



## NOAA FISHERIES

Alaska Fisheries  
Science Center

Genetics Program

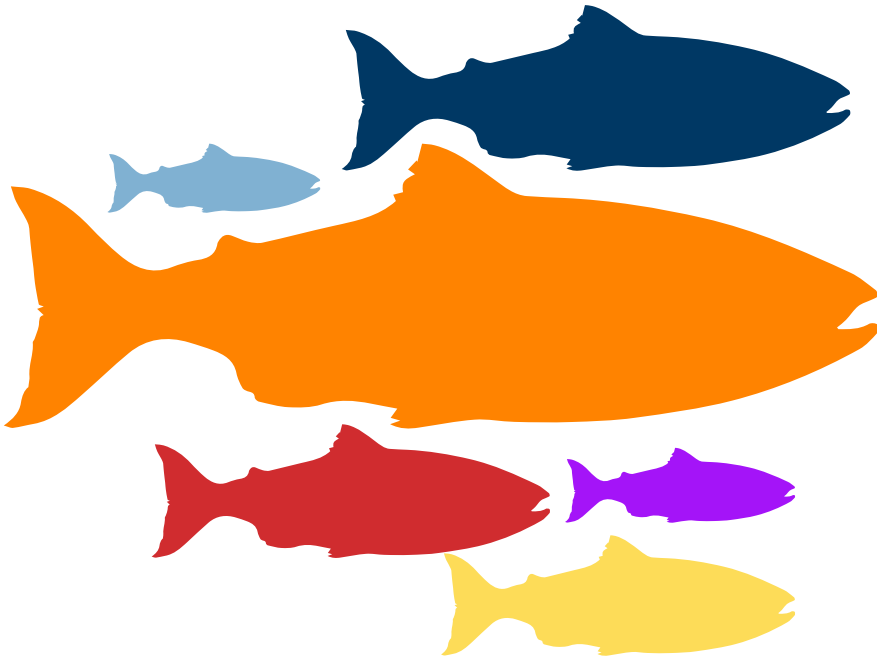
# Salmon Bycatch

The Alaska Fisheries Science Center's Genetics Program works to determine the stock composition of the chum and Chinook salmon bycatch from trawl fisheries in the Bering Sea. They also are exploring ways to help the fishing industry avoid catching specific stocks of salmon.

In studying salmon bycatch, the Science Center's Genetics Program has three primary research goals

- Determine the geographic origin of salmon caught in federally managed groundfish fisheries that are collected by NOAA Fisheries observers to estimate stock-specific impacts of bycatch.
- Determine the number of adult Chinook salmon that would have returned to their natal rivers if not caught as bycatch (Adult Equivalency Analysis).
- Merge stock ID with other data to predict stock-specific distributions and potentially help fishing fleets avoid certain stocks (e.g., western Alaska [WAK] stocks).



