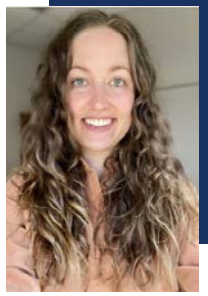
Overview of Salmon Bycatch Management and Recent Bycatch Performance

Alaska Subsistence Regional Advisory Councils
Fall 2023



Dr. Kate Haapala, Fishery Analyst/Rural Community and Tribal Liaison Kate.Haapala@noaa.gov

WHAT IS THE NORTH PACIFIC FISHERY MANAGEMENT COUNCIL?

The Guiding Law for U.S. Marine Fisheries

The Magnuson-Stevens Fishery Conservation and Management Act – Adopted 1976

U.S. Regional Fishery Management Councils

200-mile limit

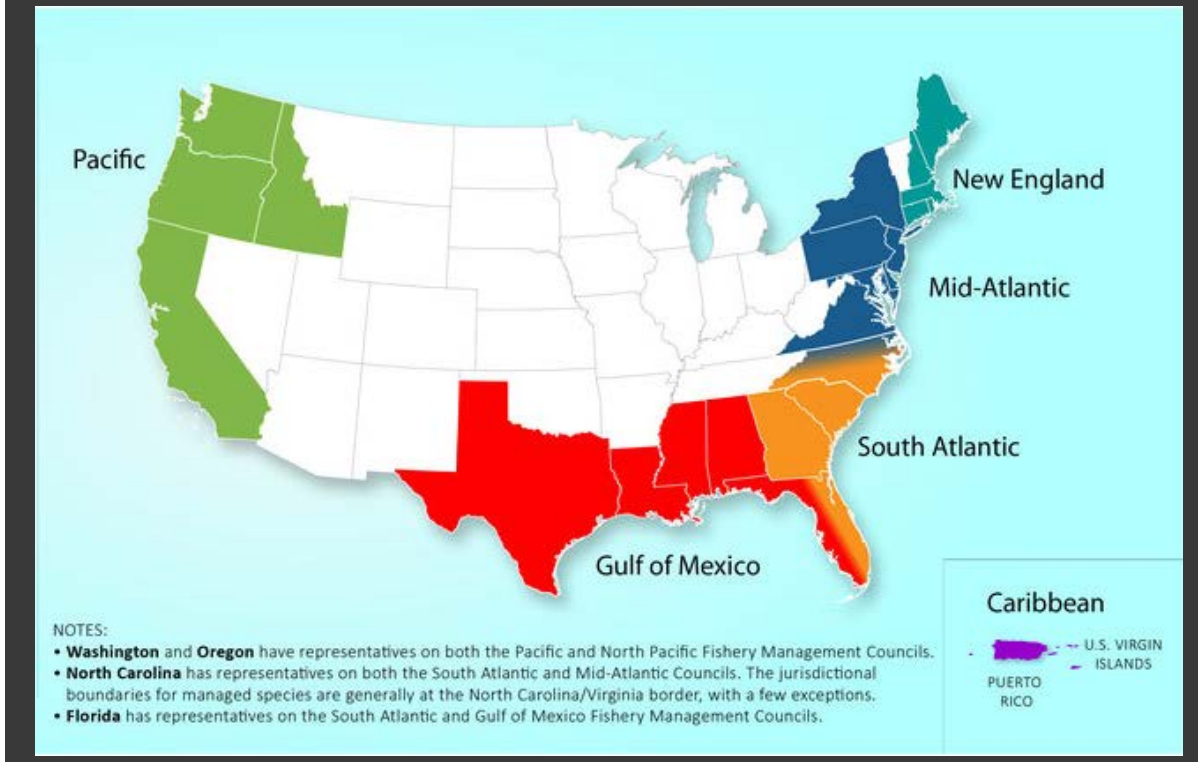
Established the 3-200 nautical mile exclusive economic zone

National Standards

Established National Standards and other requirements for conservation and management of resources

8 Councils

Established a system of 8 Regional Councils, composed of fishermen and government representatives, to develop fishery regulations for their specific area




Karla Bush
ADF&G alternate


Rachel Baker
ADF&G


David Witherell
Executive Director


Rudy Tsukada


Bill Tweit
WA DF&W Acting Chairman


Chris Oliver
PSMFC


Steve Williams
OR DF&W


Andy Mezirow


Angel Drobnica


Nicole Kimball


Kenny Down


John Jensen


RADM Nathan Moore
US Coast Guard


Anne Vanderhoeven


Jon Kurland
NMFS Regional Dir


Gretchen Harrington
NMFS alternate


US Dept of State
David Moore


USFWS
Pete Fasbender


Demian Schane
NOAA GC

Council Membership

11 voting members
AK (6), WA (3), OR (1), NMFS (1)

- 7 appointed
- 4 agency representatives

4 non-voting members

- US Fish & Wildlife
- US Coast Guard
- PSMFC
- US State Dept.

What is the Council's purpose?

Council makes recommendations to NMFS

NMFS approves, implements, and enforces Council recommendations

Management is coordinated, and in some cases jointly managed, with the State of Alaska

The Council, *working with experts, stakeholders, staff and the public*, is required to balance conservation, economic, and social concerns with the intent of managing sustainable fisheries for the greatest benefit to the Nation

The Council has jurisdiction over four regions in the North Pacific

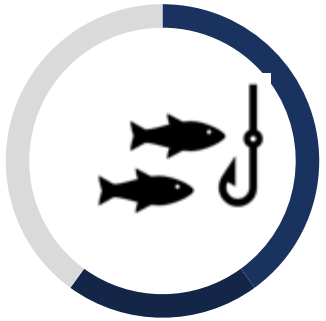
Management Areas

Bering Sea
Aleutian Islands
Gulf of Alaska
Arctic Ocean

Fisheries

Groundfish
Crab (Joint w. State of Alaska)
Scallop (Joint w. State of Alaska)
Pacific Halibut (Joint w. Canada)

Council Meetings



5 meetings each year

3 are in Anchorage

1 is in a rural fishing community in Alaska

1 is in Washington or Oregon

All meetings are **open to the public**

Meeting **schedules** and **agendas** are available online

Advisory Panel and the **Scientific and Statistical Committee** meet prior to the Council and provide their input and recommendations

Provide public comment

Advisory Panel, Scientific and Statistical Committee, and Council

In-person or remote options

Listen live!

Participate in person, over Zoom, or catch up later with YouTube recordings

BACKGROUND ON THE BERING SEA POLLOCK FISHERY

The Council's salmon bycatch management program focuses on the Bering Sea pollock fishery

The majority of salmon bycatch in the Bering Sea is attributed to this fishery

Chinook Bycatch

Year	All BSAI groundfish fisheries	Bering Sea pollock fishery	Bering Sea pollock as % of total
2013	16,084	13,016	81%
2014	18,204	15,037	83%
2015	25,289	18,329	72%
2016	32,925	21,926	67%
2017	36,280	30,076	83%
2018	17,399	13,740	79%
2019	31,467	24,984	79%
2020	34,976	32,294	92%
2021	15,896	13,784	87%
2022	8,342	6,337	76%

Notes: Chinook salmon bycatch (numbers of fish) in all Bering Sea Aleutian Islands (BSAI) groundfish fisheries compared to Bering Sea pollock fishery

Chum Bycatch

Year	All BSAI groundfish fisheries	Bering Sea pollock fishery	Bering Sea pollock as % of total
2013	127,001	125,316	99%
2014	224,263	219,442	98%
2015	243,354	237,752	98%
2016	347,341	343,001	99%
2017	471,447	467,678	99%
2018	309,045	295,064	95%
2019	358,804	347,882	97%
2020	346,375	343,821	99%
2021	550,698	546,042	99%
2022	245,269	242,375	99%

Notes: Chum salmon bycatch (numbers of fish) in all Bering Sea Aleutian Islands (BSAI) groundfish fisheries compared to Bering Sea pollock fishery

There are four fishing sectors in the Bering Sea pollock fishery

Community Development Quota (CDQ) Program

Inshore catcher vessel (CV) sector

- 85 eligible CVs
- These CVs harvest fish at sea and deliver to eligible processing plants in Alaska communities
- Dutch Harbor, King Cove, Sand Point, and Akutan

