



**2022 Board of Fisheries Work Session
North Pacific Fishery Management Council Update
ADF&G Extended Jurisdiction Section
October 25, 2022**

This report reflects actions taken by the North Pacific Fishery Management Council (Council) since the 2021 Board of Fisheries Work Session and Council actions currently under development. Information in this report is referenced from Council documents available at:

<https://www.npfmc.org/>

Crab

The Fishery Management Plan for Bering Sea/Aleutian Islands (BSAI) King and Tanner Crabs (crab FMP) establishes a state/federal cooperative management regime for the major crab fisheries that defers most management measures to the State of Alaska with federal oversight. These crab fisheries are part of the federal Crab Rationalization Program with exclusive harvesting and processing quota issued to participants annually by the National Marine Fisheries Service (NMFS) based on the Total Allowable Catch (TAC) set by ADF&G. The fisheries, if opened by the State, have varying season lengths during the crab fishing year. Since the annual fishing season spans two calendar years, from July 1 through June 30, each season is referred to as a crab year. Harvest strategies for the Bering Sea crab fisheries have evolved over time but have maintained two major management objectives: to maintain a healthy stock that ensures reproductive viability and to provide for sustained levels of harvest over the long term. Only male crabs may be harvested, and no directed fishing is allowed during molting and mating periods.

Harvest specifications: In October 2022, the Council established annual harvest specifications for Bristol Bay red king crab (BBRKC), Bering Sea Tanner crab, and Bering Sea snow crab. Federal harvest specifications include setting an annual Overfishing Limit (OFL) and an Acceptable Biological Catch (ABC) level. Under the cooperative state/federal structure of the crab FMP, the State determines whether to open the fisheries and if open, sets the annual TAC limit so that all crab removals remain below the ABC.

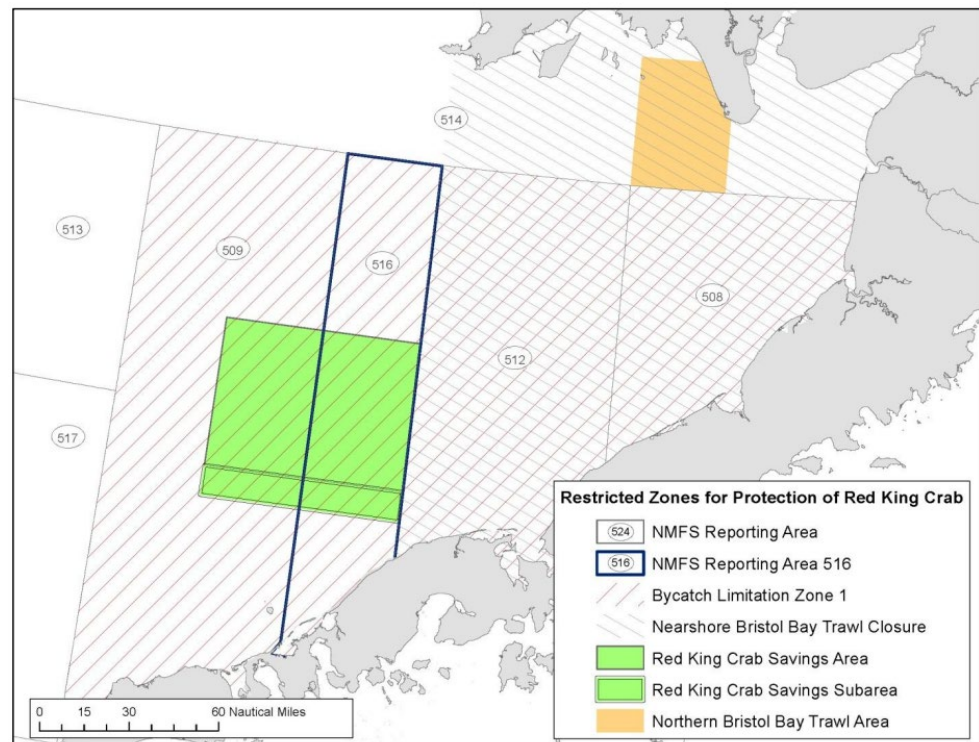
The 2022 Bering Sea trawl survey occurred as scheduled in both the Eastern Bering Sea and Northern Bering Sea. For BBRKC, mature male biomass estimates increased by 38% from 2021 and mature female biomass stayed relatively the same although mature female abundance increased from 6.3 million crab to 7.5 million crab. The estimated Bering Sea Tanner crab mature male biomass decreased slightly (-9%) from 2021 levels in the area west of 166° W long. and increased by 74% in the area east of 166° W long. Mature female Tanner crab biomass decreased 21% in the west and 36% in the east. Male snow crab biomass estimates continued to decline in the 2022 survey from the 2021 survey estimates. Mature males declined by 16% and are estimated to be at a historic low, immature males declined by 23%, and legal males declined by 44%.

