NPFMC Salmon Reports from June 2022 Council meeting

Alaska Bycatch Review Task Force (ABRT)
Western Alaska Salmon Subcommittee
July 8, 2022

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October 2021 Council motion

- 1) An updated bycatch impact (AEQ) analysis which includes current genetic stock identification information and an updated age/length composition for Chinook salmon along with estimates of how many Chinook salmon taken as bycatch in the Bering Sea pollock fishery would have returned to Western Alaska Chinook salmon stock groupings. The analysis should include a PSC harvest rate analysis and an estimate of the Chinook salmon bycatch impacts to each specific stock grouping at the current cap levels and at actual bycatch levels in recent years. The Council also requests that the report include recommendations to evaluate impacts of chum salmon bycatch in the pollock fishery with currently available data.
- 2) A stock status update of Western Alaska Chinook and chum salmon stocks.

- In addition, the Council requests staff write a letter to the Secretary of State to request help to identify levels and stock composition of bycatch of salmon in waters outside of the jurisdiction of the United States. The Council requests staff write a letter in support of recent requests to the Secretary of Commerce for increased and dedicated funding for salmon research, observation, and monitoring, including on the lifecycle of salmon species in the freshwater, nearshore, and marine environments, and the effects that environmental changes are having on salmon throughout their lifecycle.

Presentations to the Council

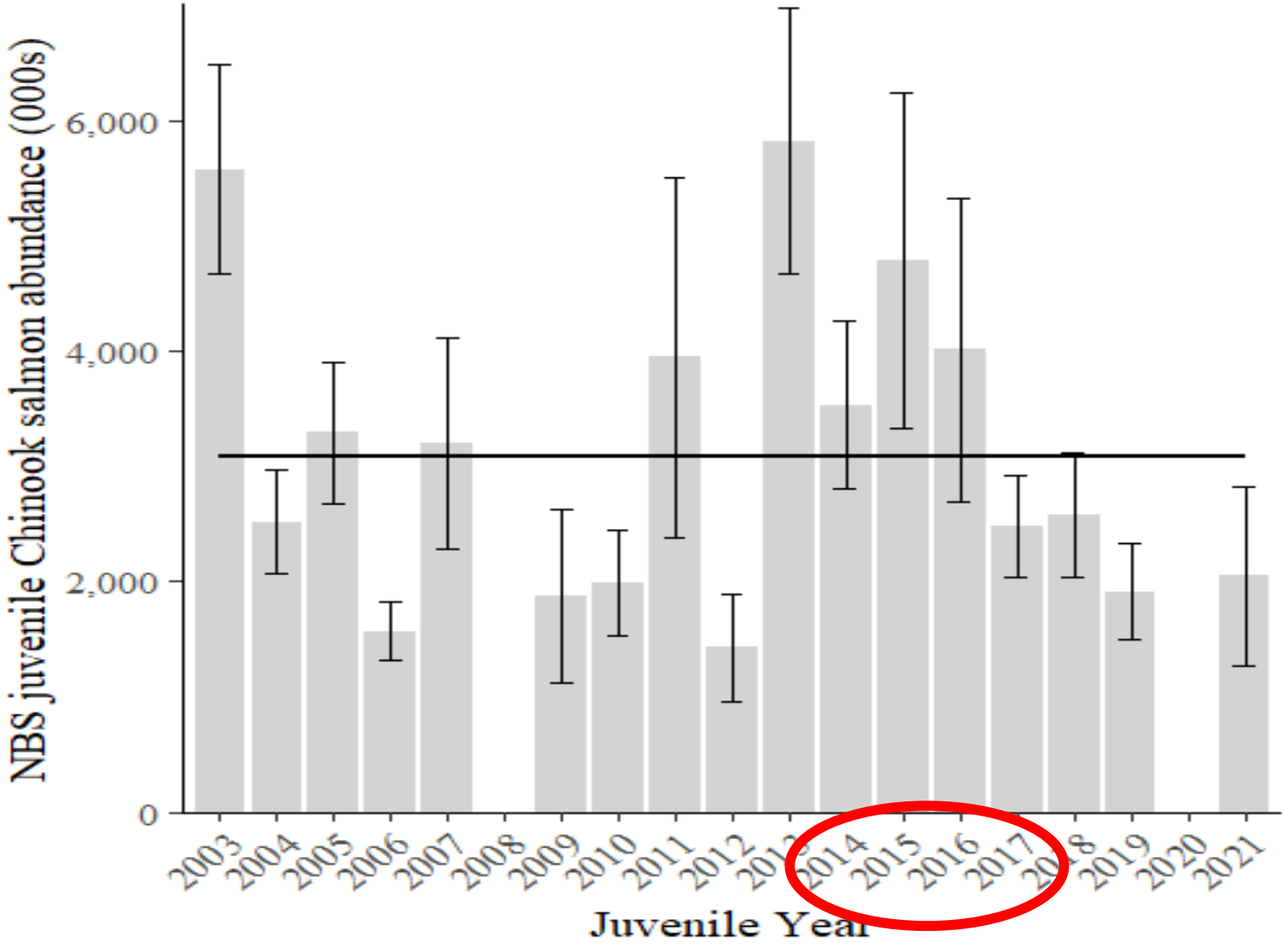
- **Salmon stock status and research updates**
  - **Stock status update for WAK Chinook and chum**
  - **AFSC overview of salmon research and mandates**
  - **ADF&G overview of ongoing research and plans**

- **BSAI and GOA salmon genetics reports**
  - **BSAI Chum salmon bycatch genetics from 2020-2021**
  - **Chinook salmon genetics 2020 (BSAI and GOA)**
- **Update on ongoing genetics works and plans**
  - **AFSC progress and plans**
- **Bering Sea Chinook Adult Equivalency and Impact rate report; staff recommendation for assessing chum impacts**
  - **Update on 2015/2018 report; changes noted in age/length updates and maturity estimates**
  - **Staff feedback on assessing chum bycatch impacts**

- **Salmon Excluder final report**
- **Reports from the IPAs (3)**
- **SeaShare update**