Catcher processor (CP) sector

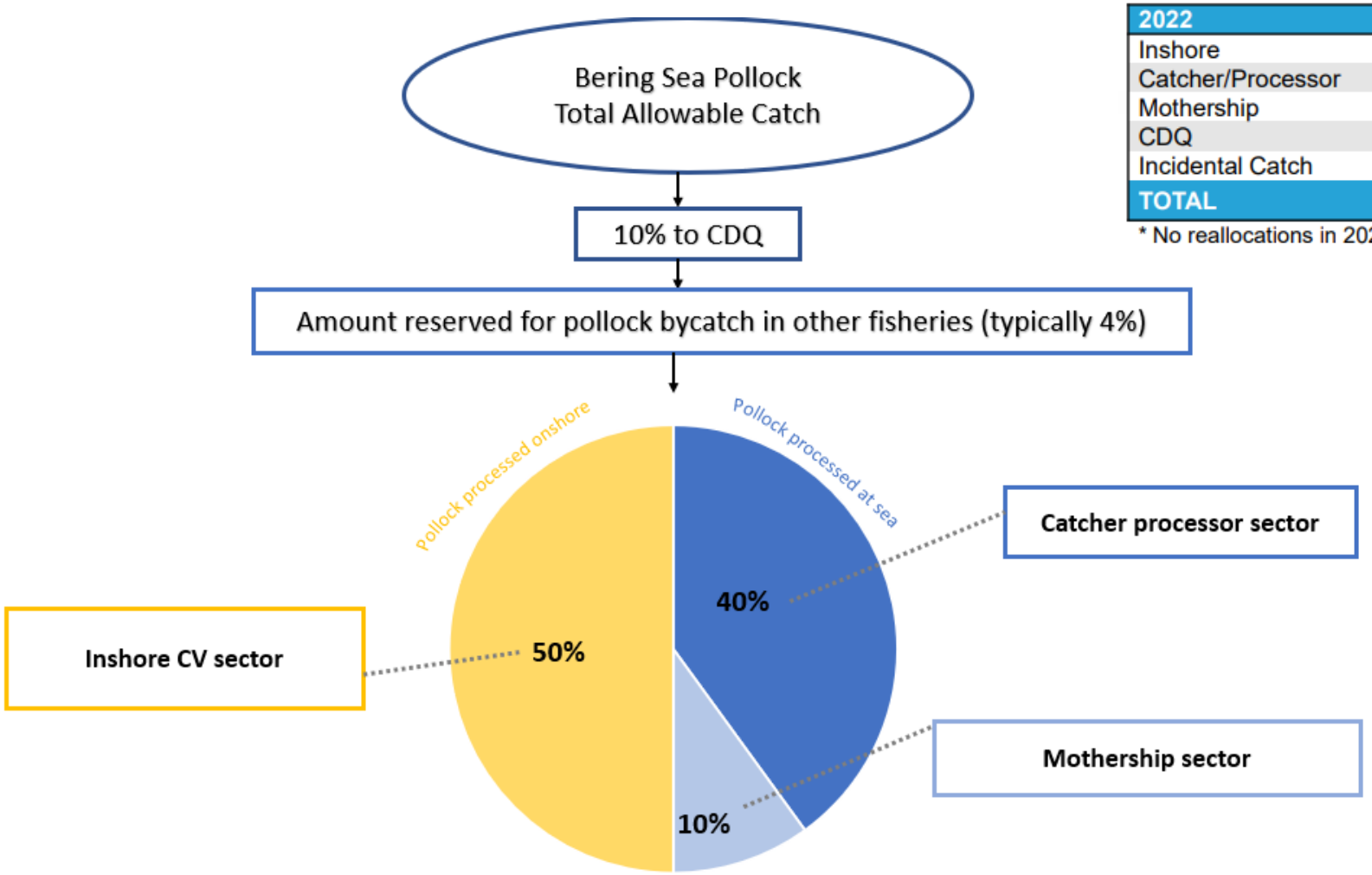
- 20 eligible CPs and 5 CVs eligible to deliver to CPs
- CPs are vessels that catch and process at sea

Mothership sector

- 3 motherships eligible to accept pollock for processing at sea
- 19 CVs eligible to motherships
- 13 of these are “dual qualified” to also deliver to shoreside processing facilities

Referred to as “AFA” sectors

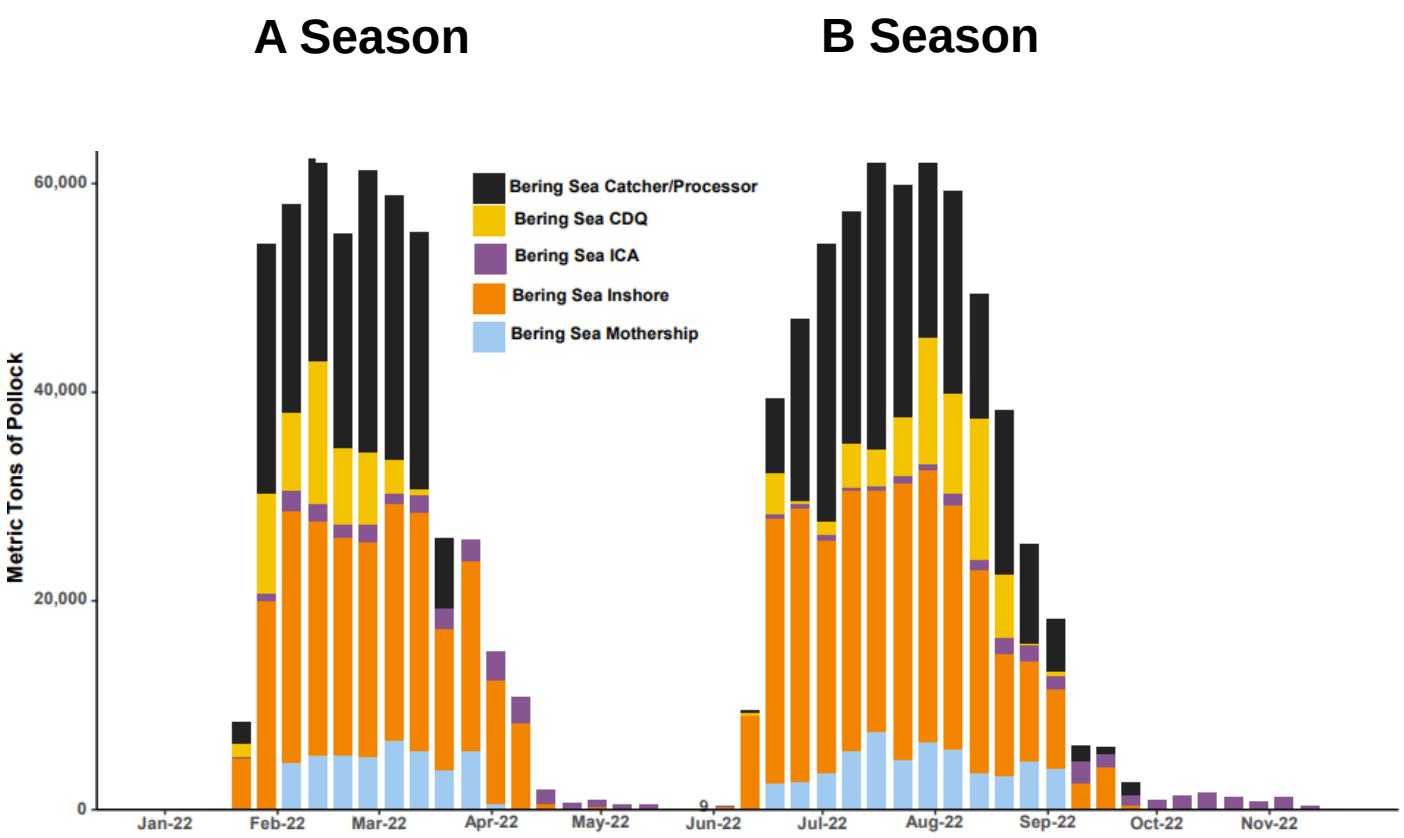
The Bering Sea Pollock catch limit is divided among the four sectors



2022	TAC (mt)	Catch (mt)	%
Inshore	475,200	473,491	100%
Catcher/Processor	380,160	380,089	100%
Mothership	95,040	95,008	100%
CDQ	111,100	111,033	100%
Incidental Catch	49,500	44,781	90%
TOTAL	1,111,000	1,104,402	99%

* No reallocations in 2022

Bering Sea pollock fishing seasons



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

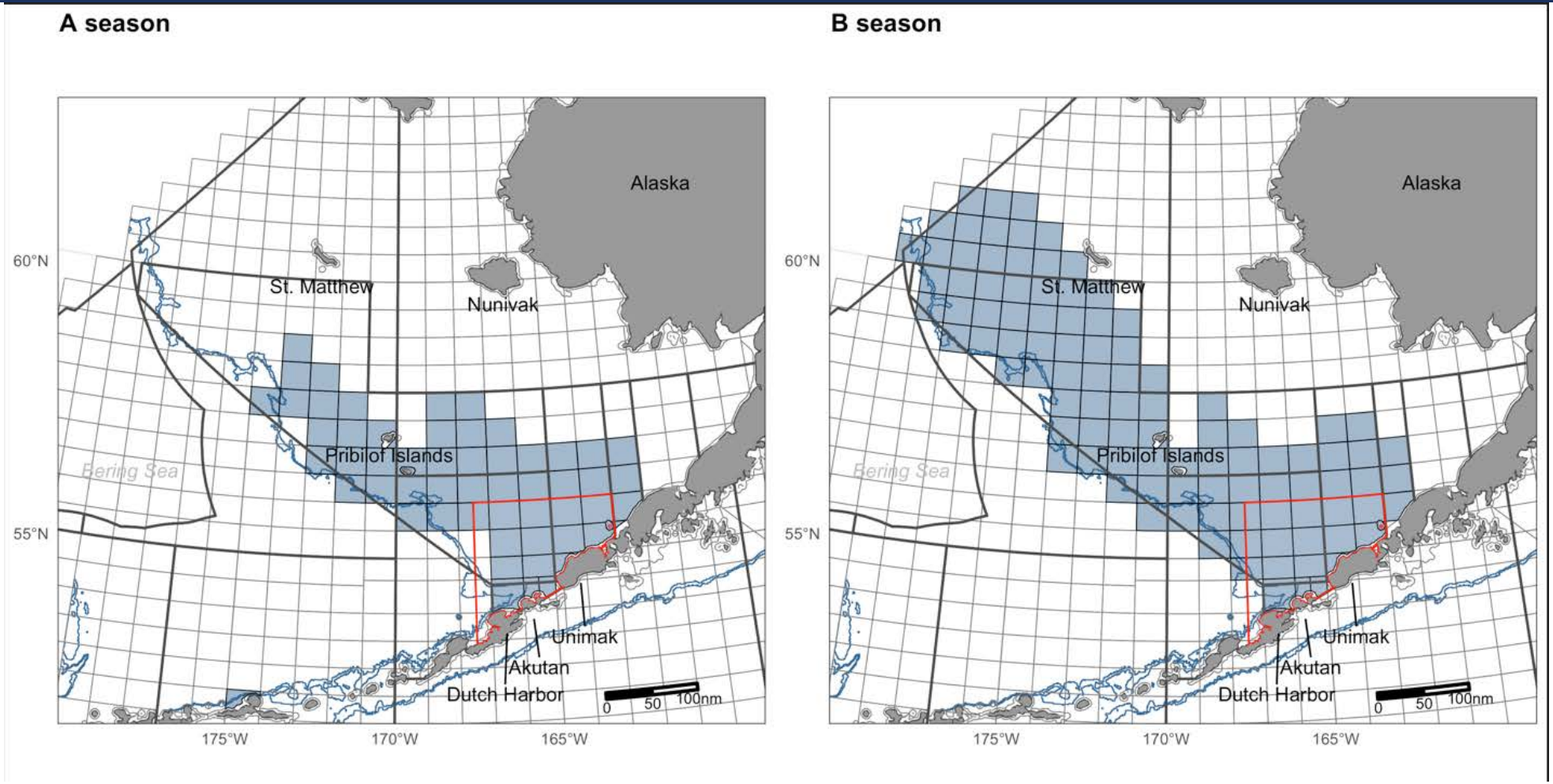
A season is open January 20 to June 10

- 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 early to mid October

The location of pollock fishing effort varies by fishing season



Notes: Figure displays the pollock fishing locations in the A and B season. ADF&G groundfish statistical areas are displayed by small boxes, which are highlighted blue to denote where pollock catch was recorded by three or more vessels from 2011 through 2022. Blue contour line indicates the Bering Sea shelf. Red line indicates the boundary of the Catcher Vessel Operational Area.