	OFL (mlb)	ABC (mlb)	TAC (mlb)
Bristol Bay red king crab	6.70	5.35	closed
Bering Sea Tanner crab	72.34	54.25	1.16 east / 0.85 west
Bering Sea snow crab	22.70	17.00	closed

Bristol Bay red king crab bycatch and closure areas: Recruitment in the BBRKC stock has been extremely low for at least ten years and the projected mature biomass is expected to continue declining over the next few years. The directed fishery was closed for the 2021/22 and 2022/23 seasons based on the State Harvest Strategy (SHS) because the estimated abundance of mature female crab was below the 8.4 million crab threshold required to open the fishery. When the directed fishery is closed, BBRKC bycatch limits that apply to the groundfish trawl fisheries are reduced 67% and set to the lowest level and the Red King Crab Savings Subarea is closed year-round to non-pelagic trawling. In October 2021, the Council recommended a rationalization program for the BSAI trawl catcher vessel Pacific cod fleet that included an additional 35% reduction in BBRKC and Bering Sea snow crab bycatch limits. The rationalization program for BSAI trawl catcher vessels is expected to be implemented for the 2024 fishing season.

The figure below shows the existing fishing closures aimed at protecting BBRKC and their habitat. Two areas are closed year-round, the Nearshore Bristol Bay Trawl Closure Area for all trawl gear and the Red King Crab Savings Area for non-pelagic trawl gear. Area 516 is closed seasonally from March 15 to June 15 to all trawl gear, and as mentioned earlier the Red King Crab Savings

Subarea is closed to non-pelagic trawl gear year-round when the directed fishery is closed. None of these fishery closures apply to groundfish fishing with longline, pot, or jig gear. Abundance-based BBRKC bycatch limits apply to all groundfish trawl fishing in Zone 1. Zone 1 is a triggered closure area that closes to



select target trawl fisheries when those fisheries reach their portion of the bycatch limit.

At the April 2022 meeting, the Council reviewed a [discussion paper](#) that provided information on several topics relating to BBRKC including life-history, management and stock assessment boundaries, bottom contact by pelagic gear, and information related to developing seasonal or area closures. In response to the information in the paper and public testimony received in April, the Council made a two-part motion. The Council requested industry participants bring forward voluntary measures that could be implemented in 2023 and beyond to reduce crab mortality in the non-directed fisheries and discard mortality in the directed fisheries. These voluntary measures are the most efficient and timely short-term tool for mitigating fishing impacts on crab while the Council considers potential management actions for the groundfish fisheries. The second part of the Council's April action focused on an [expanded discussion paper](#) that was reviewed at the October 2022 Council meeting. The paper included tables that showed all sources of BBRKC across all federal groundfish sectors and the directed crab fisheries; impacts of annual or seasonal closures to all groundfish gear sectors in the Red King Crab Savings Area; impacts of groundfish predation on BBRKC; impacts of closing the federal Pacific cod pot fishery in Area 512 and establishing a bycatch limit for the Pacific cod pot fishery; and additional data needed to create dynamic closed areas to protect mature female BBRKC.

At the October meeting, the Council identified BBRKC and Bering Sea snow crab as a priority conservation concern and provided direction to address this level of concern through several means. First, the Council will consider an emergency rulemaking petition that was submitted by the Alaska Bering Sea Crabbers which would close the Red King Crab Savings Area and Subarea to all fishing gears from January 1 to June 30, 2023. An analysis for the emergency rule request will be prepared by NMFS staff for the December 2022 Council meeting. This analysis could also be used as the basis to initiate a regulatory amendment through the normal rulemaking process if the Council wants to consider a permanent closure to some or all gear types.

The Council motion expressed appreciation for crab and groundfish industry responses to requests for [information](#) on voluntary measures for implementation in 2023 and beyond to avoid BBRKC and snow crab, reduce crab mortality in the non-directed fisheries, and to reduce discard mortality in the directed fishery. The Council encouraged all sectors to implement these voluntary measures in 2023 and provide a status report on the efficacy of these measures in December 2023. The Council also encouraged continued research and testing on:

- pot gear modifications, soak times and handling practices that reduce unintended mortality of crab bycatch
- evaluating the interactions of pelagic trawl gear with the sea floor and crab to inform gear modifications to reduce unintended mortality of crab bycatch and impacts on benthic habitat
- methods to gather data on interannual and seasonal distribution of crab, such as additional surveys and tagging studies

ADF&G staff have begun working with Council and NMFS staff to develop a workplan targeted at addressing BBRKC and Bering Sea snow crab conservation concerns and the need for a comprehensive ecosystem-based approach to crab research and management. The workplan will prioritize reducing fishing impacts on molting and mating crab, providing protections to improve recruitment, protecting habitat, and building in resilience to changing environmental conditions, predation, and fishing pressure. The workplan may include specific areas of research and/or

groundfish fishery management actions focused on restoring and sustaining BSAI crab stocks. ADF&G will provide the draft workplan for the Council's consideration at the December 2022 meeting.

Bering Sea snow crab rebuilding: In October 2021, NMFS notified the Council that the Bering Sea snow crab stock was overfished because the estimate of mature male biomass was lower than the minimum stock size threshold. The Magnuson–Stevens Fishery Conservation and Management Act (MSA) requires implementation of a rebuilding plan for overfished stocks within two years of the overfished determination. The MSA mandates that overfished stocks must be rebuilt to levels that support maximum sustainable yield in as short a time frame as possible, accounting for the status and biology of the stock, the needs of fishing communities, and the interactions within the marine ecosystem.

