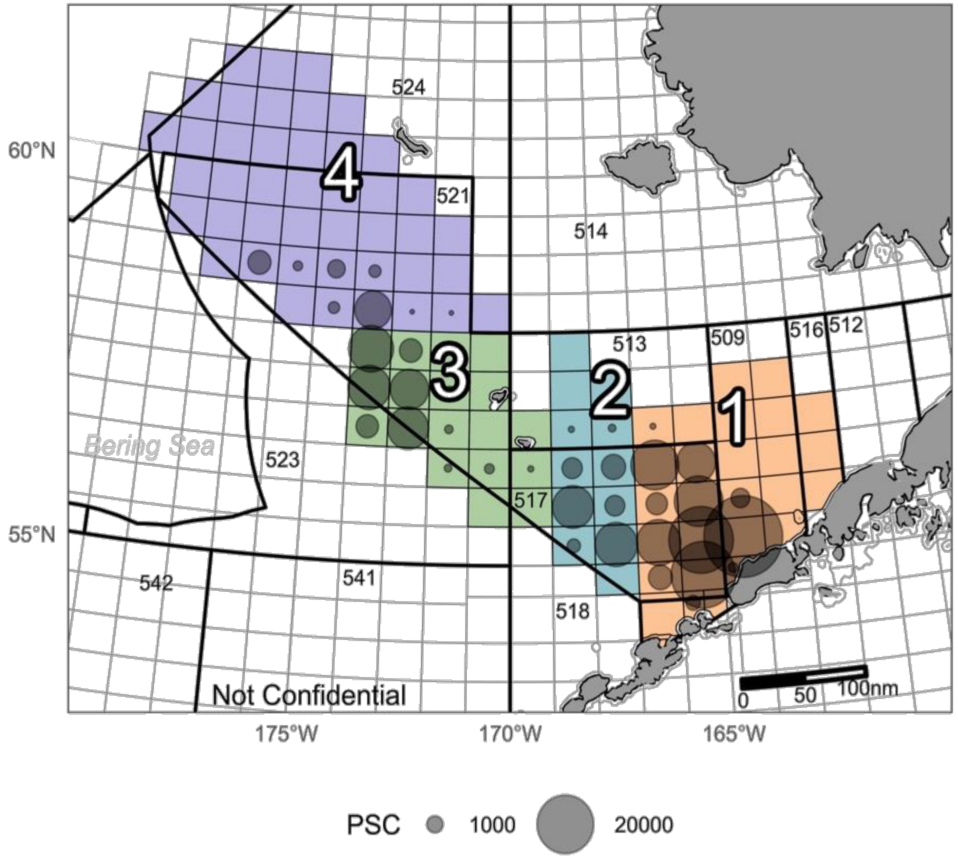
The Bering Sea pollock fishery caught 242,375 chum salmon as bycatch in 2022

2022 stock composition estimates



Notes: Pie chart displays the genetic stock reporting groups as a proportion of the total chum salmon bycatch in the 2022 Bering Sea pollock fishery.