Research updates: NOAA and ADF&G

Juvenile Chinook salmon abundance

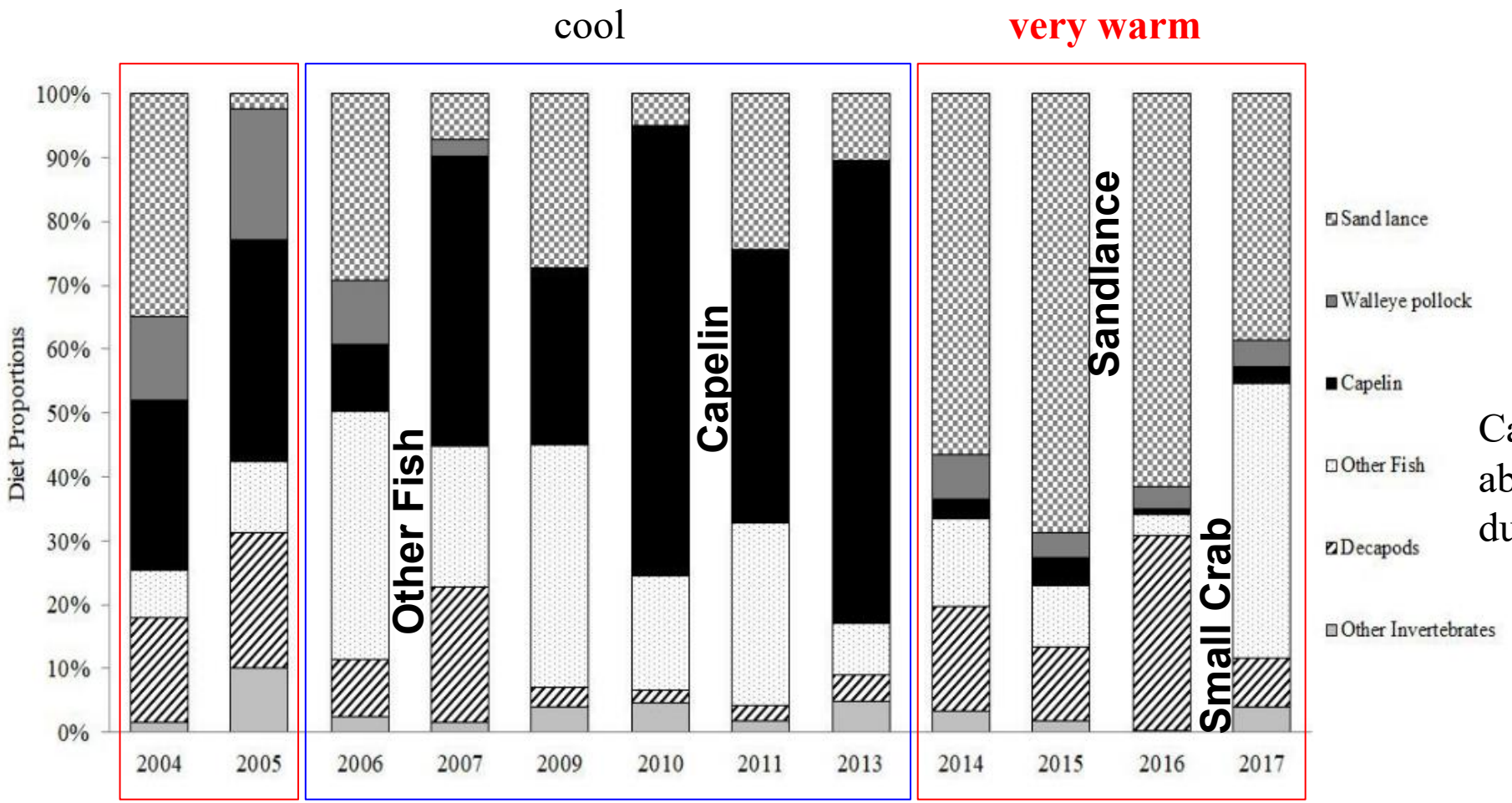


Abundance of Juvenile Chinook has been below average since 2017

Smaller than average size during recent warm years

NOAA FISHERIES

Juvenile Chinook Salmon Diet

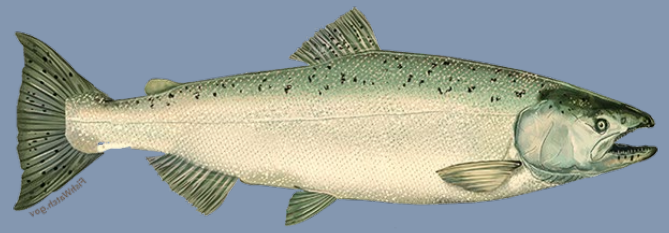


Capelin, a high quality prey, are absent from Chinook salmon diet during recent warm years.

NOAA FISHERIES

RIVER

Future run size of Yukon Chinook is determined very early in their life – before their first winter at sea