The mechanisms that caused the snow crab stock to collapse are still being investigated but are likely related to climate change and the marine heatwave in the Bering Sea during 2019 and 2020 rather than fishing. This decline was unexpected because the survey had been tracking one of the largest recruitment pulses on record from the 2015-2019 surveys. The 2020 survey was canceled due to the pandemic, creating a critical gap in the ability to track snow crab abundance. Increased metabolic demands due to warmer waters in conjunction with a large pulse of immature crab suggests that starvation may have contributed to the stock collapse.

To comply with the rebuilding plan deadline specified in the MSA, the Council selected draft alternatives for a rebuilding plan in June 2022, and analysis of the rebuilding plan is scheduled to be reviewed by the Council in December. The Council's Scientific and Statistical Committee (SSC) reviewed several recommended snow crab model scenarios for establishing minimum and maximum time limits to rebuild the snow crab stock using different assumptions. The SSC recommended use of the model projecting a minimum time of six years and a maximum time of 10 years to rebuild the stock. Although the Council is considering a rebuilding plan alternative that would allow bycatch removals in groundfish and non-directed crab fisheries only and no directed fishing until the stock is rebuilt, the projected rebuilding time recommended by the SSC in October 2022 suggests that allowing bycatch removals and a directed snow crab fishery under the current SHS would allow the stock to rebuild within the required timeframe.

Groundfish

BSAI Pacific cod small vessel access: The Council took final action in October 2022 to address ongoing challenges faced by smaller hook-and-line (HAL) or pot catcher vessels (CVs) within the BSAI Pacific cod <60' HAL/pot CV sector, including intra-sector competition from a subgroup of vessels typically 58' LOA with increased capacity and efficiencies. The State put forward a motion to redefine the current BSAI Pacific cod jig sector during the A-season (January through April) to include HAL/pot CVs less than or equal to 55' LOA and specified that after the jig sector's A-season ends, all HAL/pot CVs <60' LOA would be in the same sector and the jig sector's allocation for the B- and C-seasons (May through December) would remain available for vessels fishing jig gear. Unharvested Pacific cod from the jig sector will continue to be prioritized for reallocations to the <60' HAL/pot CV sector. The Council passed the motion 10-1, noting the opportunity this action afforded to help entry-level participants, the mitigation of effects on the 56'-59' fleet presented by the revision allowing the C-season to remain jig only,

the original intent of the jig allocation to support a small vessel fleet in Unalaska, and the support for the action from the City of Unalaska and the Council's Advisory Panel.

The Council action redefines federal BSAI Pacific cod sector definitions from January through April, therefore the Alaska Board of Fisheries will need to take action in the future to redefine a trigger for opening the state-waters Dutch Harbor Subdistrict (DHS) pot fishery. Currently, the DHS pot fishery opens seven days after the Federal BSAI Pacific cod <60' HAL/pot CV sector closes. This allows pot vessels to participate in the <60' HAL/pot CV sector before registering to fish in the DHS fishery, which maximizes their opportunity to fish for Pacific cod early in the year. Options for a new trigger for opening the DHS pot fishery include the new BSAI Pacific cod small vessel sector closing date, the redefined 56'-59' HAL/pot CV sector closing date, or another trigger such as a set date. Federal regulations to implement this action are anticipated for either 2024 or 2025, so the Board will to take action during a future meeting cycle.

Halibut

BSAI Halibut Abundance Based Management of bycatch limits: In December 2021 the Council received a [draft Environmental Impact Statement](#) and took [final action](#) to link annual Pacific halibut bycatch limits for the BSAI non-pollock trawl catcher processor sector, also called the Amendment 80 or A80 sector, to halibut abundance. Currently, A80 halibut bycatch limits are set at a fixed amount of 3.8 million pounds and when BSAI halibut abundance declines, halibut bycatch becomes a larger proportion of the total halibut removals. Although the A80 sector does not take its full bycatch limit, averaging 67% of the limit for the past three years (2019-2021), the fixed bycatch allocation can result in lower catch limits for directed halibut fisheries when halibut abundance declines, particularly in the Bering Sea halibut management areas. The Council spent six years working on this issue and received extensive analysis and public testimony on this topic. While other groundfish sectors are also subject to bycatch limits, this action was limited to the A80 sector as that sector is responsible for the majority of BSAI halibut mortality in the BSAI groundfish fisheries.

The Council's action included eight different steps/tiers for the A80 bycatch limit based on halibut abundance levels as determined by the Eastern Bering Sea trawl survey and the International Pacific Halibut Commission setline survey. For example, the new abundance-based bycatch limits will range from the current limit of 3.8 million pounds when halibut abundance is high, according to both survey indices, to 35% below the current limit at 2.5 million pounds when halibut abundance in both surveys is very low.