Spatial distribution of the chum bycatch

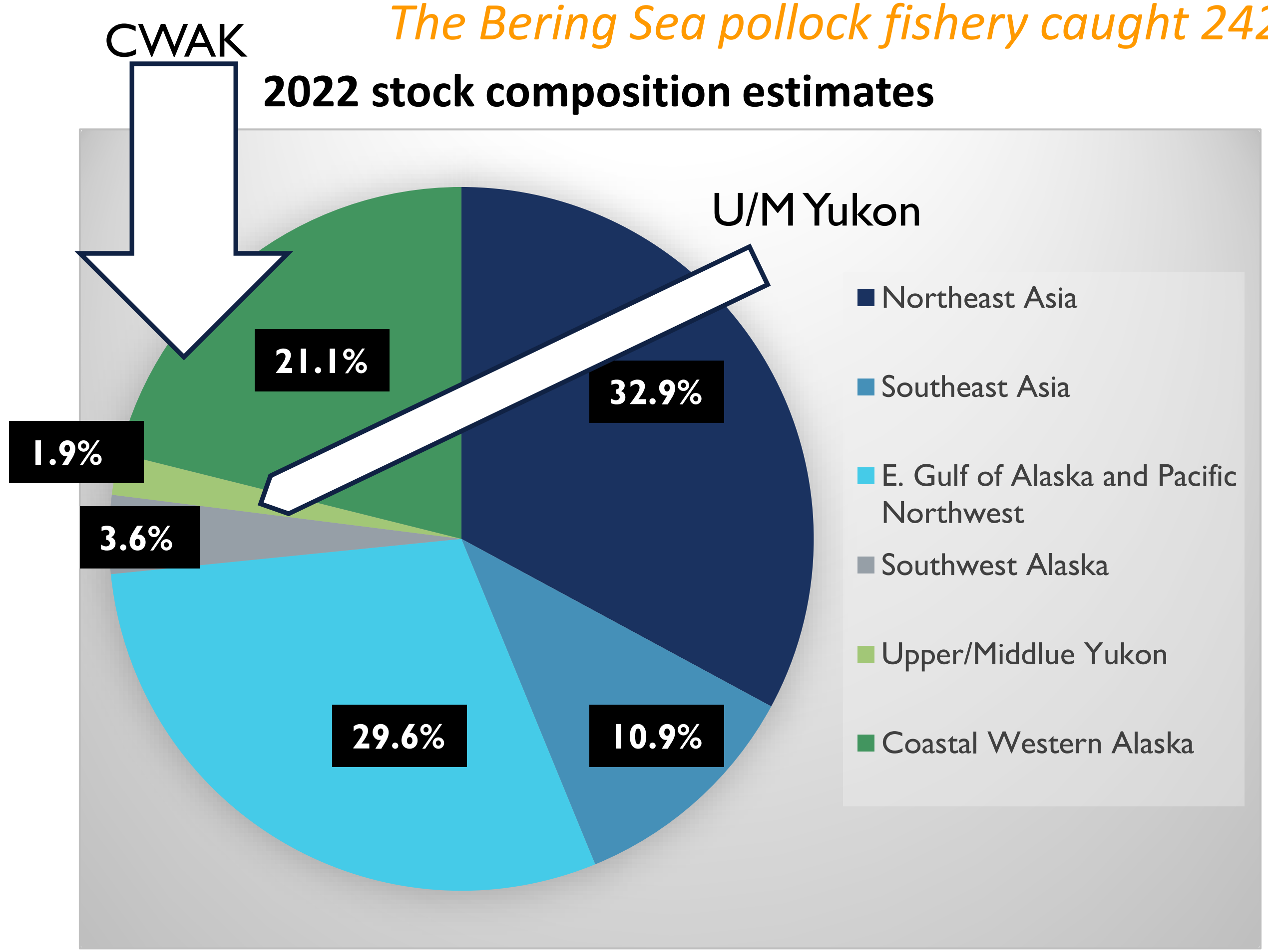


Notes: Circles represent the amount of total bycatch in each ADF&G groundfish statistical area (smaller grey boxes embedded within larger Federal reporting areas).

Summary of chum bycatch genetics, 2022

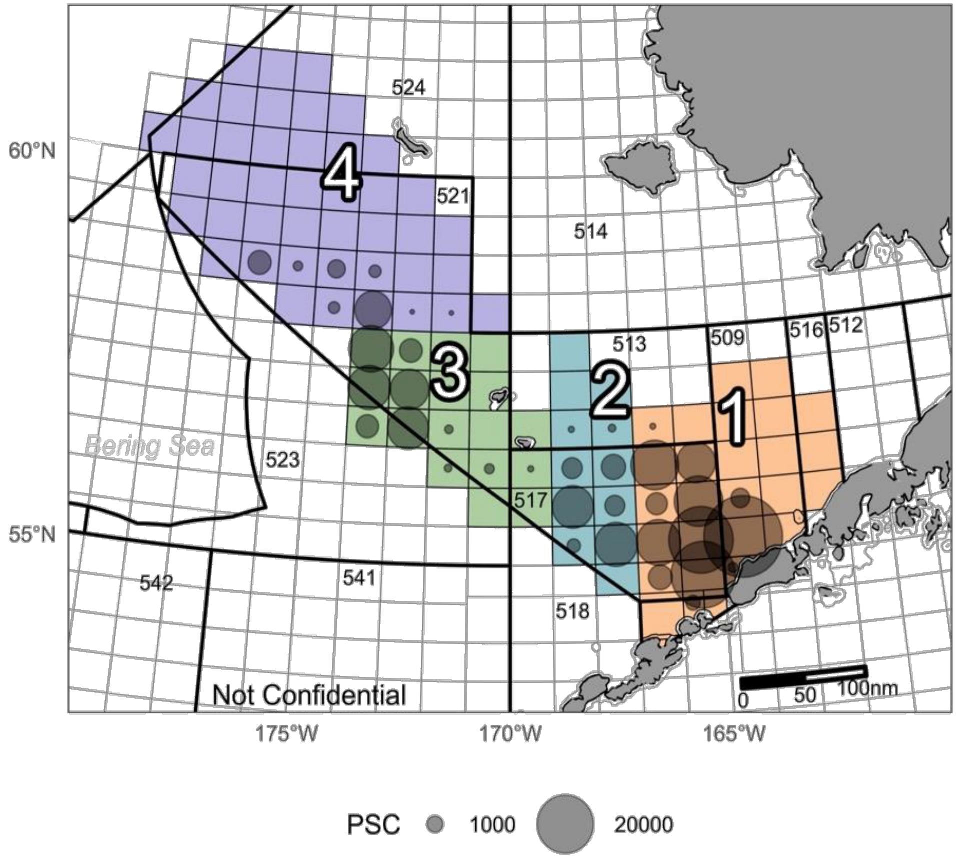
The Bering Sea pollock fishery caught 242,375 chum salmon as bycatch in 2022