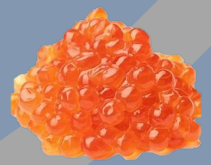
~2 years

~3 months

OCEAN

RIVER

Yukon fall chum salmon runs also seem to be driven by factors early in life…

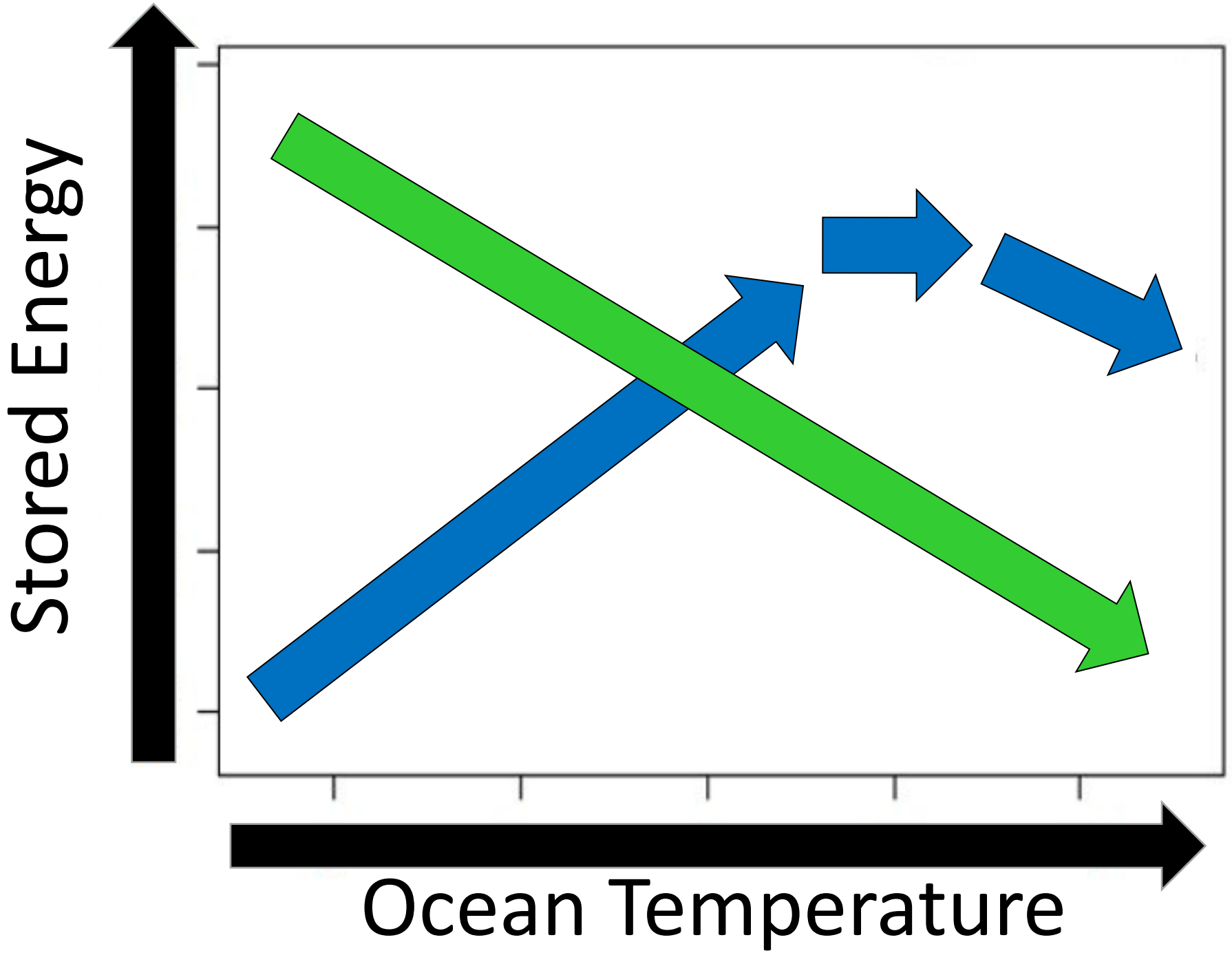


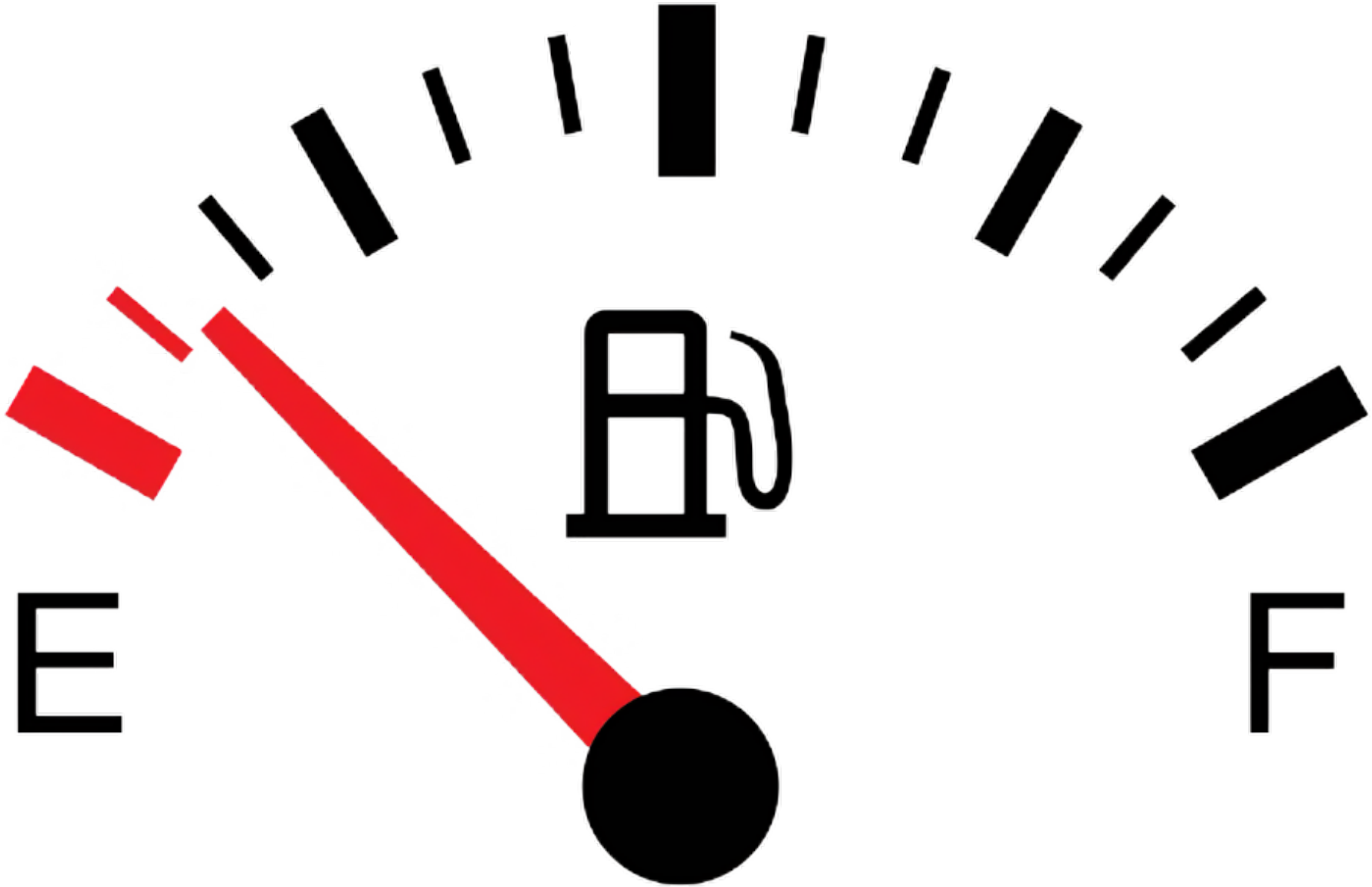
~1 year