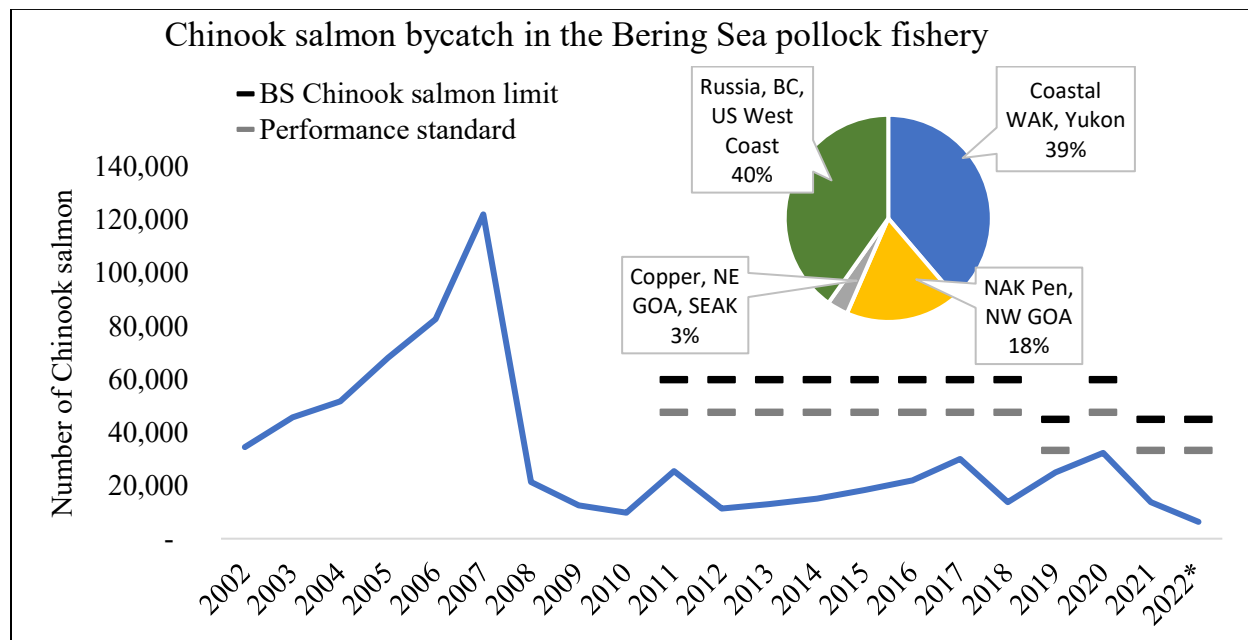
Final regulations are expected to be implemented by NMFS 2024 and, based on the current and predicted status of the halibut stock remaining in a 'Low/Low' condition, the A80 halibut bycatch limit will likely be reduced by 25% from the current limit when final regulations are implemented. The Council recognized that this action is likely to increase operational costs for the A80 sector when avoiding halibut but also recognized that continued participation of those dependent on halibut directed fisheries is an important priority.

Salmon

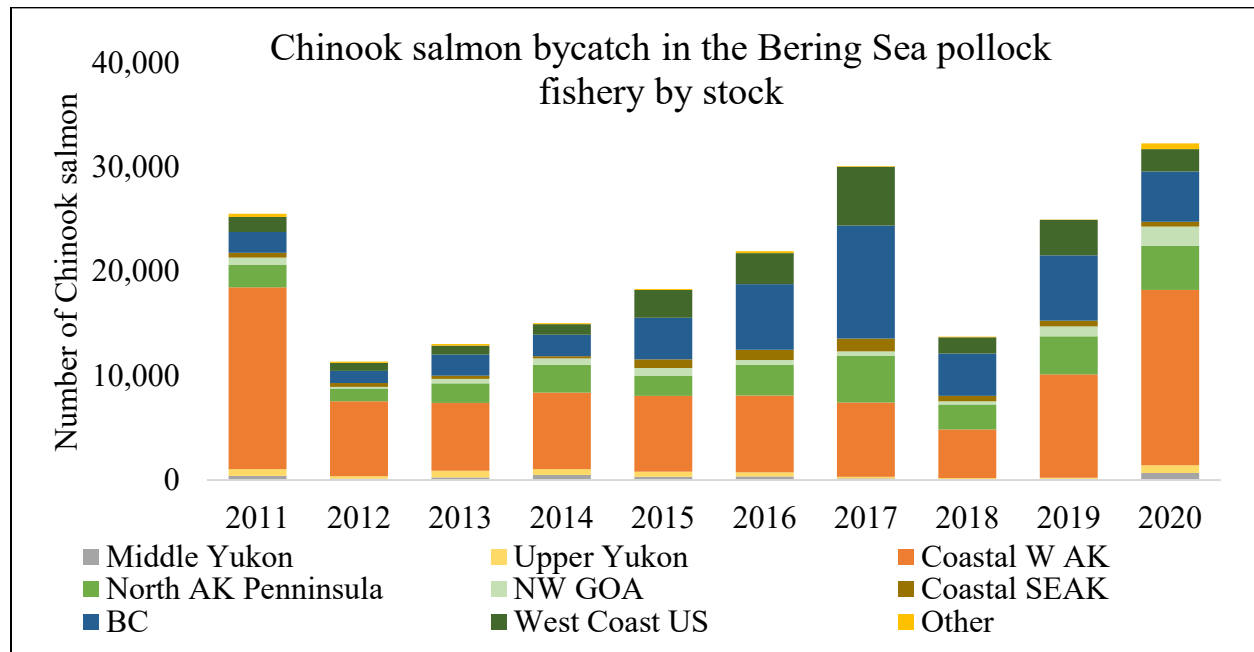
Salmon reports and bycatch in the BSAI and GOA groundfish fisheries: Both Chinook salmon and chum salmon in the federal groundfish fisheries are considered Prohibited Species Catch and