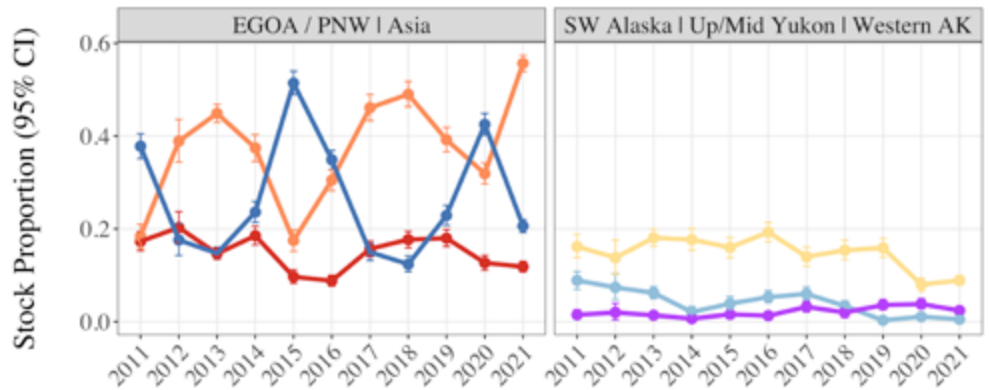


## Trends in chum salmon bycatch in the Bering sea

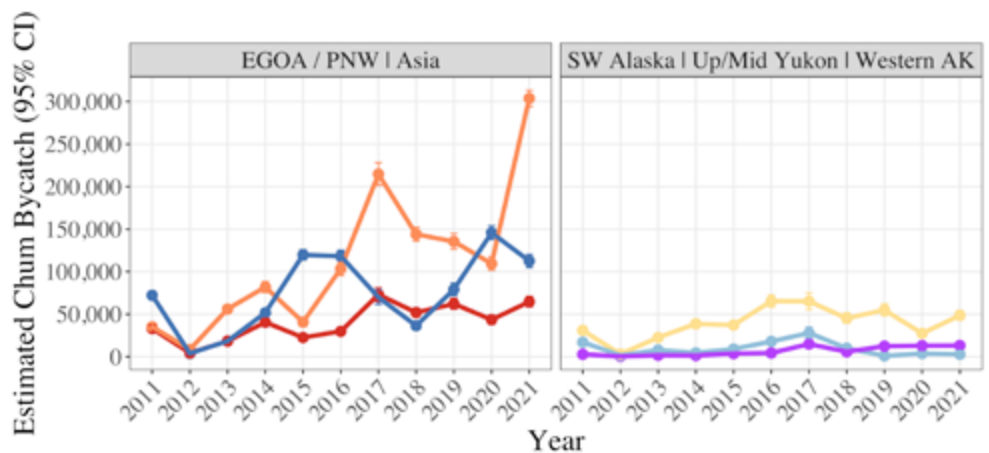
- Majority of chum salmon caught are from Asia (Japan, Russia) or southern stocks (Southeast Alaska, British Columbia, Washington, and Oregon).
- Proportion of WAK and Yukon stocks much lower than average over the last two years, which was likely a function of low run sizes for these stocks.
- Even though the total chum salmon bycatch in the last two years has been high, catches of WAK and Yukon chum salmon have been below or near average.
- Proportions of WAK and Yukon fish vary across space and time in the ocean environment within a year. We are planning to investigate this further with the goal of developing strategies to avoid these stocks.