~3 months

……until 2016

OCEAN


Stored Energy
Ocean Temperature
Juvenile Chinook
Juvenile Chum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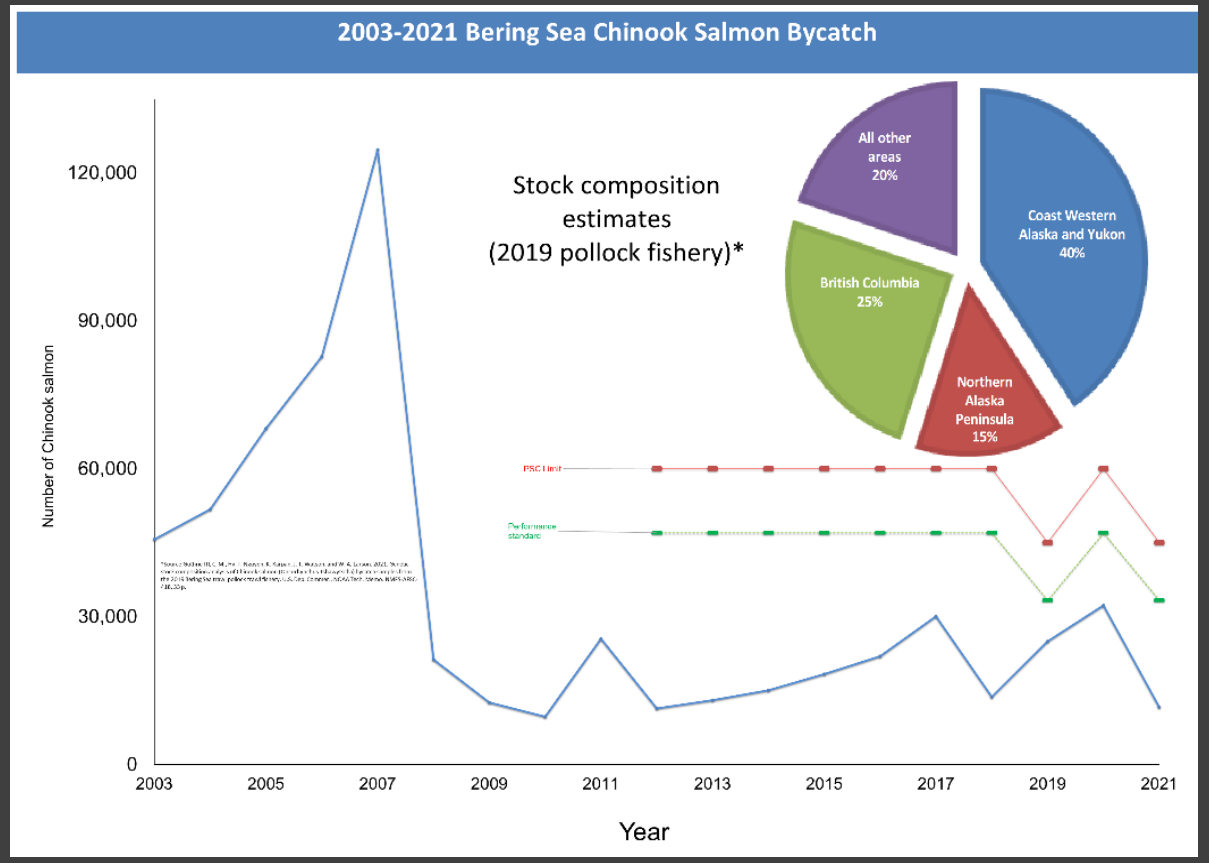
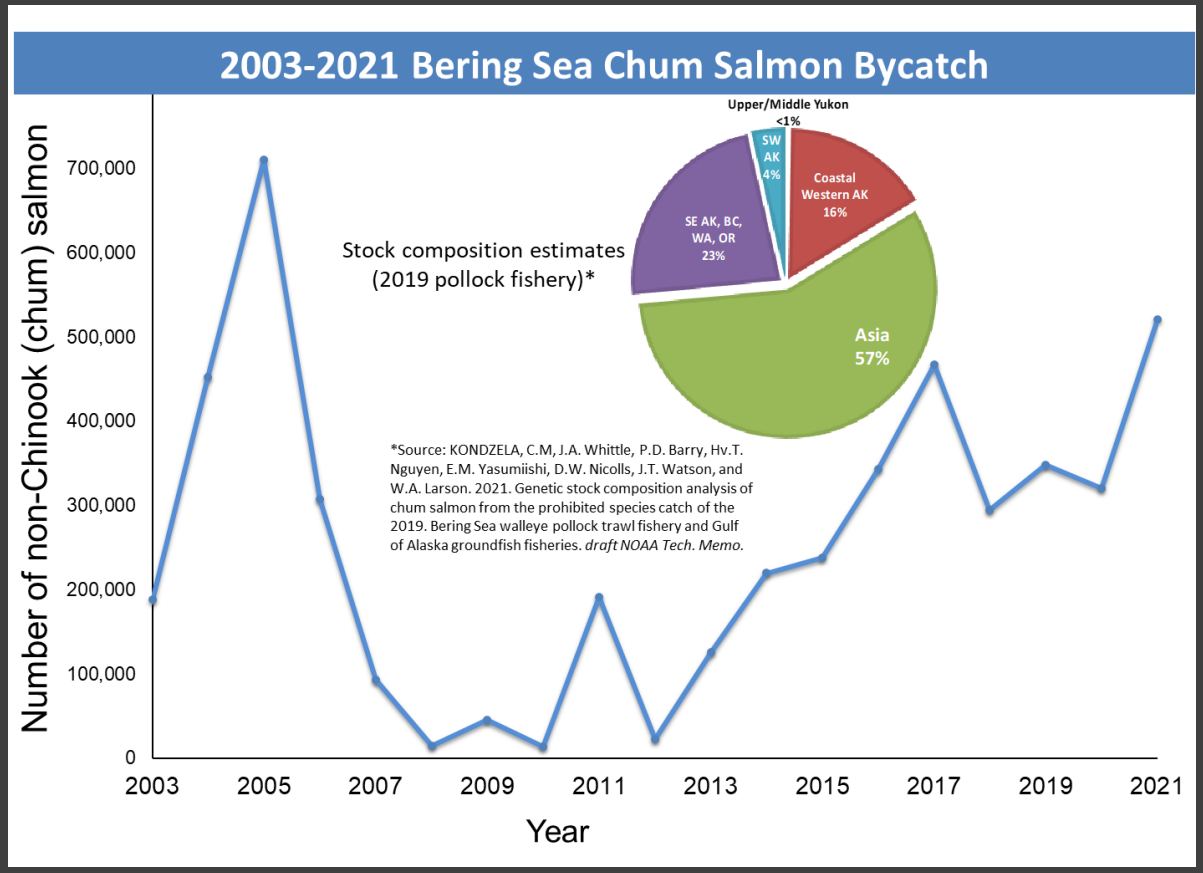
Genetics Summary