bycatch of these species is limited by both hard caps (Chinook salmon) and avoidance plans (Chinook and chum salmon) that provide incentives to avoid salmon at all times to keep salmon bycatch below the cap. These measures are designed to minimize salmon bycatch in the BSAI and GOA groundfish trawl fisheries. To assess impacts of bycatch on individual salmon stock groups, genetic samples are taken from Chinook salmon in the BSAI and GOA pollock trawl fisheries and the GOA rockfish and non-pollock trawl fisheries while chum salmon samples are primarily taken in the BSAI pollock trawl fishery since chum salmon bycatch is very low in GOA trawl fisheries. In response to public input recommending the Council take additional action to mitigate the impacts of bycatch in the pollock fisheries on Western Alaska salmon, in June 2022, the Council received genetic reports from Chinook salmon samples taken in 2020 and chum salmon samples taken in 2020 and 2021. The Council also receives [annual reports](#) from the pollock fishery cooperatives on performance under salmon avoidance plans required by the Council’s salmon bycatch management program. Additionally, at the June 2022 meeting, the Council received updates on salmon bycatch research which was requested at the October 2021 meeting.

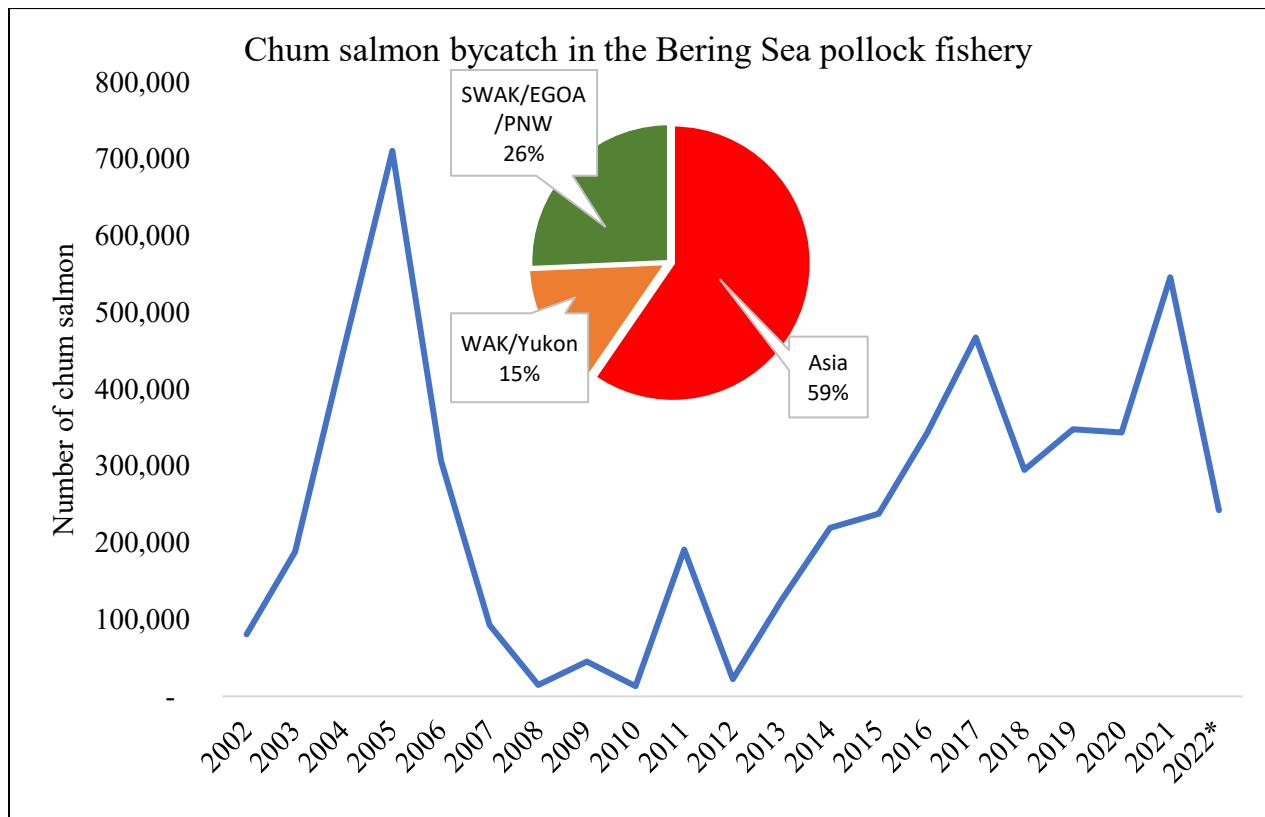
Chinook salmon bycatch in the [Bering Sea pollock fishery](#) – In 2011, Amendment 91 to the BSAI Groundfish FMP implemented Chinook salmon bycatch limits for the BSAI pollock fishery along with avoidance plans and performance standards. In 2017, Amendment 110 implemented additional Chinook salmon caps in years following low Western Alaska Chinook salmon abundance. In 2021, an estimated total of 13,784 Chinook salmon were taken in the Bering Sea pollock fishery. So far in 2022, 6,336 Chinook salmon have been taken as bycatch in the Bering Sea pollock fishery. Based on stock composition estimates from genetic samples taken from one of every 10 Chinook salmon during the most recent five years (2016-2020), 40% of the bycatch is composed of US West Coast and British Columbia stocks, 39% originates from Coastal Western Alaska and Yukon River stocks, 18% is from North Alaska Peninsula and NW GOA stocks, and the remaining 3% originates from the Copper River, NE GOA, and Southeast Alaska.