OVERVIEW OF SALMON BYCATCH MANAGEMENT AND PERFORMANCE

What is bycatch?

Magnuson-Stevens Act definition for bycatch:

The term "bycatch" means fish which are harvested in a fishery but are not sold or kept for personal use and includes economic discards and regulatory discards. Such a term does not include fish released alive under a recreational catch and release fishery management program.

In other words: Bycatch = Discarded fish

Economic discards: Fish harvested that could be legally retained, but are of insufficient value to retain (e.g., sculpins, grenadiers, brittle stars)

Regulatory discards: Fish harvested that are required by regulation to be discarded whenever caught, or are required by regulation to be retained but not sold

- Prohibited Species Catch (PSC) : A special type of regulatory discard. Fish caught that must be returned to sea with a minimum of injury = Pacific halibut, Pacific herring, Pacific salmon, steelhead, king crab, bairdi, opilio crab.

The Bering Sea pollock fishery encounters Chinook and chum salmon bycatch

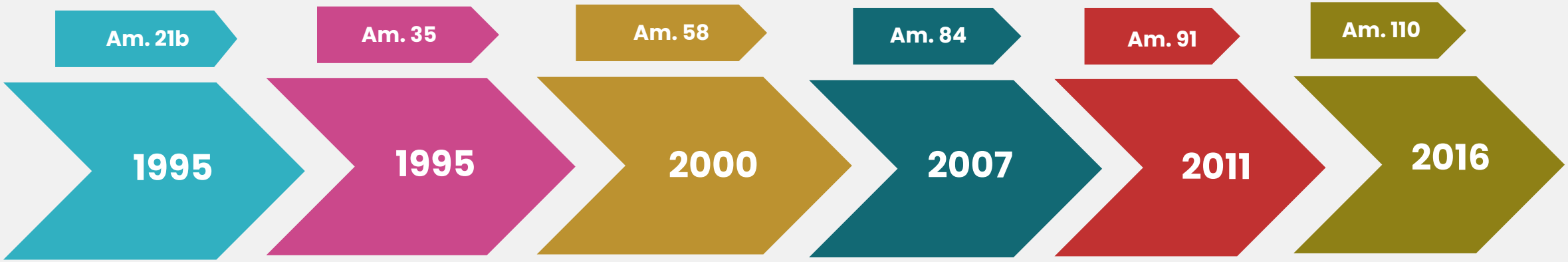
- The National Marine Fisheries Service tracks salmon bycatch as “Chinook” or “non-Chinook” bycatch
- “Non-Chinook” category for bycatch accounting includes sockeye, coho, pink, and chum, but consistently over 99% of the salmon are chum

Year	Sockeye	Coho	Pink	Chum	Total	Chum as % of total
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%

Notes: Table shows the composition of salmon species identified in the “non-Chinook” category, and the number of fish by caught as bycatch by species for each year, 2013 through 2022.

Summary of Management Measures

Chinook and Chum Salmon Bycatch in the Bering Sea



- Established Chinook Salmon Savings Areas
- Annual bycatch limit of 48,000 Chinook
- Areas close to all trawling if bycatch limit is reached through April 15

- Chum Salmon Savings Area established by Emergence Rule in 1994
- Am. 35 closes Area to all trawling Aug 1-Aug 31
- Established a 42,000 non-Chinook (i.e., chum salmon) bycatch limit

- Reduced annual bycatch limit for Chinook Salmon Savings area to 29,000 Chinook
- Redefined Savings Areas as two non-contiguous areas, one in the Bering Sea and one in the Aleutian Islands
- Set new closure dates

- Established the Intercooperative Agreement (ICA)
- Vessels in ICA exempt from Salmon Savings Areas
- Rolling Hot Spot closure program managed under ICA instead

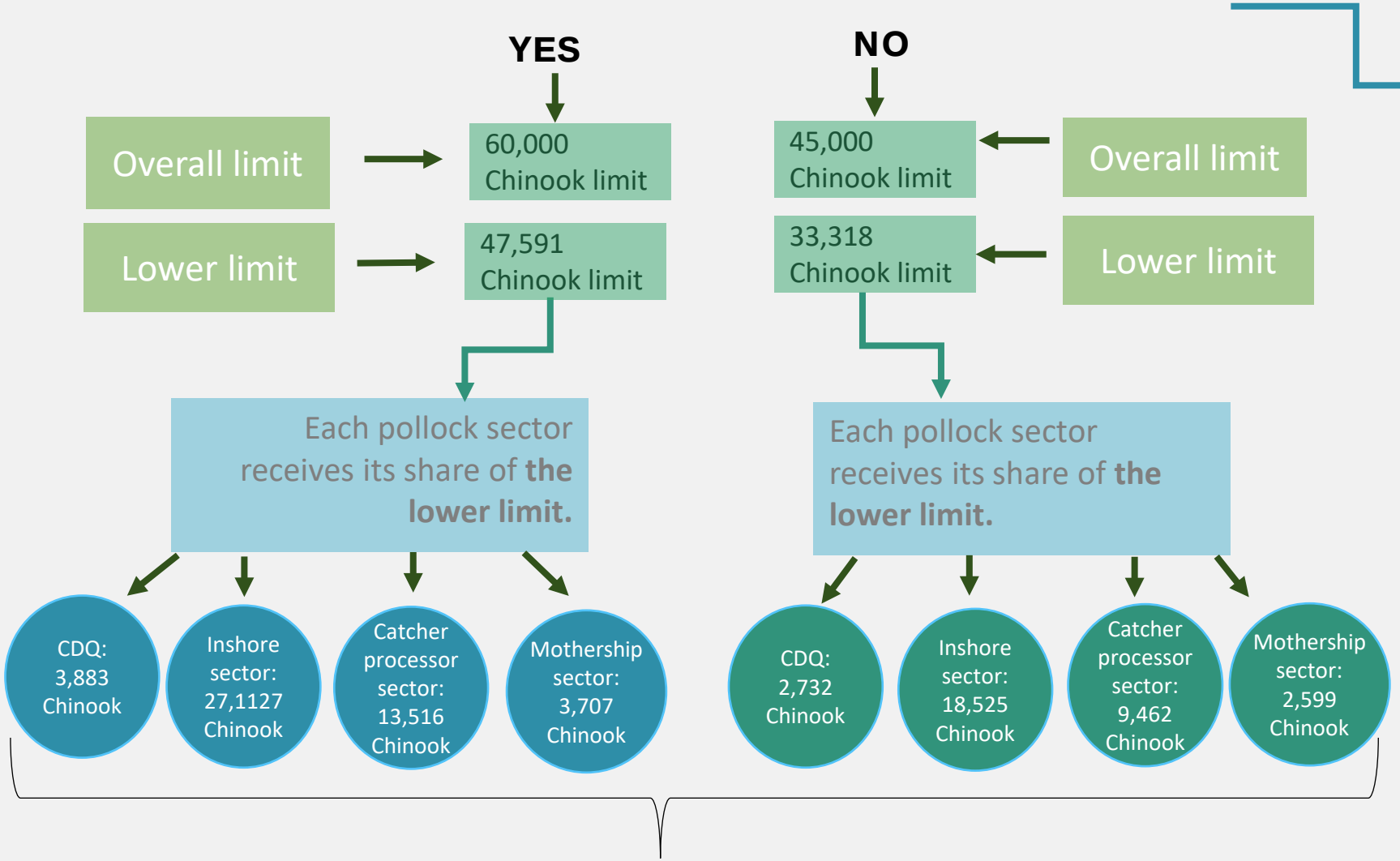
- Established Chinook bycatch limits – fishery closes if reached
- Annual threshold limit and performance Standard
- Created the Incentive Plan Agreements
- Incorporated Rolling Hot Spot closure program for Chinook into Incentive Plan Agreements
- Increased monitoring

- Incorporated Rolling Hot Spot closure program for chum into Incentive Plan Agreements
- Linked Chinook bycatch limits with Western Alaska Chinook abundance – limits decrease in low abundance years
- Changed the amount of pollock that can be harvested seasonally
- Increased monitoring