Trends and genetic breakouts



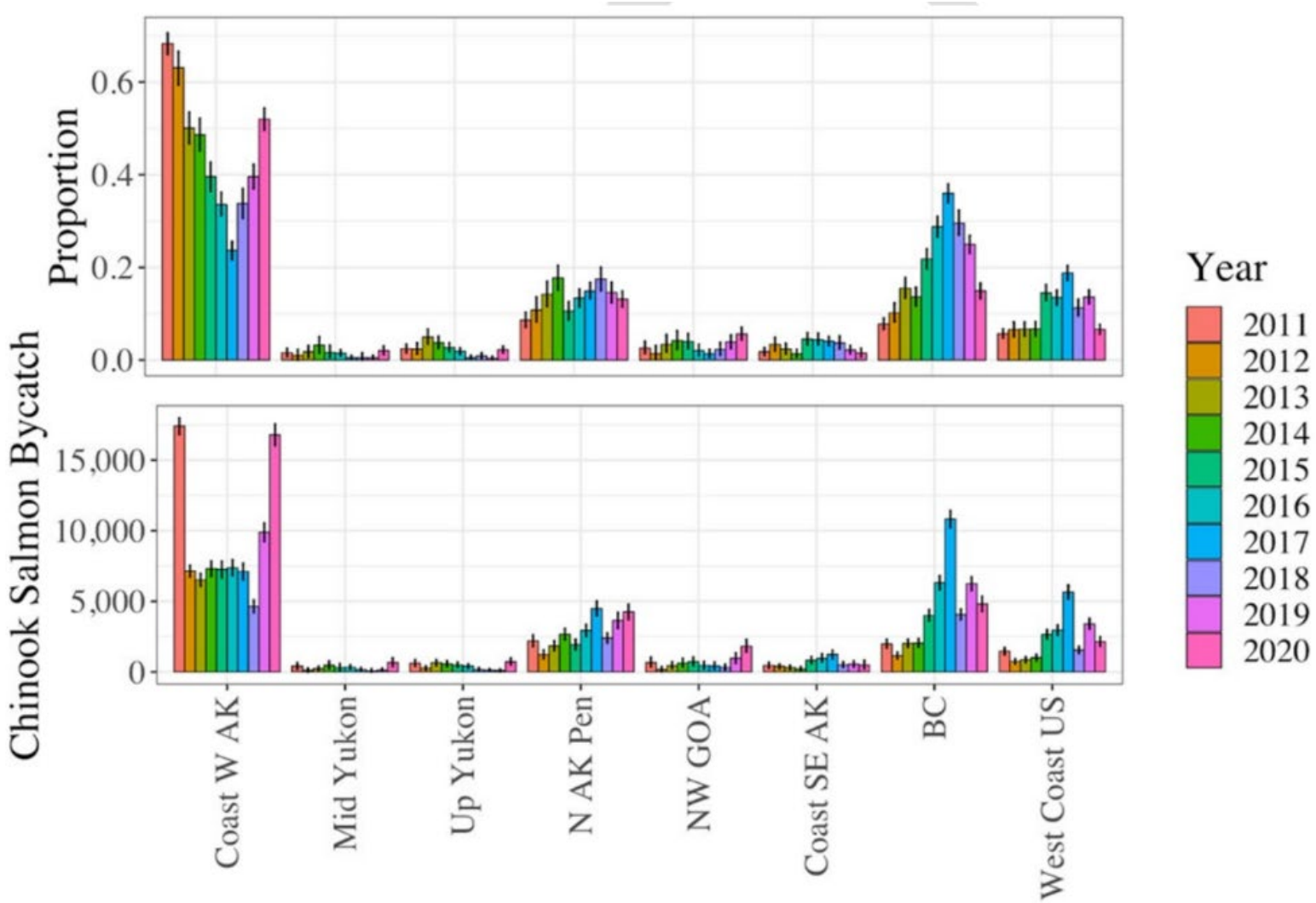


Chinook 2021: 13,783*

Chum 2021: 530,626*

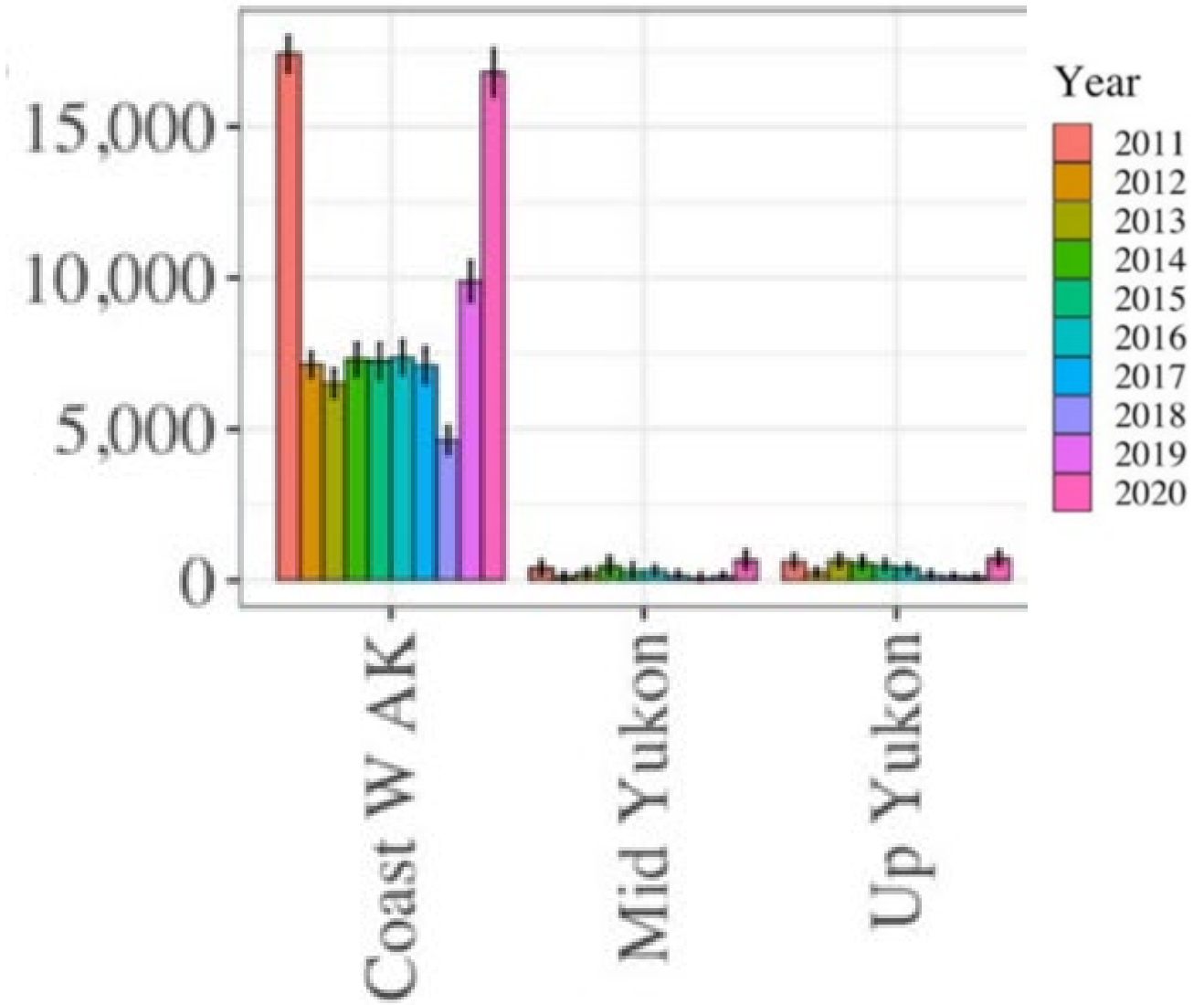
*from NMFS from Catch Accounting System database 12/21/2021