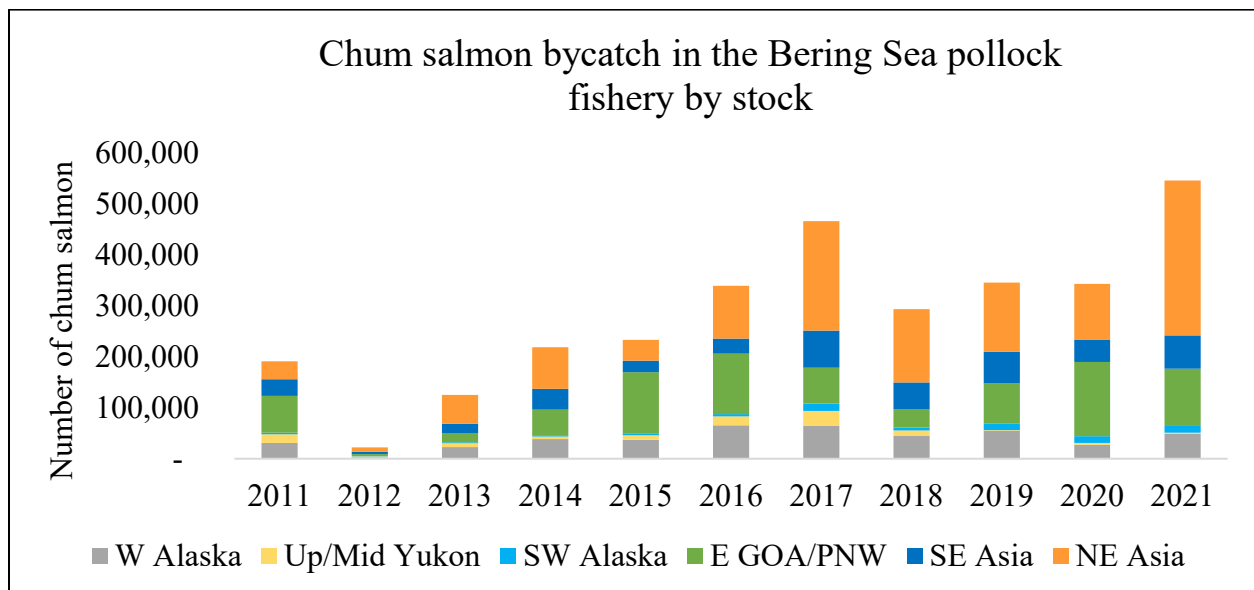
Coastal Western Alaska stocks have historically made up the largest proportion of Chinook salmon bycatch samples taken in the Bering Sea pollock fishery. The relative contribution of Coastal Western Alaska stocks steadily declined from 2011 to 2018 but has been increasing since 2018. The relatively large catch of Chinook salmon in 2020 of 32,294 fish, combined with the increased contribution of Coastal Western Alaska stocks, resulted in a Coastal Western Alaska catch estimate for Chinook salmon of 16,797 fish in 2020. Stock composition estimates from the 2021 bycatch are expected in the spring of 2023.