Static area closures with trigger bycatch limits

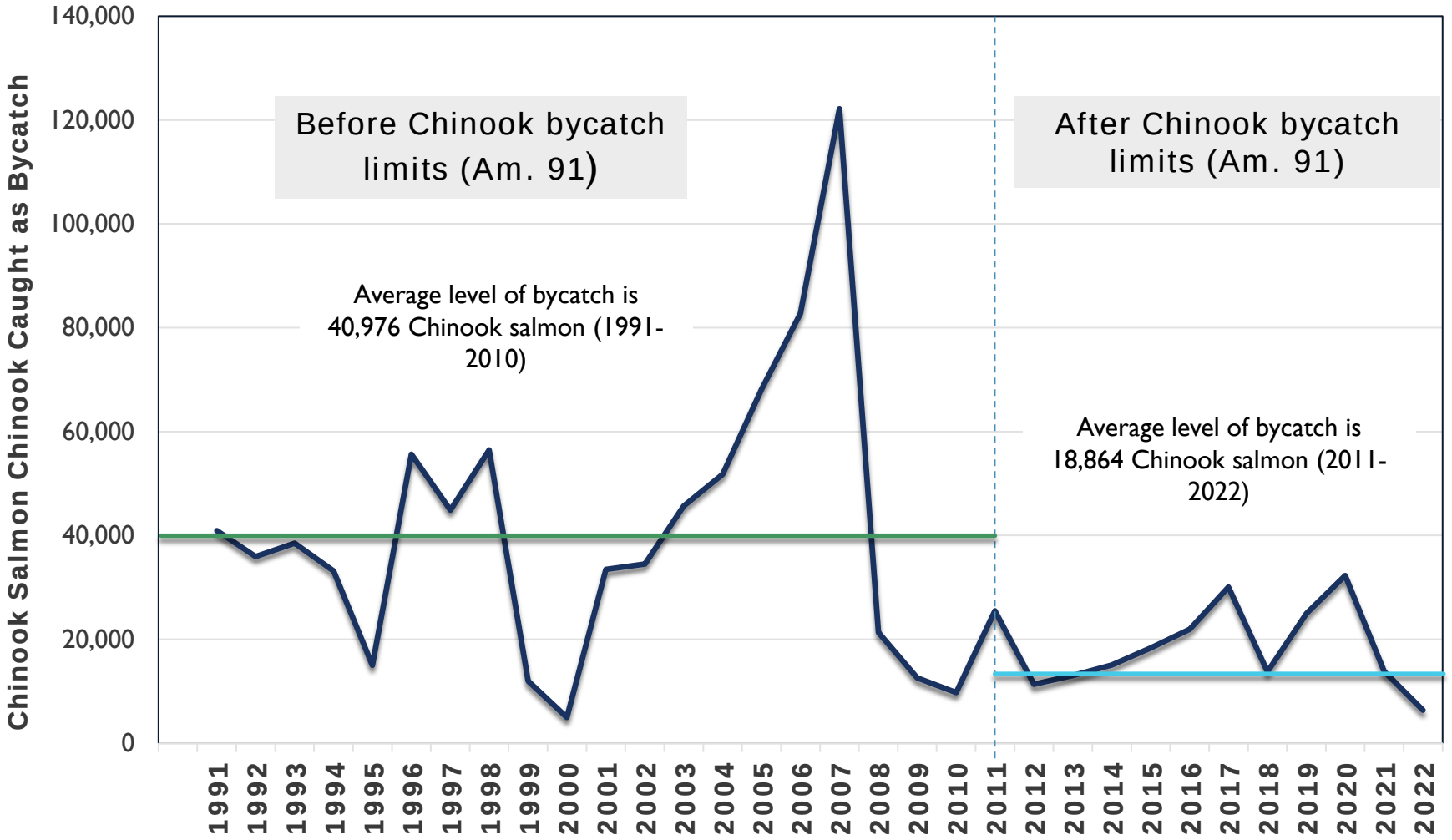
Dynamic or “hot spot” closure areas and “hard cap” bycatch limits for Chinook

Is Western Alaska Chinook abundance high?



Performance standard: If a sector exceed its share of the lower limit in 3 out of 7 years (i.e., no more than 2 out of 7), it is permanently allocated its share of the lower limit. If the pollock fishery hits the overall limit, it shuts down.

Chinook salmon bycatch trends in the Bering Sea pollock fishery



Summary

Highest level of bycatch (2007): 122,195

32-year average (1991-2022): 32,684

20-year average (2003-2022): 32,027

10-year average (2013-2022): 18,952

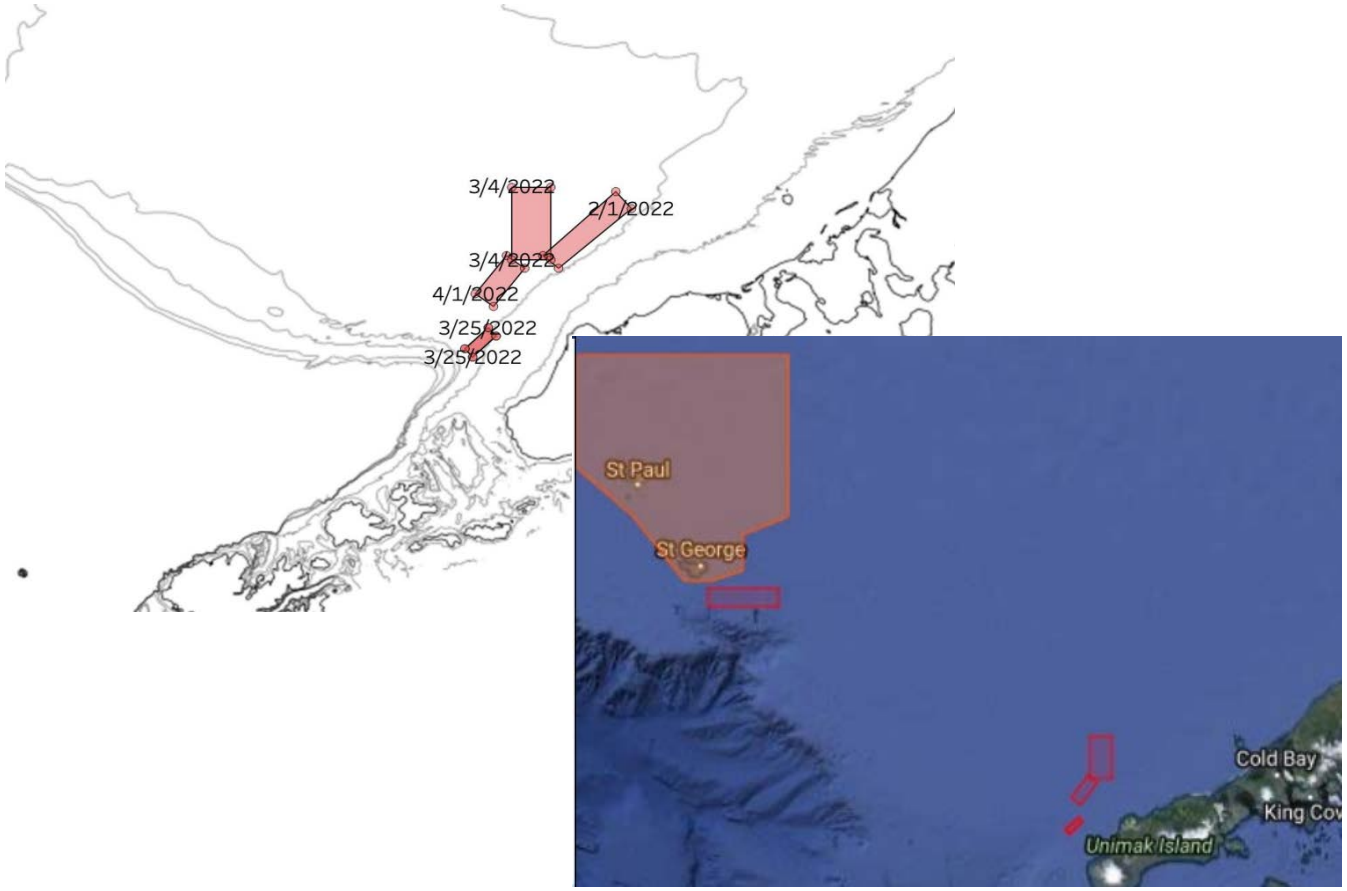
5-year average (2018-2022): 18,228

Lowest level of bycatch (2000): 4,961

Notes: Figure shows the number of Chinook salmon catch as bycatch in the Bering Sea pollock fishery from 1991-2022. Dashed vertical line indicates when Chinook bycatch limits were implemented under Amendment 91 in 2011. Green horizontal line indicates average level of bycatch from 1991 through 2010. Blue horizontal line indicates average level of bycatch from 2011 through 2022.

Additional measures to minimize Chinook bycatch

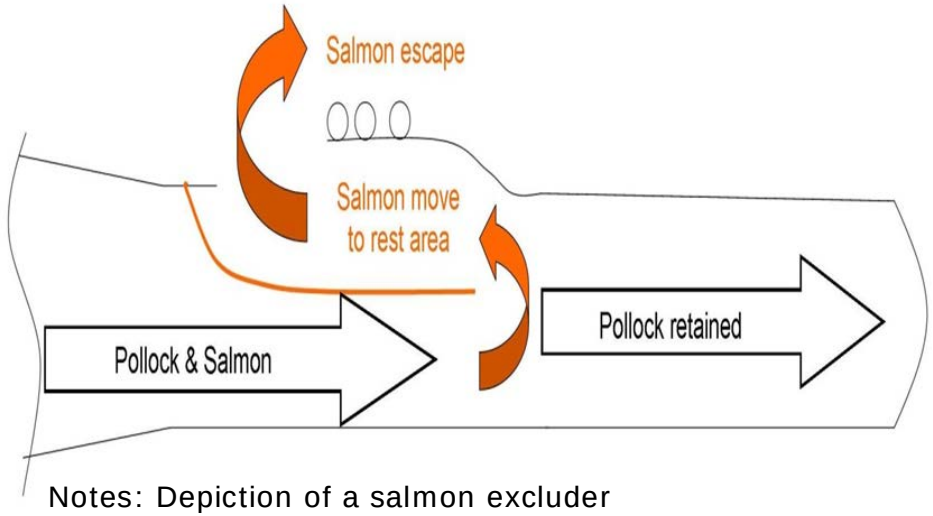
Rolling Hot Spot Closures



Notes: Top left image displays Chinook hot spot closures for inshore sector in 2022; bottom right image displays Chinook hot spot closures for catcher processor and mothership sectors in 2022