2022 stock composition estimates



Notes: Pie chart displays the genetic stock reporting groups as a proportion of the total chum salmon bycatch in the 2022 Bering Sea pollock fishery.

Spatial distribution of the chum bycatch



Notes: Circles represent the amount of total bycatch in each ADF&G groundfish statistical area (smaller grey boxes embedded within larger Federal reporting areas).

WAK chum performance threshold: Key Points

- Two approaches considered:
  1. Stand-alone performance threshold
     - Determine value of the threshold (number of WAK chum not to be exceeded)
     - Determine how this could be based, e.g., historical proportions (averages) or other approach
  2. Link performance threshold to an overall PSC limit
- Assessed retroactively
  - Genetics information available in April following previous B season
  - Assessment of bycatch towards a threshold would be available prior to the following B season

How to establish a chum performance threshold

- Use of genetic proportions in establishing a WAK perf. threshold
  - Annual proportion
  - Average proportion over a number of years
  - Rolling average (caveat perverse incentives associated with that)
- Assumptions regarding relative proportion and **associated uncertainty** around that point estimate
  - Annual variability in genetic proportion with uncertainty surrounding it

USE OF AVERAGES AND ASSOCIATED UNCERTAINTY TO CALCULATE THE THRESHOLD TABLE 3-16

Time Period		Coastal Western Alaska	Upper Middle Yukon	Western Alaska
3-Year	Proportion	12.7%	1.2%	13.8%
	95% CI	11.4 - 14.0%	0.7-1.7%	12.1 - 15.7%
	Number	42,401	3,748	46,150
	95% CI	37,747 - 47,163	2,213 - 5,630	39,960 - 52,794
5-Year	Proportion	13.9%	1.5%	15.3%
	95% CI	12.3 - 15.5%	0.9 - 2.1%	13.8 - 17.6%
	Number	45,483	4,455	49,938
	95% CI	40,132 - 51,085	2,739 - 6,507	42,871 - 57,592
10-Year	Proportion	15.4%	3.1%	18.5%
	95% CI	13.6 - 17.3%	2.2 - 4.1%	15.8-21.4%
	Number	45,668	8961	54,629
	95% CI	40,055 - 51,431	6,398 - 11,938	46,453 - 63,369

USE OF THE MOST RECENT GENETICS TO CALCULATE A WAK CHUM PERFORMANCE THRESHOLD

TABLE 3-17

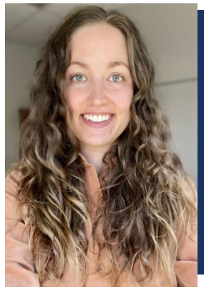
Year	Mean WAK proportion	WAK threshold
2011	25.10%	n/a
2012	21.20%	60,240
2013	24.40%	50,880
2014	19.80%	58,560
2015	19.90%	47,520
2016	24.60%	47,760
2017	20.00%	59,040
2018	18.80%	48,000
2019	16.20%	45,120
2020	9.10%	38,880
2021	9.40%	21,840
2022	23.00%	22,560
2023	n/a	55,200