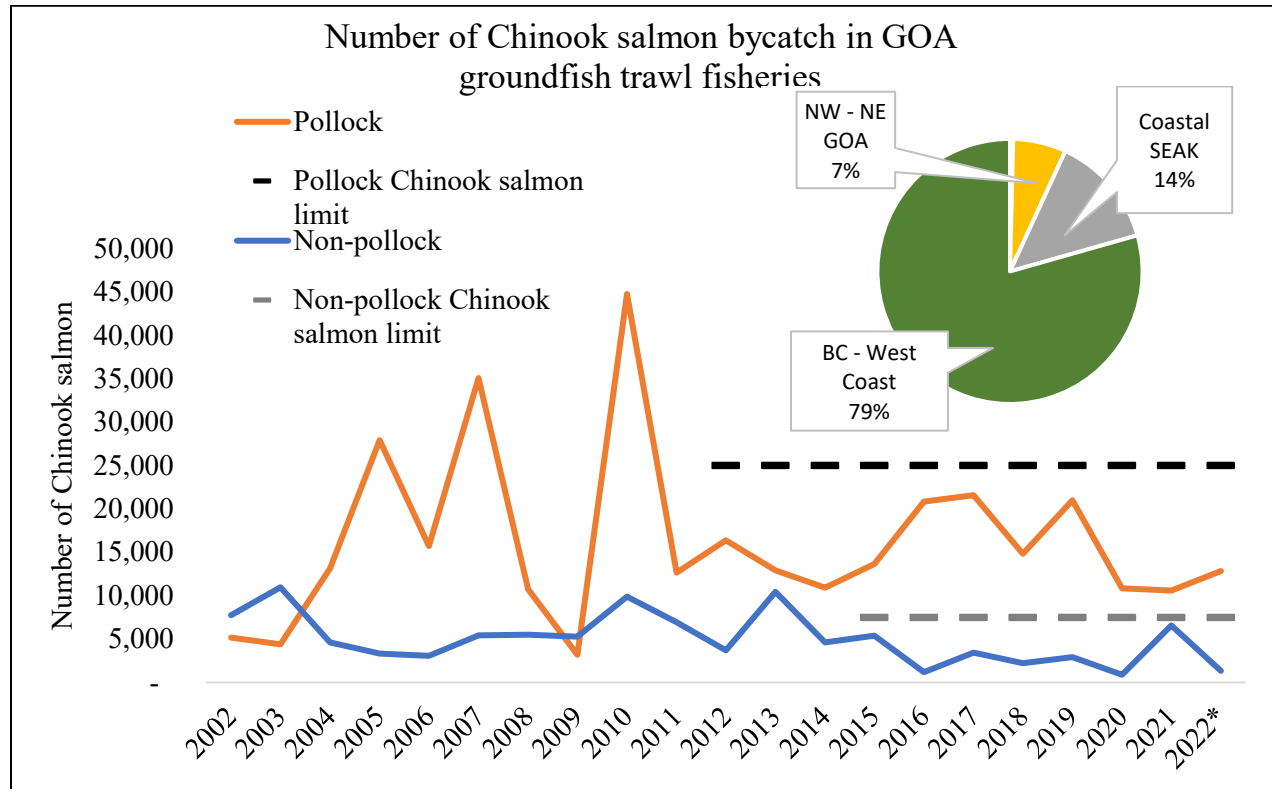
Chum salmon bycatch in the Bering Sea pollock fishery – Nearly all chum salmon bycatch occurs during the pollock B-season (June – November). In [2020](#) and [2021](#), an estimated 546,042 and 242,350 chum salmon were caught in the BS pollock fishery, respectively. Based on stock composition estimates from genetic samples taken from one of every 30 chum salmon during the most recent five years (2017-2021), 59% of the bycatch is composed of Asian stocks; 26% is from SW Alaska, Eastern GOA and Pacific NW stocks; and 15% of the bycatch is salmon originating from Western Alaska and the Yukon River.



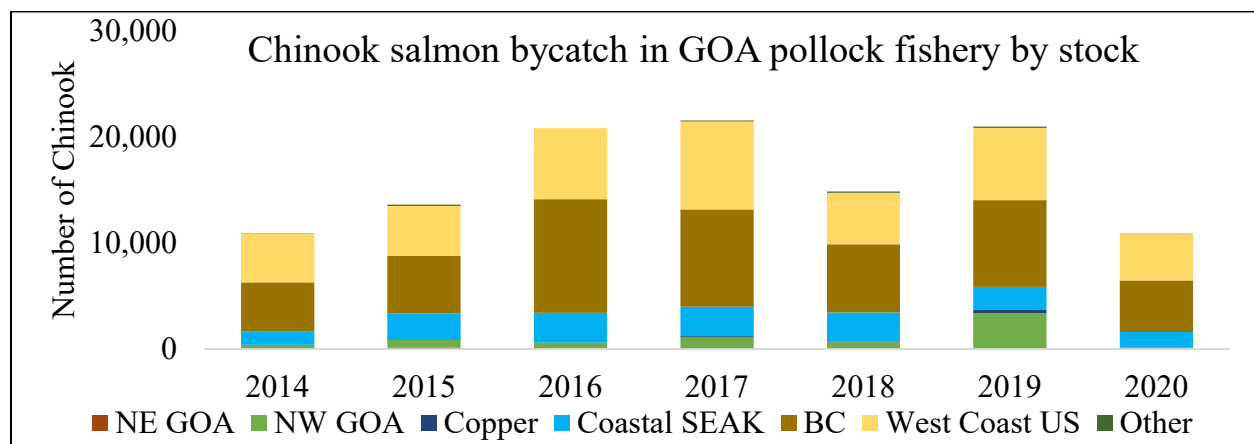
Although the proportion of Western Alaska and Yukon stocks declined in 2021, the increase in number of chum salmon caught from these stocks in 2021 resulted in the highest Western Alaska and Yukon chum salmon bycatch estimates since 2017. In 2020, the estimated combined Western Alaska and Yukon chum salmon bycatch was ~30,000 fish and in 2021 it was ~50,000 fish. The 2011 through 2020 average estimated number of chum salmon bycatch from these two stock groups is ~48,000 fish. As with all salmon genetic stock composition estimates in the BSAI trawl fisheries, it is unknown to what extent these differences in stock composition can be attributed to differences in abundance, fishing patterns, or salmon migration patterns.