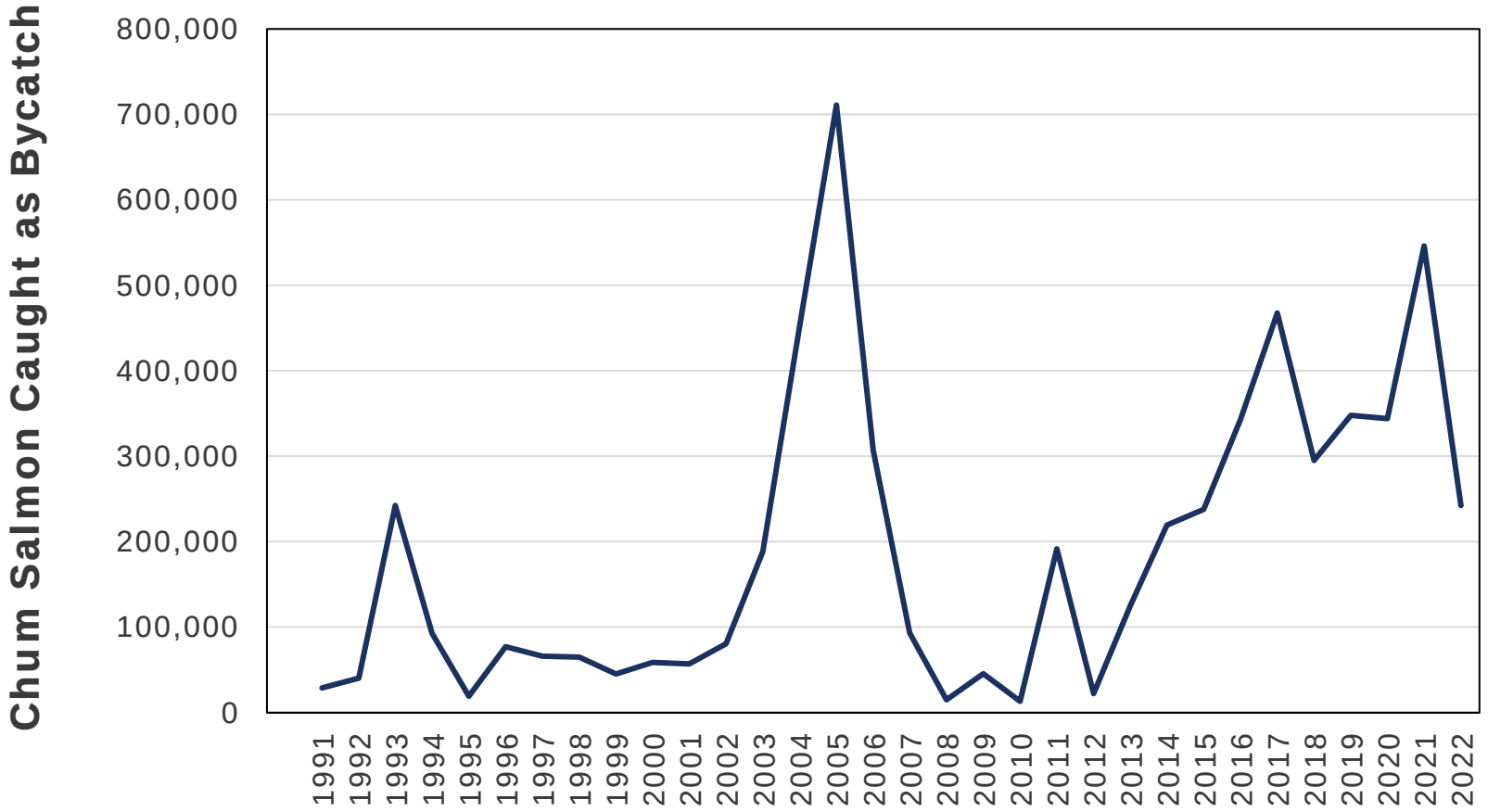
Salmon excluder devices

- Most recent tests indicate range of 9-39% Chinook escapement with ~ 1% pollock loss
- Variable by vessel and Horsepower



Notes: Depiction of a salmon excluder device in orange within a trawl net.

Chum salmon bycatch trends in the Bering Sea pollock fishery



Notes: Figure shows the number of salmon caught as bycatch in the non-Chinook category (i.e., chum salmon) in the Bering Sea pollock fishery from 1991-2022.

Summary

Highest level of bycatch (2005): 710,790

32-year average (1991-2022): 190,002

20-year average (2003-2022): 260,352

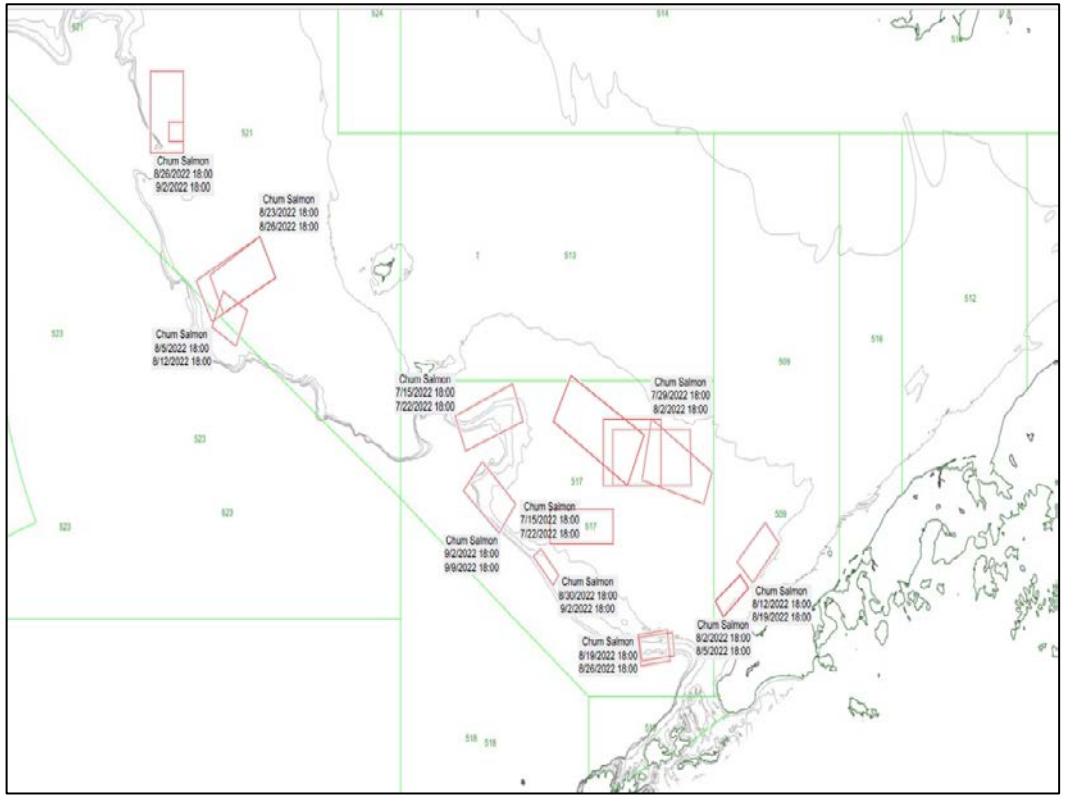
10-year average (2013-2022): 316,837

5-year average (2018-2022): 355,037

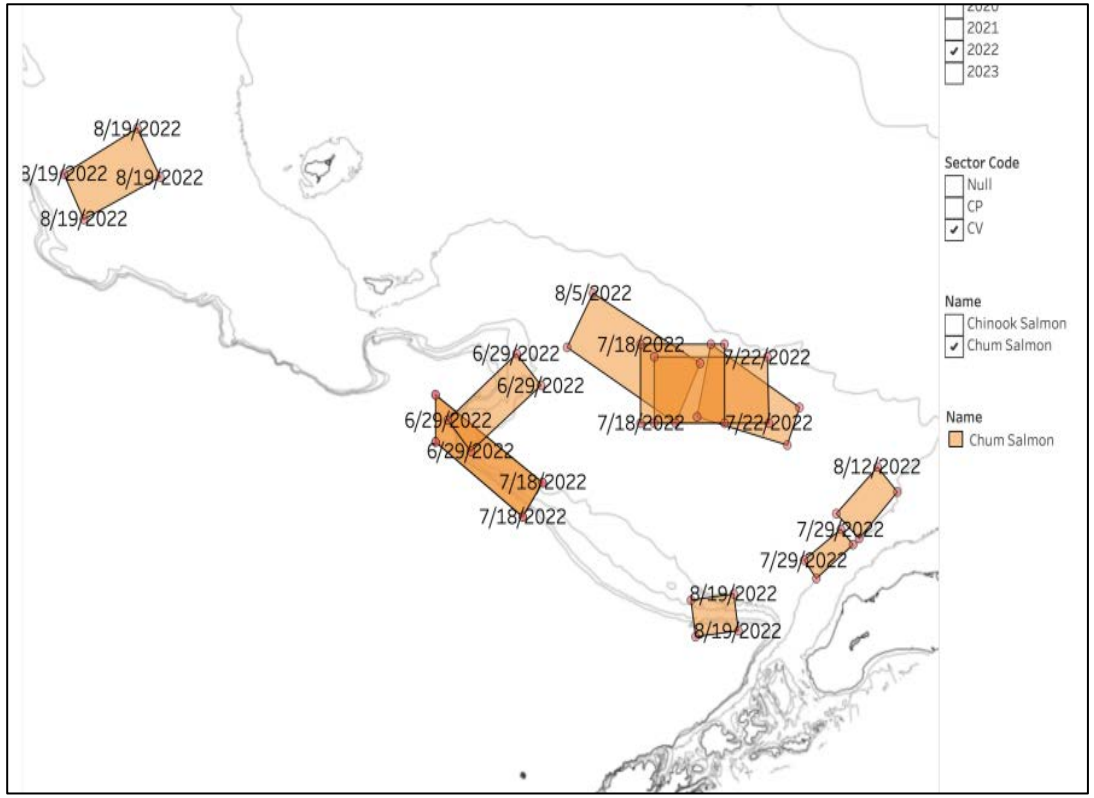
Lowest level of bycatch (2010): 13,283

Rolling hot spot closure program to minimize chum salmon bycatch

- Rolling hot spot closures identify areas with high bycatch (number of chum salmon per metric ton of pollock), close them, and redistribute pollock fishing effort



Notes: Rolling hot spot closures for chum avoidance in the pollock B season for the catcher processor and mothership sectors in 2022