### Reporting Group

- SE Asia
- NE Asia
- W Alaska
- Up/Mid Yukon
- SW Alaska
- EGOA/PNW

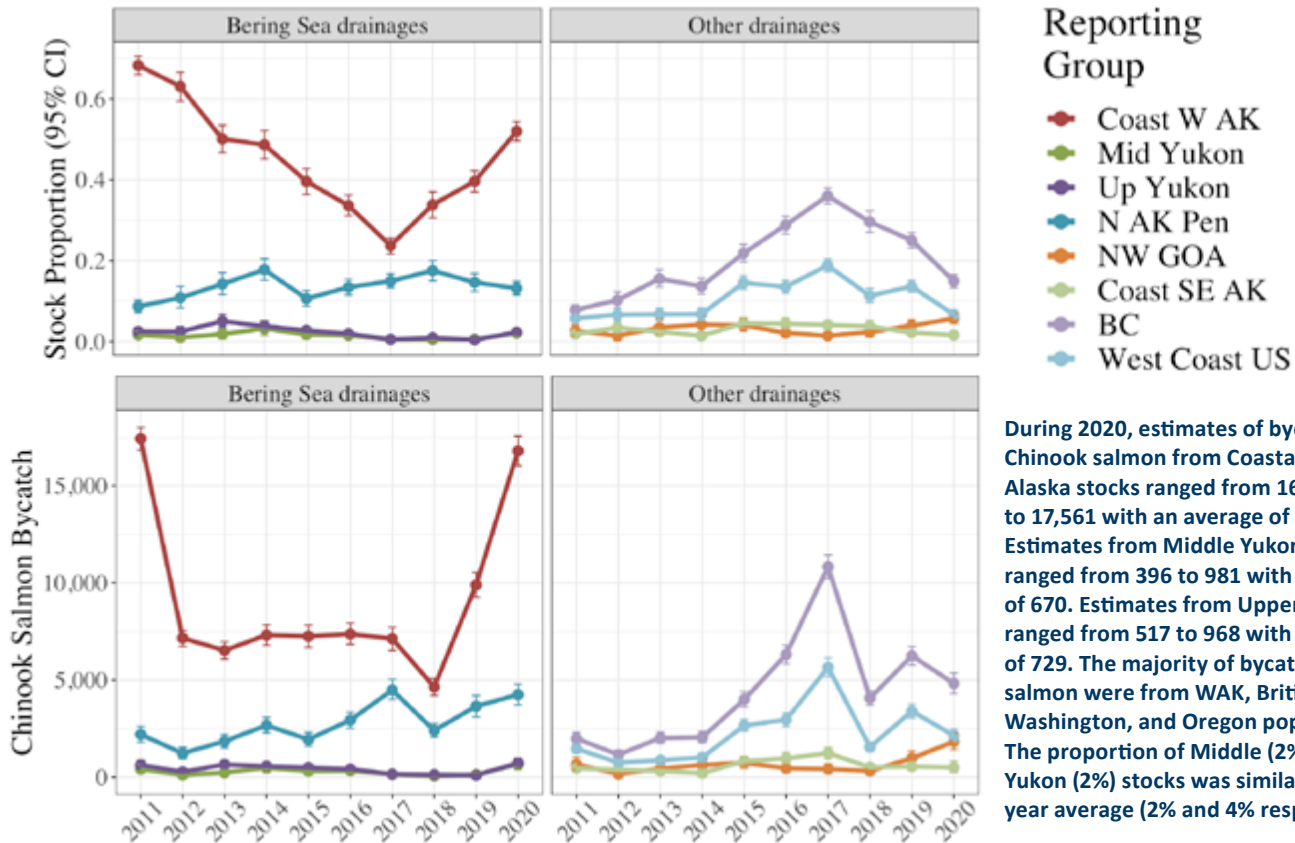
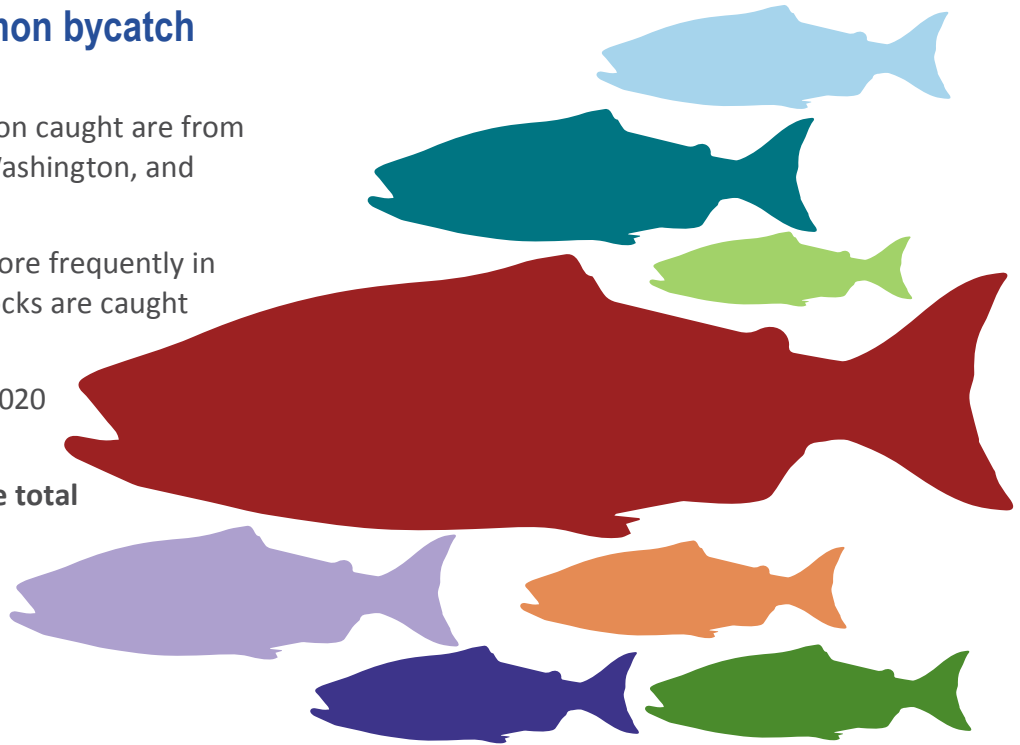


Between 2011 and 2021 annual estimates of chum salmon bycatch from Western Alaska ranged from 3,061 to 66,199 with an average of 39,904. Estimates from Yukon River fall stocks ranged from 1,044 to 28,061 with an average of 9,448. In a given year the stocks that made up the largest proportions and numbers were either Northeast Asia or Eastern Gulf of Alaska/Pacific Northwest (southern stocks including Southeast Alaska, British Columbia, Washington, and Oregon).