Major genetic takeaways: BSAI Chinook salmon

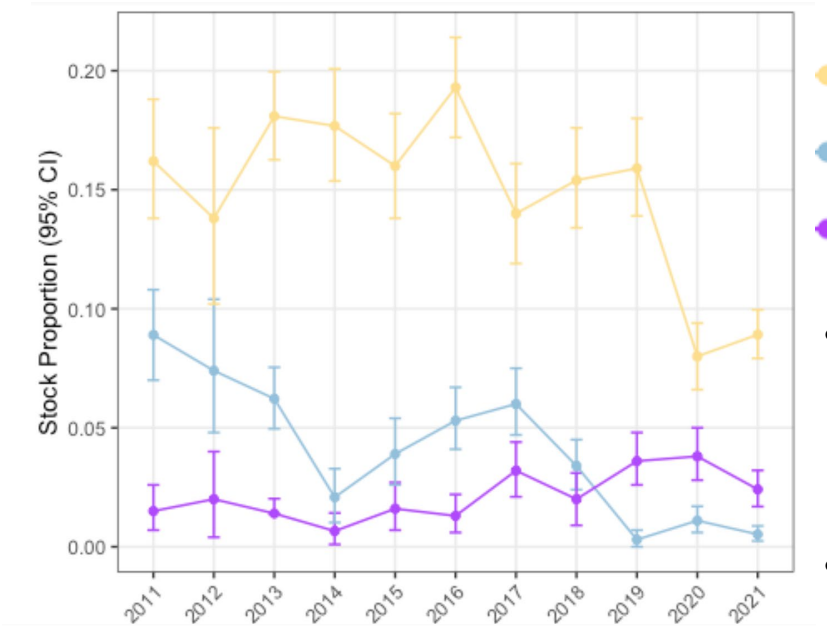


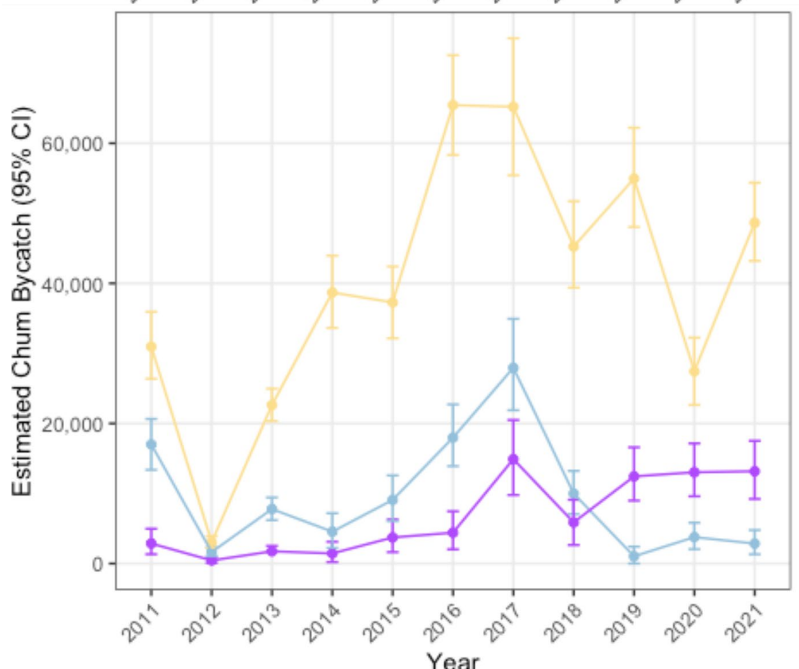
Spike in WAK catches, southern stocks decreasing after 2017 peak

Chinook salmon bycatch #s



Major takeaways: chum salmon





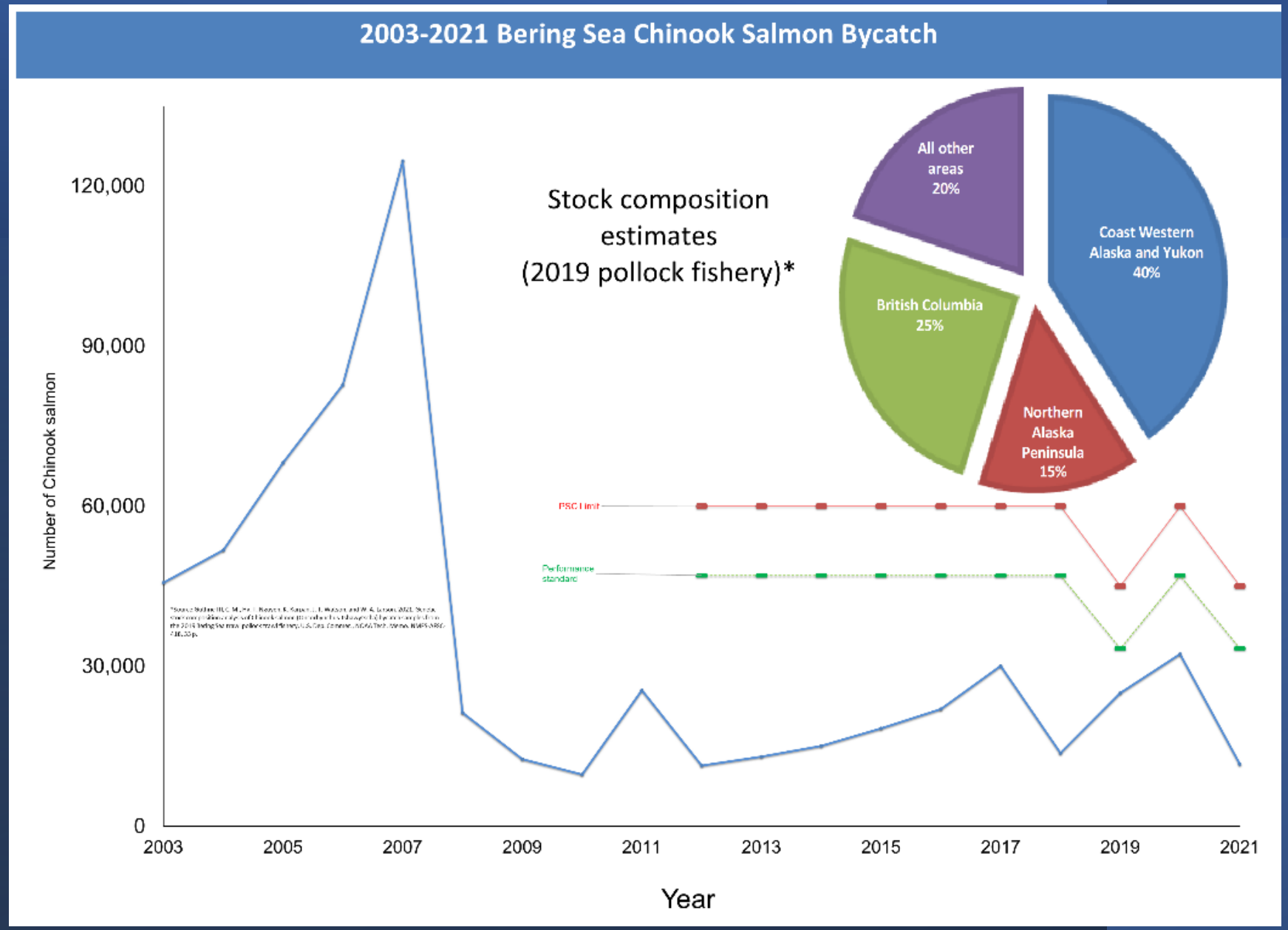
- Proportion of WAK and Yukon stocks much lower than average over the last two years
- Even with large bycatch in the last two years, catches of WAK and Yukon chum salmon have been below or near average
- Proportions of WAK and Yukon fish do vary across space and time within a year. We are planning to investigate this further with the goal of informing stock-specific avoidance.