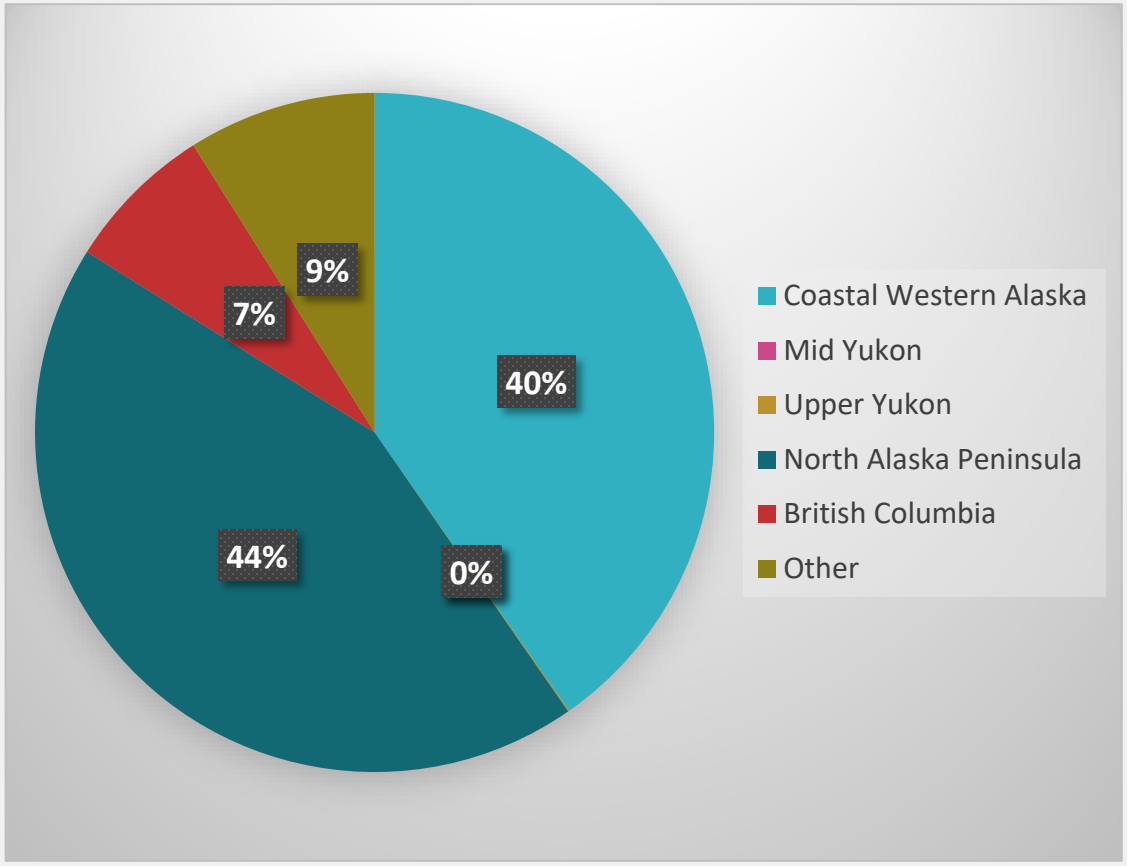
Notes: Rolling hot spot closures for chum avoidance in the pollock B season for the inshore sector in 2022

SUMMARY OF SALMON BYCATCH GENETICS

Summary of Chinook bycatch genetics, 2022

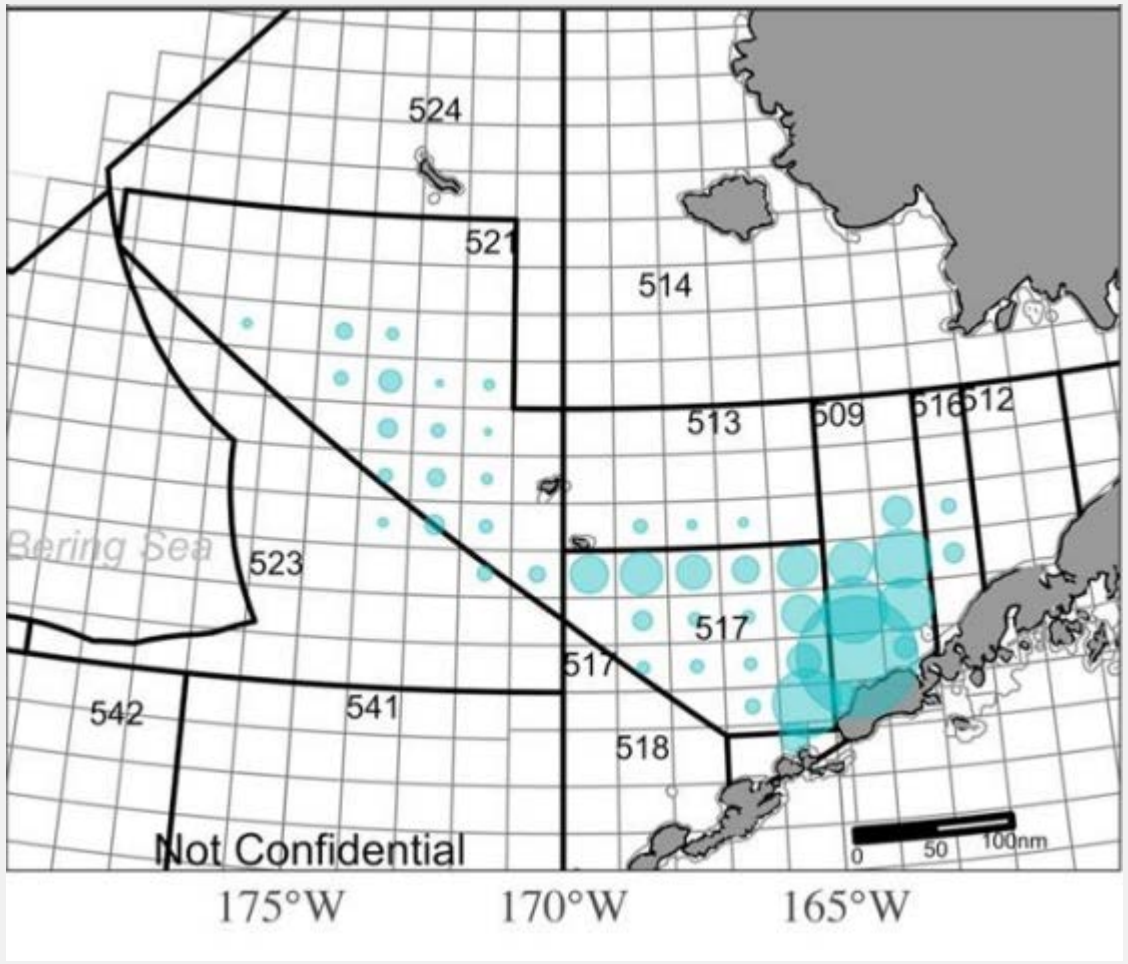
The Bering Sea pollock fishery caught 6,337 Chinook salmon as bycatch in 2022

2022 stock composition estimates



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

Spatial distribution of the Chinook bycatch

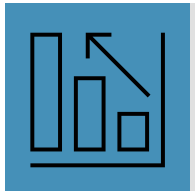


Notes: Circles represent the amount of total bycatch in each ADF&G groundfish statistical area (smaller grey boxes embedded within larger Federal reporting areas).

How do we estimate how many bycaught Chinook salmon would have back to a river system?

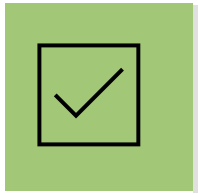
Estimate the Adult Equivalent (AEQ) Chinook

Number of bycaught salmon (from Observer Program)



Age of salmon from observer data on length (age-length key updated in 2022)

Region of origin (limited to Coastal W. Alaska and Upper/Mid Yukon for Western Alaska)



Estimated maturity by year (in aggregate across multiple Western Alaska rivers)

After AEQ is known, we estimate the impact of bycatch on the total Chinook run, or the sum of specific genetic groupings (such as Coastal Western Alaska) that would have returned to that genetic area had the fish not been caught as bycatch. To do this, we also need run size estimates for applicable rivers.

Impact rate = AEQ for that grouping ÷ run size estimate + AEQ

Chinook impact summary

Impact rates on Western Alaska Chinook

Year	Coastal W. Alaska	Upper Yukon
2011	1.40%	0.42%
2012	1.72%	0.61%
2013	1.85%	0.78%
2014	1.81%	0.58%
2015	1.57%	0.46%
2016	1.88%	0.63%
2017	2.04%	0.53%
2018	1.41%	0.48%
2019	1.32%	0.37%
2020	3.40%	0.94%
2021	2.64%	1.10%
Average	1.91%	0.63%