Chinook salmon bycatch in the [Gulf of Alaska trawl fisheries](#) – Compared to the BSAI, Chinook salmon bycatch in the GOA is usually smaller with an average catch of 15,400 Chinook salmon in the GOA pollock fishery from 2012 to 2021. In 2021, total Chinook salmon bycatch in the pollock fishery was estimated at 10,595 fish. Based on stock composition estimates from genetic samples during the most recent five years (2016-2020), 79% of the bycatch is composed of West Coast and British Columbia stocks, 14% is composed of Coastal SE Alaska stocks, and 7% are Chinook salmon originating from NW and NE GOA stocks.



The contribution of Chinook salmon originating from GOA stocks decreased from a high of 17% of the total bycatch in 2019 to less than 1.5% in 2020 (152 Chinook salmon). Relative to recent years, the number Chinook salmon taken as bycatch in the groundfish trawl fisheries declined for all stocks.



Chinook salmon and chum salmon stock status and AEQ updates: In June 2022, the Council received [updates](#) on the status of Chinook and chum salmon stocks in Western Alaska. In 2020, Western Alaska chum salmon runs declined dramatically, with run sizes similar to those seen in the previous record low run in 2000. All Western Alaska areas had chum salmon run sizes below recent year averages and some were the lowest in the historical dataset. The decline in Western Alaska chum salmon abundance was even more extreme in 2021 compared to 2020 across all areas. Western Alaska Chinook salmon runs have been chronically poor for over a decade and while this pattern has been observed elsewhere in Alaska, the magnitude of the decline has been particularly prominent in Western Alaska. The Western Alaska Chinook salmon run sizes in 2020 and 2021 were the poorest observed over the past 40 years.

The updated [analysis on estimated adult equivalency](#) (AEQ) impacts of Chinook salmon bycatch in the Bering Sea pollock fishery provided current genetic stock identification information, an updated age/length composition for Chinook salmon, and estimates of how many Chinook salmon, grouped by combined Western Alaska and Upper Yukon salmon stock groupings, taken as bycatch would have returned as adults. The previous update on the impacts of Chinook salmon bycatch in the Bering Sea pollock fishery to Western Alaskan Chinook stocks was provided in 2018.

The 2022 report presented new data indicating some evidence of a decrease in size at age of returning Chinook salmon, the stock composition in the estimated AEQ has not changed significantly since the previous report. Since 2011, the estimated impact rates have averaged 1.9% for Western Alaska stocks and 0.6% for the Upper Yukon River stock. This means that bycatch removed an estimated 1.9% from the estimated total number of adult salmon returning to the combined Western Alaska stock grouping and 0.6% from the estimated total number of adult salmon returning to the Upper Yukon stock grouping. The analysis also showed that the estimated numbers of Chinook taken as bycatch from Western Alaska and Upper Yukon stocks increased in 2020 and 2021, resulting in higher impact rates compared to recent years.

Year	Combined western AK	Upper Yukon
	PSC mortality rate	PSC mortality rate
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%
Mean	1.91%	0.63%

At the June 2022 meeting, the Council also received staff [recommendations](#) on the feasibility of producing a chum salmon AEQ. Although creating a chum AEQ is possible, such an analysis would include significant uncertainties and likely would be of limited use for management purposes. The Council did not recommend further work on estimating the AEQ impact of chum salmon bycatch on returns to Western Alaska rivers.

In response to the reports and public testimony, the Council passed a motion acknowledging the Western Alaska salmon crisis and the impact it is having on culture and food security throughout Western Alaska. The Council committed to continued improvements in bycatch management with a goal of minimizing bycatch at all levels of salmon and pollock abundance. The Council’s motion requested the pollock industry implement additional chum salmon bycatch avoidance measures immediately and requested a discussion paper updating the 2012 analysis of chum salmon bycatch to include updated chum salmon bycatch and genetic stock composition data; a

description of the Council's rationale for establishing the current Bering Sea chum salmon bycatch management program; discussion of tradeoffs in the pollock fishery associated with avoiding different bycatch species (e.g., chum salmon, Chinook salmon, herring); and a summary of conditions that have changed since the 2012 analysis (e.g., increased Asian hatchery releases and Western Alaska chum salmon stock status). This discussion paper is scheduled for the Council's December 2022 meeting.

The Council also intends to consider the findings and recommendations of the State of Alaska's Bycatch Review Task Force as it considers how to improve salmon bycatch management. The Council intends to collaborate with Western Alaska salmon users by forming a committee of Tribal members, scientists, industry representatives, and other experts to review and provide recommendations on: the discussion paper on chum salmon bycatch; recommendations of the Bycatch Review Task Force and its Western Alaska salmon subcommittee; and current information, including Local, Traditional, and Subsistence knowledge, and research needed to determine what is driving Western Alaska salmon declines. Finally, the Council prioritized research on Bering Sea salmon by recommending that NMFS and ADF&G prioritize development of models to predict where and when specific salmon stocks will be located in the Bering Sea. The Council also supported work to improve the timeliness of genetic data, increased nearshore Bering Sea survey work as proposed by ADF&G, and continued gear innovation by industry that may reduce bycatch. This work will inform development of management measures focused on avoiding Western Alaska salmon bycatch in the pollock fishery.