Adult Equivalency (AEQ) and impact rate update BSAI Chinook

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

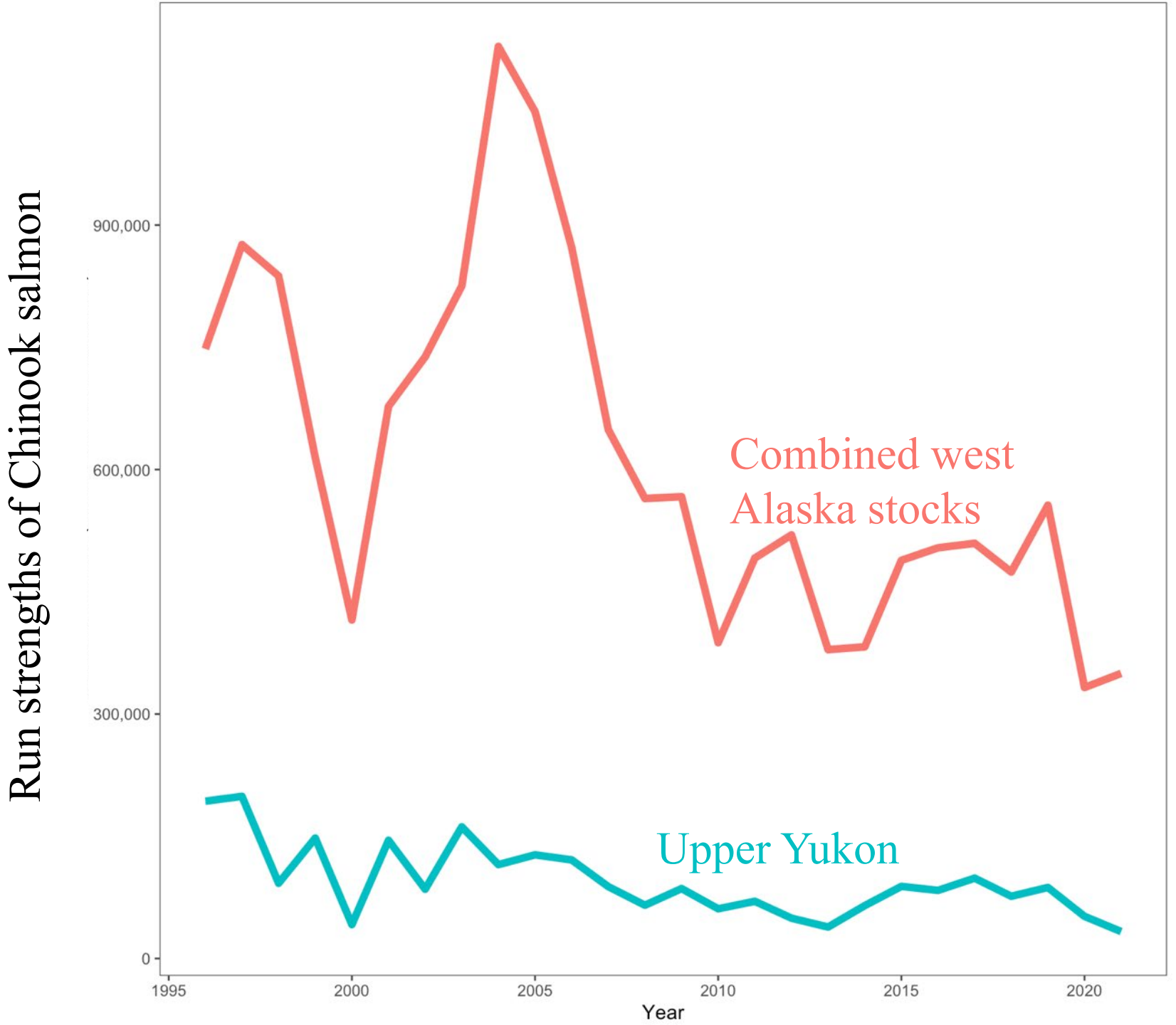
- To estimate Adult Equivalent (AEQ)
  - fish that would have returned to some river that year if they had not died from bycatch
- Information needs:
  - Number of salmon bycaught
    - from observer program
  - Age of fish
    - from observer data on length
    - using Age-Length key (updated 2022)
  - Region of origin
    - limited to Coastal West Alaska and Upper Yukon for WAK
  - Estimated maturity by year
    - We do this in aggregate across multiple WAK rivers

- To estimate impact rate the % of the total run
  - the sum of the rivers in a specific genetic grouping (e.g. CWAK or Upper Yukon) that would have returned to that genetic area had the fish not been caught as bycatch
- Information needs:
  - AEQ for that grouping
  - Run size estimate
    - for all applicable rivers in that grouping
    - E.g. only Upper Yukon has a single run size estimate, for CWAK it is sum across all western Alaska Rivers from Norton Sound to the Nushagak