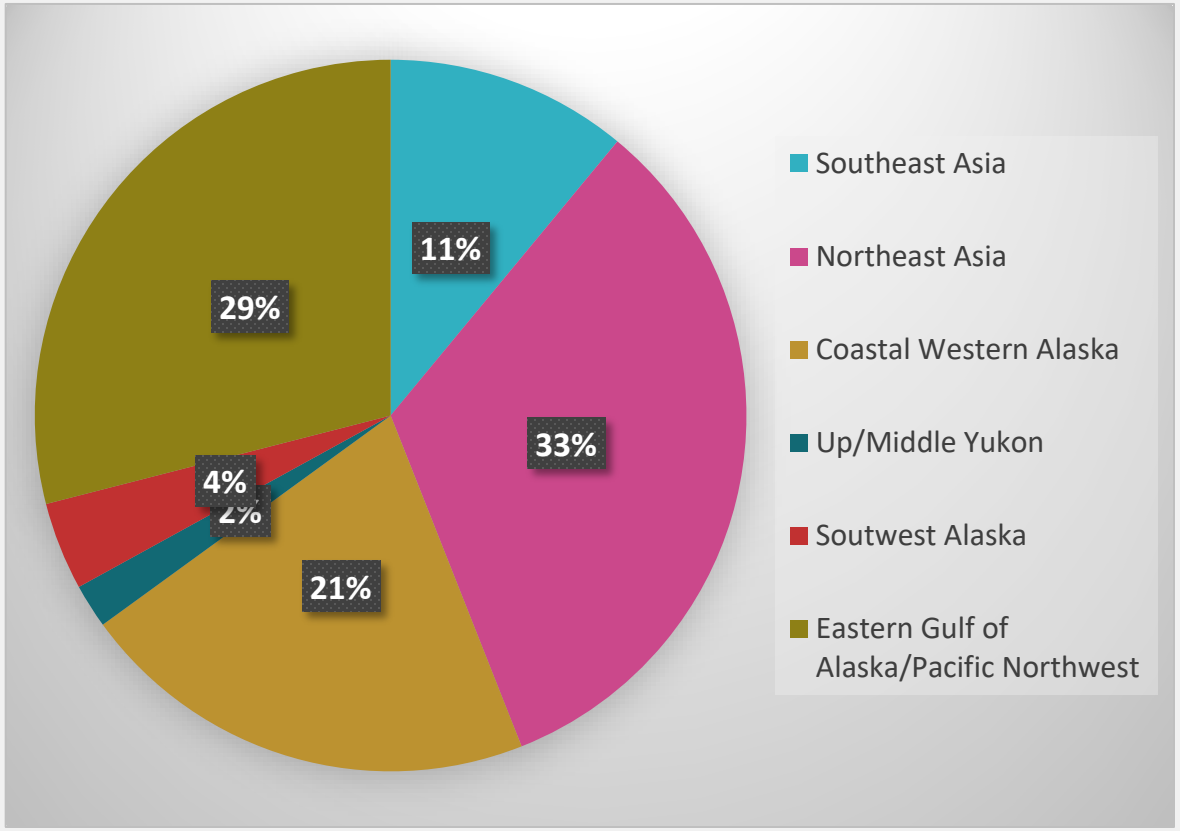
Notes: Displays the impact rate of Chinook bycatch on Coastal Western Alaska and Upper Yukon Chinook runs from 2011 through 2021 (last updated in 2022) as well as the 11-year average.

- Average impact rate of Chinook bycatch on Coastal Western Alaska Chinook stocks: 1.9%
- 0.6% for the Upper Yukon
- Rate for the Western Alaska stocks increased in 2020 to an estimate of 3.4% but dropped in 2021 to 2.6%
- The increase is due to lower returns overall with the biggest decrease for Combined western Alaska from the Nushagak River

Summary of chum bycatch genetics, 2022

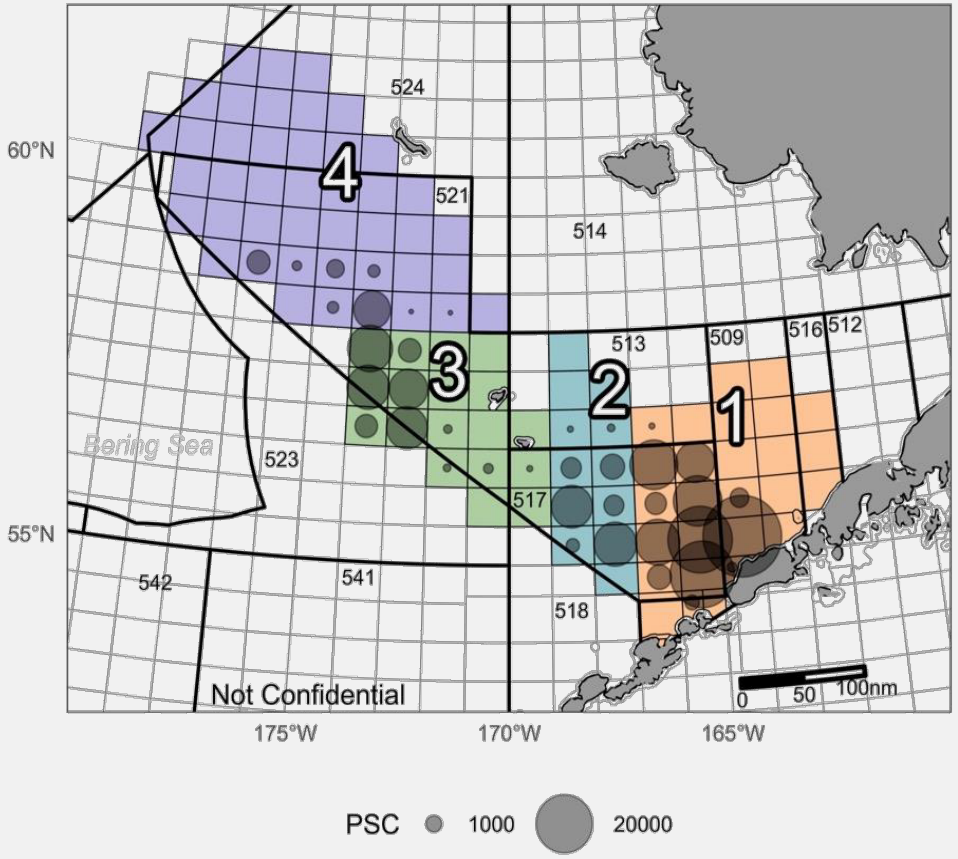
The Bering Sea pollock fishery caught 242,375 chum salmon as bycatch in 2022

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

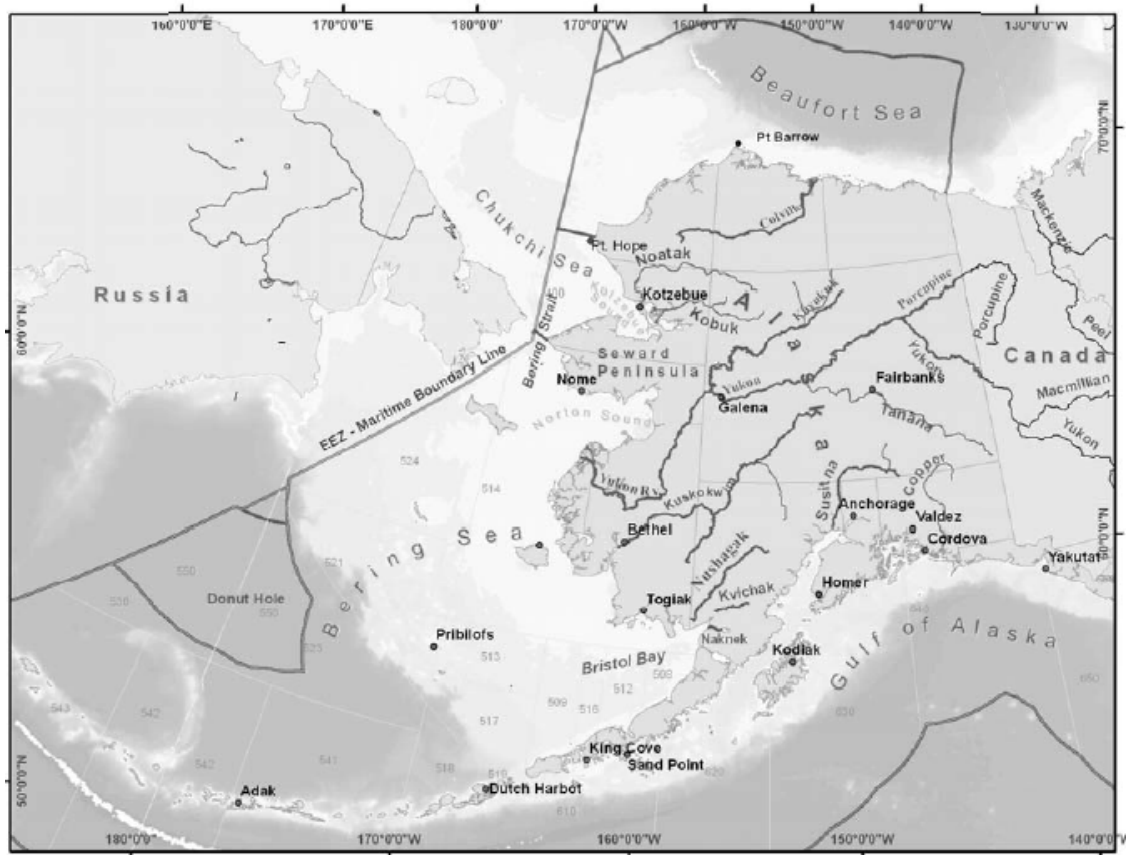


Notes: Circles represent the amount of total bycatch in each ADF&G groundfish statistical area (smaller grey boxes embedded within larger Federal reporting areas).

Is there an impact rate for chum salmon bycatch?

- An impact rate for chum is currently **not possible** for Coastal Western Alaska
- There are limited chum run reconstructions
  - ✓ Yukon fall and summer
  - ✓ Kwiniuk
- This excludes large populations in the Kuskokwim River and throughout Bristol Bay, Kotzebue Sound, and Norton Sound
- Unlike Chinook salmon, the lack of run reconstructions for large populations of chum across Western Alaska means a good approximation of total Western Alaska chum abundance cannot be made at this time

Map of the Bering Sea and major salmon producing rivers



WHAT ACTION IS THE COUNCIL CURRENTLY CONSIDERING?