Decision points for a WAK chum performance threshold

- Value associated with a WAK chum performance standard
  - Does it change annually, periodically, rolling?
- What management measures are associated with exceeding a performance threshold
  - How is uncertainty in genetic proportion incorporated into the assessment of exceeding it?
  - How to incentivize the fleet to remain below a threshold?
- On what time scale is exceeding to be assessed
- Allocation of the threshold to fishery sectors, CDQ groups and inshore cooperatives
- Option 2 step down provisions are the same as under Alt 2, option 2

Dutch Harbor, ASMI Industry and Partner Use

ALTERNATIVE 4 – ADDITIONAL REGULATORY REQUIREMENTS FOR IPAS TO BE MANAGED BY EITHER NMFS OR THE IPAS



Option 1 of Alternative 4

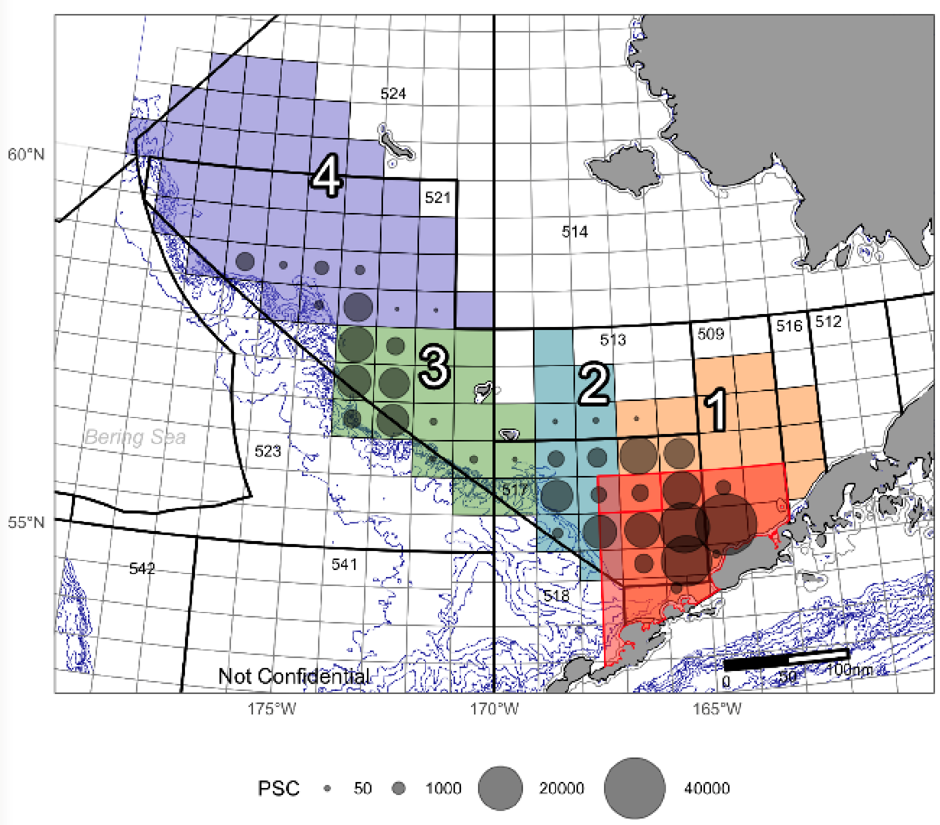


Figure 3-12, pg. 92

- Require a “chum salmon reduction plan agreement” to be implemented in the B season to prioritize avoidance in genetic cluster areas 1 and 2 for a specified amount of time when two triggers are met:
  - Trigger 1: an established bycatch rate
  - Trigger 2: a proportion of WAK to non-WAK chum

Decision point: determining the managing entity (section 3.4.1.1)

- To move forward with option 1 of Alternative 4, the Council needs to determine the managing entity

IPAs NMFS

- **This is the primary decision that determines how option 1 would work**

If the IPAs are determined to be the managing entity (section 3.4.1.1)

- A new regulatory provision would be added to implementing regulations for the salmon bycatch IPAs at 50 CFR 679.21(f)(12)
- IPA representatives put forward two potential measures that would modify the current RHS system for chum salmon avoidance
  - Reduce the Base Rate “floors”
  - Increase the size of RHS closure areas East of 168 degrees West longitude

Considerations related to proposed modifications to RHS rolling for chum salmon avoidance

- Lowering the Base Rate floor may increase the likelihood that a hot spot closure area for chum avoidance would be implemented
- But having a higher bycatch rate (or exceeding trigger 1) may not mean the rate is driven by WAK chum
- Implementing more hot spot closures to avoid chum salmon may extend the length of the B season