## Trends in chinook salmon bycatch in the Bering sea

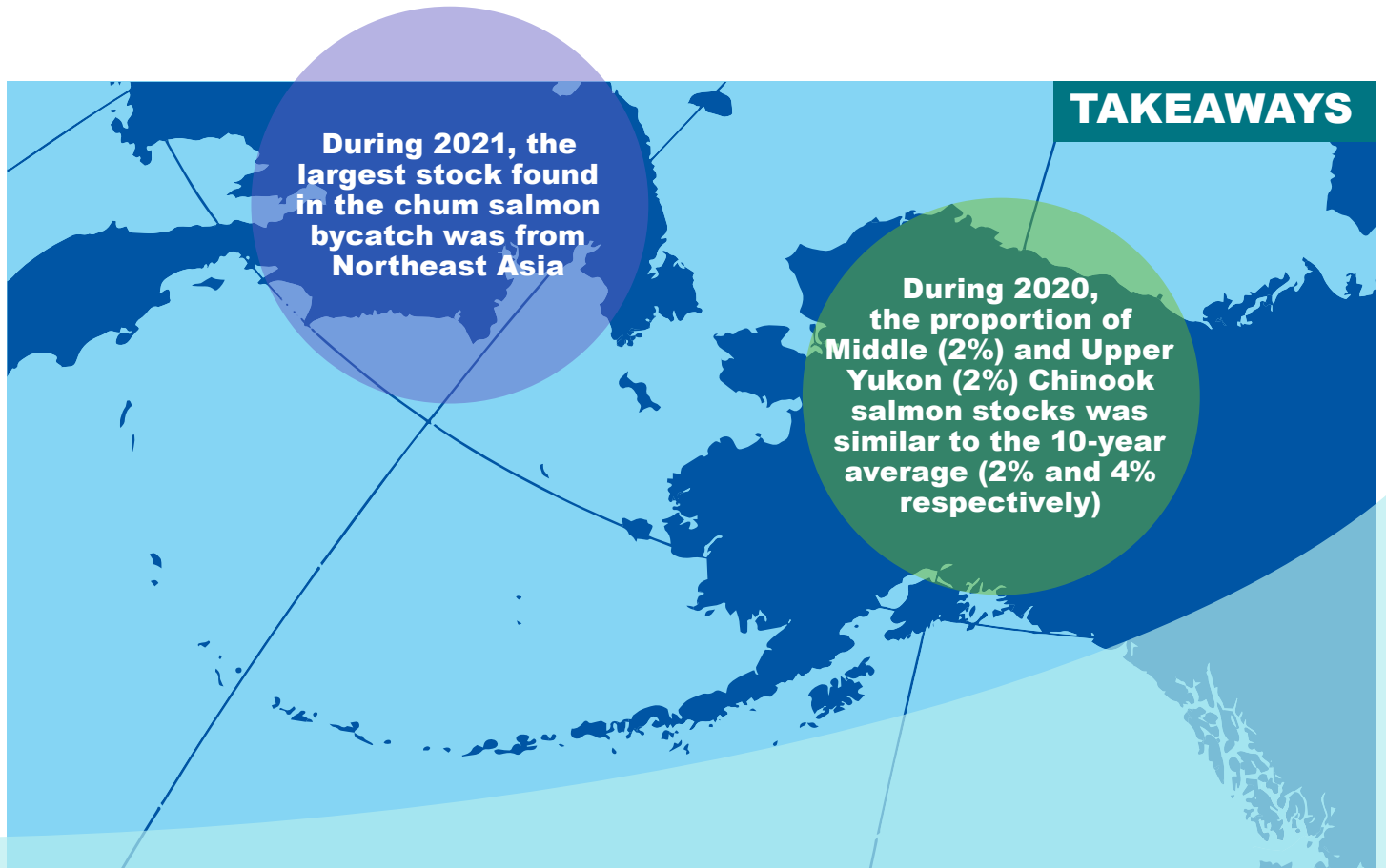
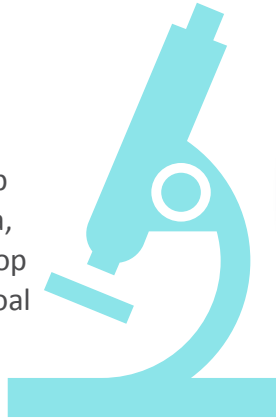
- Majority of Chinook salmon caught are from WAK, British Columbia, Washington, and Oregon populations.
- WAK stocks are caught more frequently in winter while southern stocks are caught more frequently in fall.
- Spike in WAK catches in 2020 with less southern fish.
- **Bycatch takes < 3% of the total run of WAK stocks.**



During 2020, estimates of bycatch Chinook salmon from Coastal Western Alaska stocks ranged from 16,032 to 17,561 with an average of 16,796. Estimates from Middle Yukon River ranged from 396 to 981 with an average of 670. Estimates from Upper Yukon River ranged from 517 to 968 with an average of 729. The majority of bycatch Chinook salmon were from WAK, British Columbia, Washington, and Oregon populations. The proportion of Middle (2%) and Upper Yukon (2%) stocks was similar to the 10-year average (2% and 4% respectively).

## Increased efficiencies and future research

- AFSC Genetics Laboratory has modernized workflow and decreased turnaround time for chum salmon by over a year. The same will be done for Chinook salmon next year. This decrease in turnaround time is vital for ensuring that genetics results can be integrated into management decisions in a timely fashion.
- The AFSC Genetics Laboratory, in partnership with colleagues from the University of Alaska, Fairbanks and industry, are working to develop stock-specific distribution models with the goal of facilitating avoidance of important stocks (e.g., Western Alaska).



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