The Council is currently considering new measures to minimize chum salmon bycatch

Emphasis on minimizing the bycatch of **Western Alaska origin chum salmon**

In April 2023 , the Council adopted a Purpose and Need statement and the alternatives:

1. Status quo/no action (Council is required by law to consider this alternative)
2. Overall chum bycatch limit
3. Bycatch limit for Western Alaska chum salmon
4. Prioritize Western Alaska chum avoidance using refined genetic information

The Council is finalizing alternatives in October

- In October, staff will present a preliminary analysis that describes how the initial set of alternatives could work and what is feasible
- The October Council meeting is scheduled for the 5-10th
- The meeting will be held in Anchorage, Alaska at the Hilton Hotel
- The Council will finalize its alternatives, a legally required step for future analysis of potential impacts of the alternatives

Speak Up

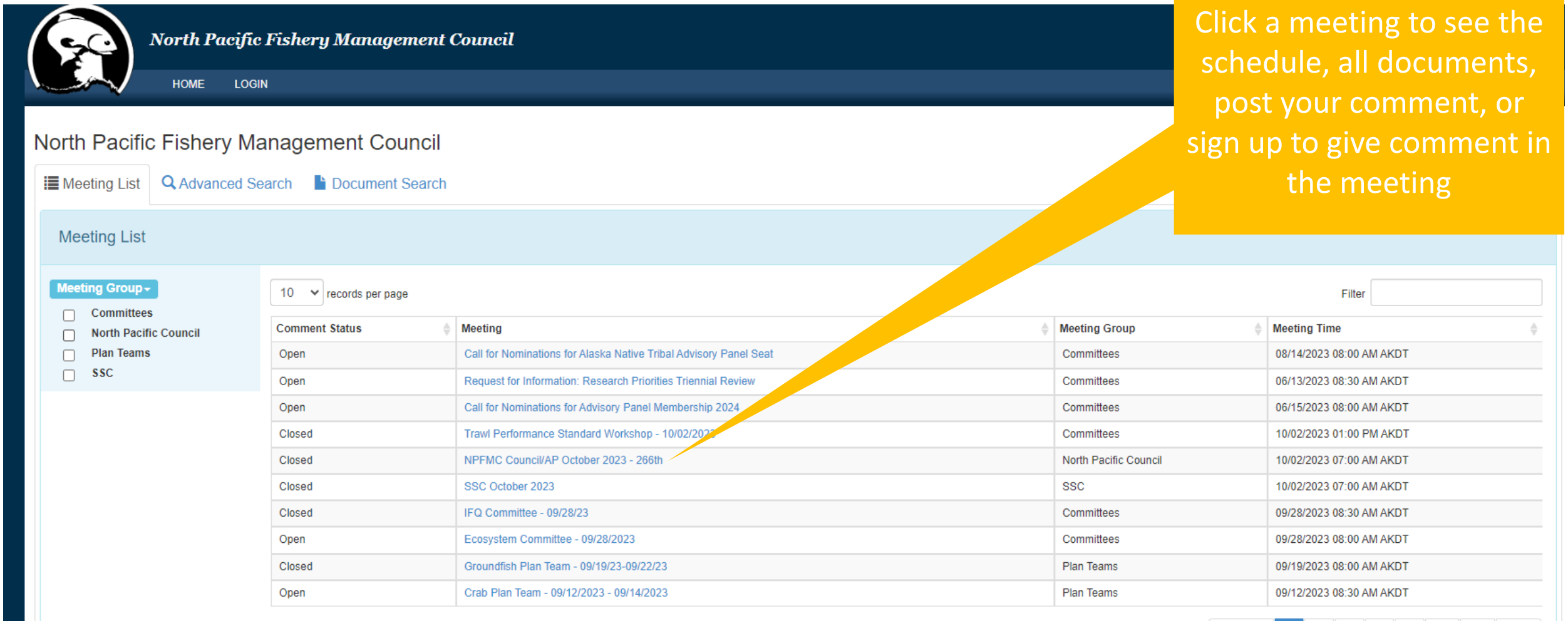
How do I give public comment?

Ways to comment

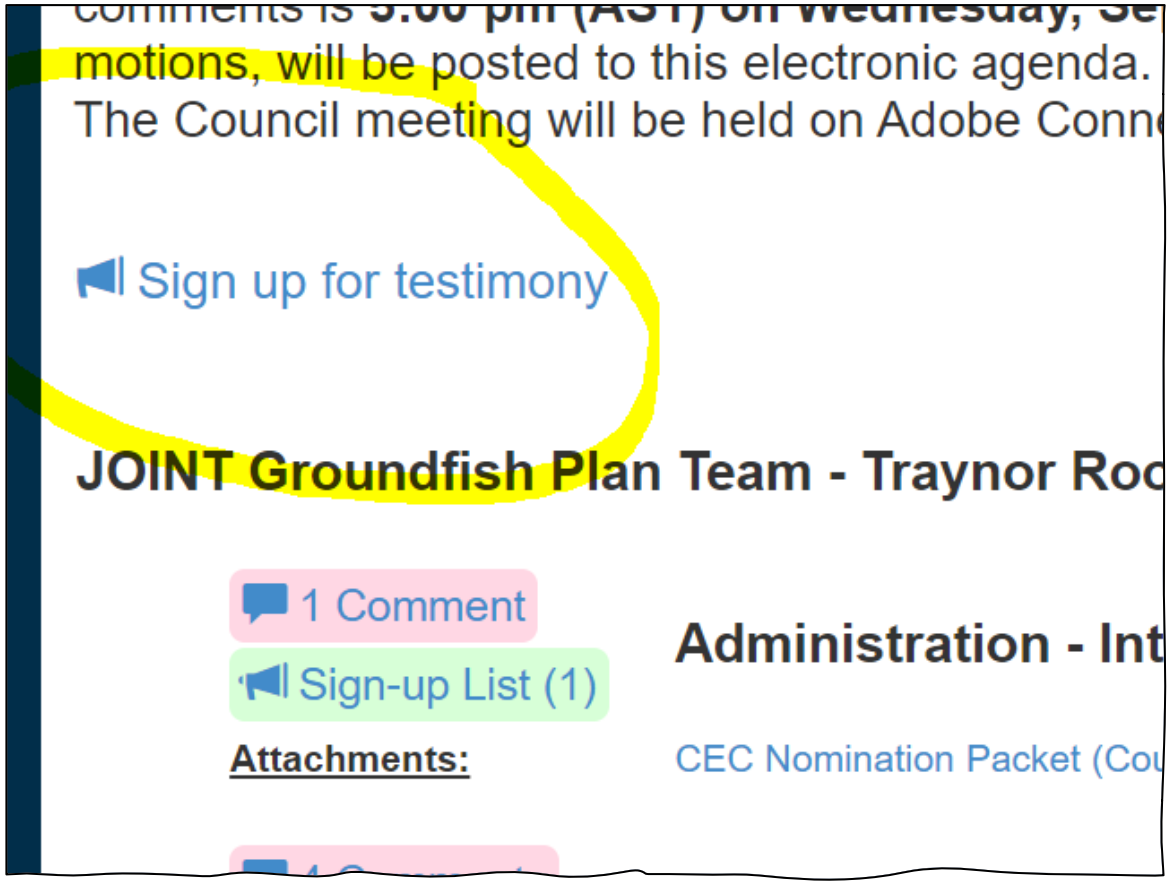
- Letter
- Written comment to eAgenda
- Public comment in a meeting

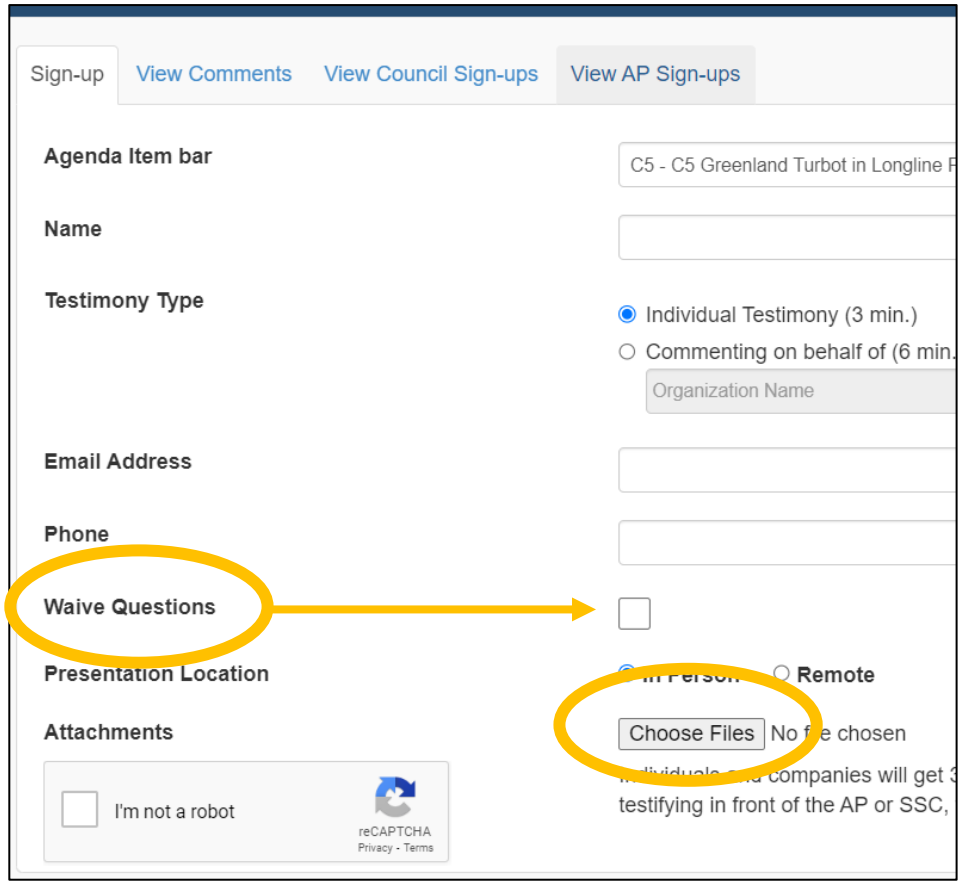
Navigating the meetings page

meetings.npfmc.org



Click a meeting to see the schedule, all documents, post your comment, or sign up to give comment in the meeting





In-meeting public comment

Sign up from the e-Agenda

Additional Resources:

North Pacific Fishery Management Council:
https://www.npfmc.org/

National Oceanic and Atmospheric Administration, National Marine Fisheries Service:
https://www.fisheries.noaa.gov/region/alaska

National Oceanic and Atmospheric Administration, Alaska Fisheries Science Center:
https://www.fisheries.noaa.gov/region/alaska

Alaska Department of Fish and Game:
https://www.adfg.alaska.gov/index.cfm?adfg=fishing.main

U.S. Regional Fishery Management Councils:
www.fisherycouncils.org

International Pacific Halibut Commission:
https://www.iphc.int/