NMFS as the managing entity (section 3.4.1.1)

NMFS

- The Council would need to determine the additional avoidance measures
- NMFS cannot manage dynamic area closures
- Some type of static time/area closure in genetic cluster area 1 and 2 may be feasible

The Council needs to determine who sets the trigger values, either the Council or the IPAs (section 3.4.1.2)

IPAs as managing entity

- Either the Council or IPAs could determine the trigger values

Council

- Values would be set in regulation
- When both values (triggers) are exceeded, additional measures would be required
- Adding specificity to regulations reduces flexibility

IPAs

- RHS is an industry-led program managed under private contractual agreements - would be consistent with prior Council decisions
- When both values (triggers) are exceeded, additional measures would be required
- Allows industry to consider and respond to new information without regulatory amendments

NMFS as managing entity

- The Council would determine the trigger values and provide direction on how they would apply

Trigger 1 - Chum salmon bycatch rates

Table 3-18 Chum salmon bycatch rates (chum per mt of pollock) by sector and fishery total, 201-2022

Year	CP	Mothership	Inshore	Total
2011	0.22	0.37	0.40	0.28
2012	0.01	0.02	0.06	0.03
2013	0.04	0.06	0.33	0.17
2014	0.21	0.12	0.43	0.29
2015	0.15	0.20	0.50	0.30
2016	0.49	0.61	0.41	0.43
2017	0.65	0.25	0.45	0.62
2018	0.35	0.32	0.43	0.39
2019	0.45	0.66	0.50	0.45
2020	0.31	0.30	0.73	0.49
2021	0.43	0.76	1.01	0.73
2022	0.38	0.60	0.50	0.41
Avg.	0.31	0.36	0.48	0.38

- The average chum salmon bycatch rate for the pollock fishery (2011-2022) is 0.38 chum per mt of pollock in the B season

Trigger 1 – Chum salmon bycatch rates by cluster area and Early/Late period breakout

Revised Table 3-19 Chum salmon bycatch rates (chum per mt of pollock) by genetic cluster area in the early and late period B season pollock fishery, 2011 through 2022

	Cluster area 1		*Cluster area 2*		*Cluster area 3*		*Cluster area 4*	
	Early	**Late**	**Early**	**Late**	**Early**	**Late**	**Early**	**Late**
2011	0.53	0.46	0.18	0.34	0.16	0.24	0.13	0.07
2012	0.04	0.23	0.02	0.11	0.01	0.09	0.001	0.004
2013	0.42	0.64	0.14	0.35	0.02	1.09	0.01	0.03
2014	0.23	0.46	0.56	1.02	0.33	0.40	0.04	0.39
2015	0.15	0.88	0.08	0.69	0.16	1.00	0.04	0.12
2016	0.31	0.50	0.40	0.67	0.66	0.40	0.05	0.81
2017	0.59	0.13	1.21	0.48	0.45	0.24	0.30	0.41
2018	0.45	0.16	0.97	1.72	0.96	0.64	0.01	0.05
2019	0.46	0.43	0.45	0.63	0.84	0.19	0.02	0.87
2020	0.13	0.64	0.73	1.86	0.06	1.30	0.05	0.38
2021	1.02	0.07	8.98	0.25	0.13	0.61	0.01	0.06
2022	0.34	1.12	0.11	1.96	0.04	0.77	0.02	0.92
Average	0.39	0.48	1.15	0.84	0.32	0.58	0.06	0.34

Source: NMFS Alaska Region Catch Accounting System; ChumRates_YrTempGrpcorrected

Trigger 2 - WAK to non-WAK chum proportions

Year	Cluster area 1		Cluster area 2		Cluster area 3		Cluster area 4	
	WAK	non-WAK	WAK	non-WAK	WAK	non-WAK	WAK	non-WAK
2011	32.8%	67.2%	-	-	28.8%	71.2%	30.2%	69.9%
2012	26.9%	73.1%	-	-	-	-	-	-
2013	25.8%	74.2%	24.1%	75.9%	-	-	17.6%	82.4%
2014	24.8%	75.2%	25.7%	74.3%	16.1%	83.9%	0.0%	-
2015	32.0%	68.0%	17.2%	82.8%	23.8%	76.2%	11.1%	88.9%
2016	31.1%	68.9%	26.2%	73.8%	10.6%	89.4%	0.0%	-
2017	29.5%	70.5%	18.4%	81.6%	12.8%	87.2%	11.9%	88.1%
2018	32.9%	67.1%	18.1%	81.9%	18.5%	81.5%	-	-
2019	32.9%	67.1%	18.1%	81.9%	18.5%	81.5%	-	-
2020	5.3%	94.8%	9.2%	90.8%	10.3%	89.7%	8.3%	91.8%
2021	9.5%	90.6%	8.4%	91.6%	12.9%	87.1%	-	-
2022	26.5%	73.5%	14.2%	85.8%	9.1%	90.9%	-	-
Avg.	25.8%	74.2%	15.0%	68.4%	13.4%	69.9%	6.6%	35.1%

Table 3-20 estimated mean proportion of WAK and non-WAK chum salmon bycatch in the **Early period** of the B season fishery by genetic cluster area, 2011-2022, pg. 98

Year	Cluster area 1		Cluster area 2		Cluster area 3		Cluster area 4	
	WAK	non-WAK	WAK	non-WAK	WAK	non-WAK	WAK	non-WAK
2011	25.5%	74.5%	7.6%	92.4%	22.1%	77.9%	-	-
2012	23.4%	76.6%	-	-	-	-	-	-
2013	22.1%	77.9%	19.7%	80.3%	29.5%	70.5%	7.7%	92.4%
2014	23.3%	76.7%	19.5%	80.5%	16.1%	83.9%	8.0%	92.0%
2015	22.3%	77.7%	6.5%	93.5%	18.3%	81.7%	3.4%	96.6%
2016	29.0%	71.0%	16.3%	83.7%	18.5%	81.5%	16.7%	83.3%
2017	29.8%	70.2%	10.0%	90.0%	15.0%	85.0%	7.1%	92.9%
2018	25.8%	74.2%	17.3%	82.7%	14.2%	85.8%	1.6%	98.4%
2019	25.8%	74.2%	17.3%	82.7%	14.2%	85.8%	1.6%	98.4%
2020	14.5%	85.5%	3.2%	96.8%	5.1%	94.9%	2.1%	98.0%
2021	17.7%	82.3%	-	-	8.2%	91.8%	-	-
2022	29.9%	70.1%	11.4%	88.7%	12.5%	87.5%	2.2%	97.8%
Avg.	24.1%	75.9%	10.7%	72.6%	14.5%	77.2%	4.2%	70.8%

Table 3-21 estimated mean proportion of WAK and non-WAK chum salmon bycatch in the **Late period** of the B season fishery by genetic cluster area, 2011-2022, pg. 98

Applying the triggers (3.4.1.3)

IPAs as managing entity

In the 2025 B season, IPA managers would monitor chum salmon bycatch rates (as done under the status quo) in an area (e.g., cluster area 1 and 2)

- Did the chum salmon bycatch rate in the area exceed the numerical value set for trigger 1?
  - If yes, then IPA managers would look at whether the genetic proportion of WAK chum in that area exceeded the numerical value of trigger 2 in the 2024 B season
- Did the proportion of WAK chum in the 2024 B season in the area exceed the numerical value set for trigger 2?
  - If yes, then additional chum salmon avoidance measures would be in place
  - If no, then no additional avoidance measures in place, but the RHS system under the status quo would be in place

NMFS as managing entity

?

Additional information required to analyze changes to IPAs (section 3.4.1.4)

Staff would need:

- Bycatch rate that would be used (trigger 1)
- The proportion of WAK to non-WAK chum (trigger 2)
- The new Base Rate floor(s)
- The new size of spatial area closures East of 168 degrees West Longitude
- Whether bycatch performance would be assessed in the cluster areas individually or as spatially combined
- The amount of time new measures would be in place

How should that information be provided?

Staff receive input from industry/IPA representatives for analysis in the Initial Review draft

Industry provide a proposal to the Council outlining these elements prior to Initial Review

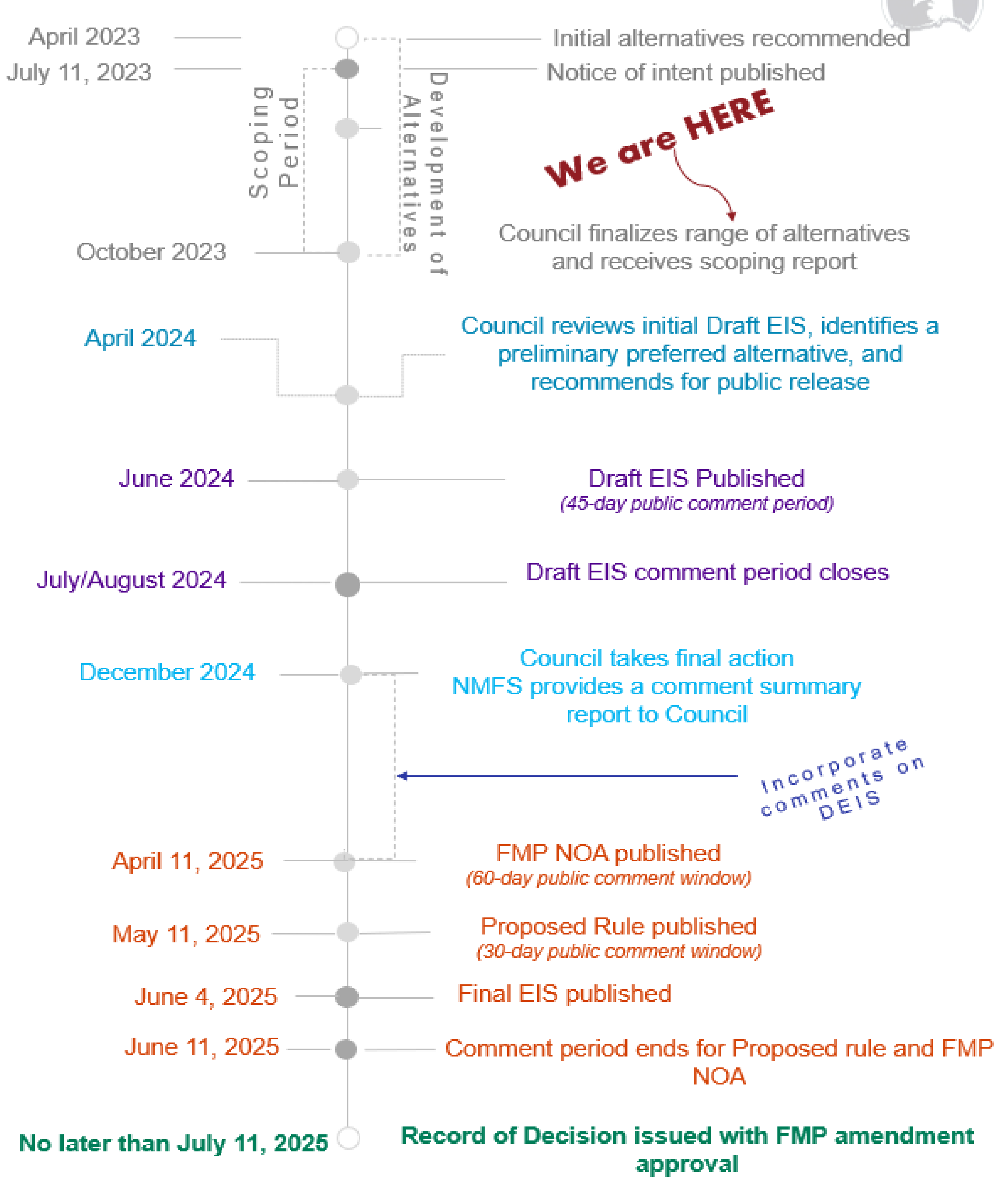
Option 2 of Alternative 4

- Add a new provision to the current IPA regulations at 50 CFR 679.21(f)(12)(iii)(E)
- IPAs would be required to use the most refined genetics information available to further prioritize avoidance of areas and times of highest proportion of WAK chum stocks
- Specific details on how the IPAs could respond to additional regulatory requirements to use the most refined genetic information available were not provided at this time
- Does not appear to be substantially different from the status quo
  - Two measures currently incorporated into existing program to avoid times and areas when WAK chum salmon are more likely to be on the pollock grounds

Timeline moving forward

- The Council is finalizing alternatives for future analysis at this meeting
  - See Table ES 6 for a list of guiding questions
- The EIS will be prepared under new statutory constraints resulting from the Fiscal Responsibility Act
  - Effective immediately it constrains the overall timeline for preparing and completing an EIS to **two years** and **limits the EIS to 150 pages in length**
- Time clock starts with the publication of the Notice of Intent to prepare an EIS and ends with the Record of Decision

Potential Schedule for Draft EIS



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