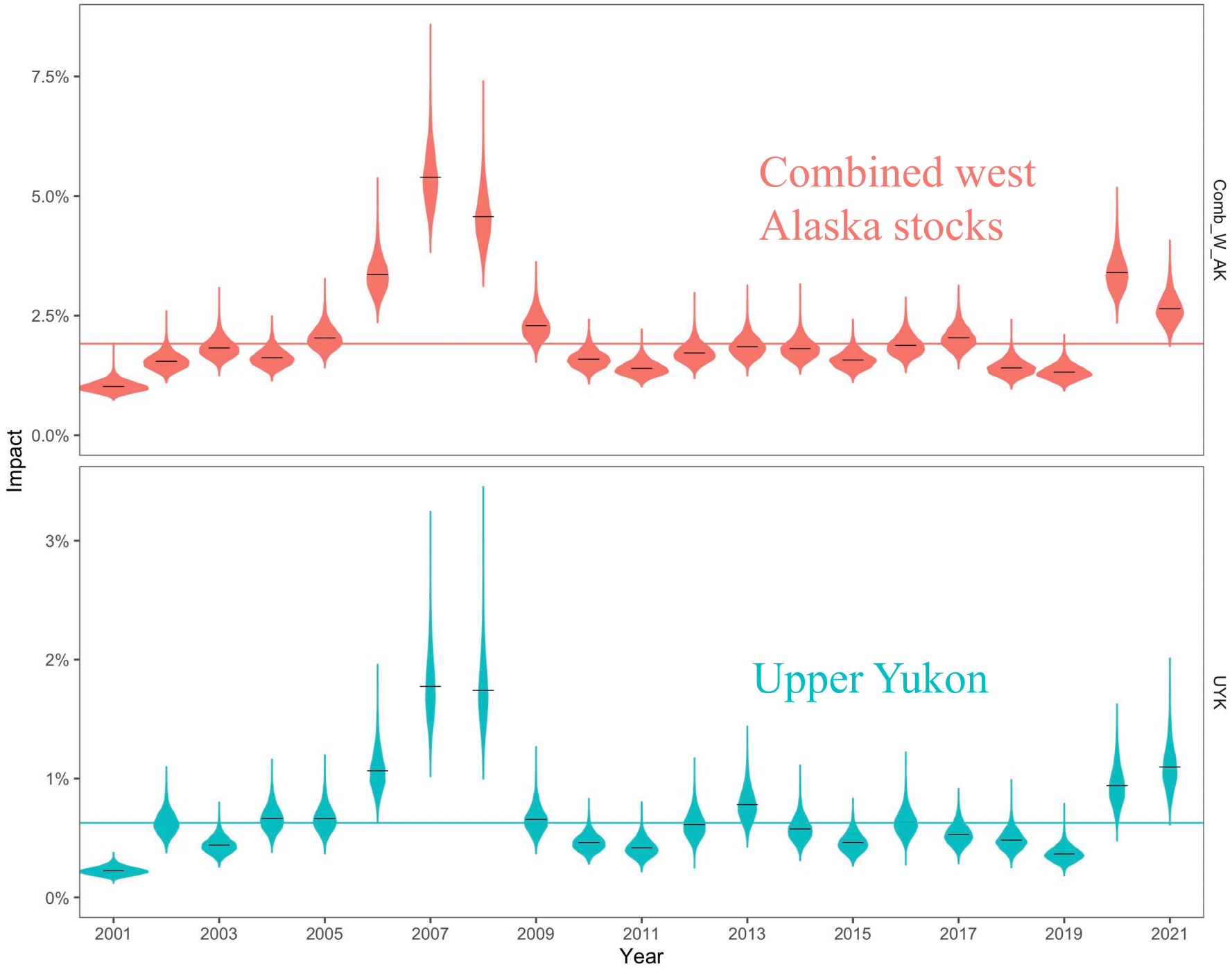
2022 (A season) 5,184

Run sizes


Run strengths of Chinook salmon
900,000
600,000
300,000
0
1995
2000
2005
2010
2015
2020
Year
Combined west Alaska stocks
Upper Yukon

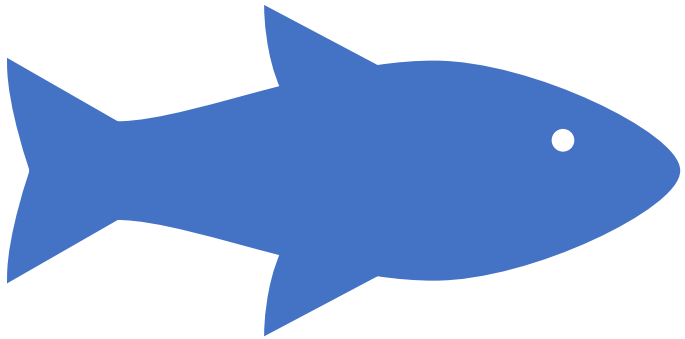
Impact estimates

$$\frac{\text{AEQ}}{\text{(run size + AEQ)}}$$



Summary

- Impact rates which has averaged 1.9% since 2011 for the combined coastal western Alaska stocks
  - 0.6% for the Upper Yukon
- The rate for the western Alaska stocks increased in 2020 to an estimate of 3.4% but dropped in 2021 to 2.6%
  - 0.9% and 1.1% for the Upper Yukon
- The increase is due to lower returns overall with the biggest decrease for Combined western Alaska from the Nushagak River



Chum salmon impact recommendations

Assessing impacts

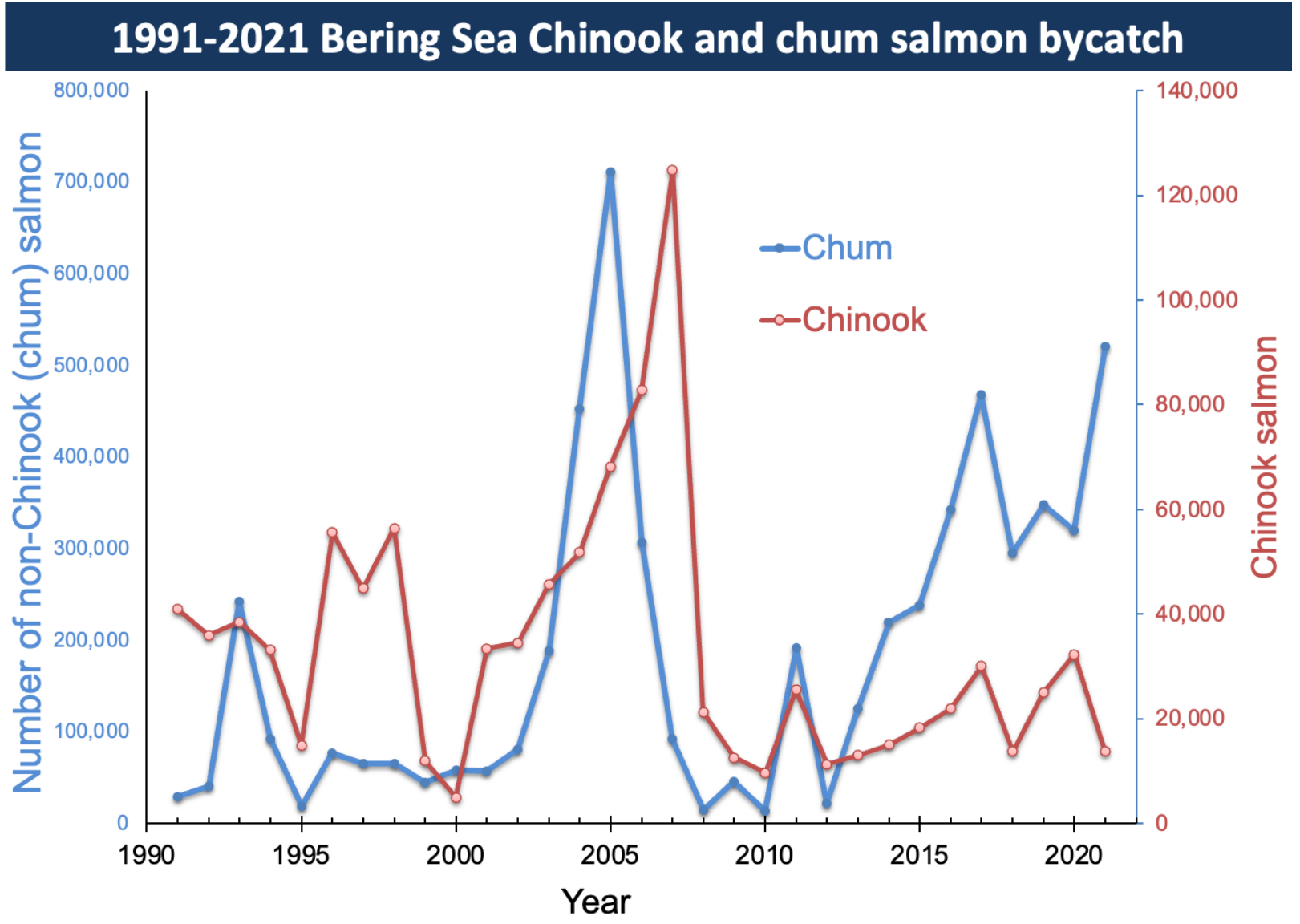
AEQ for chum

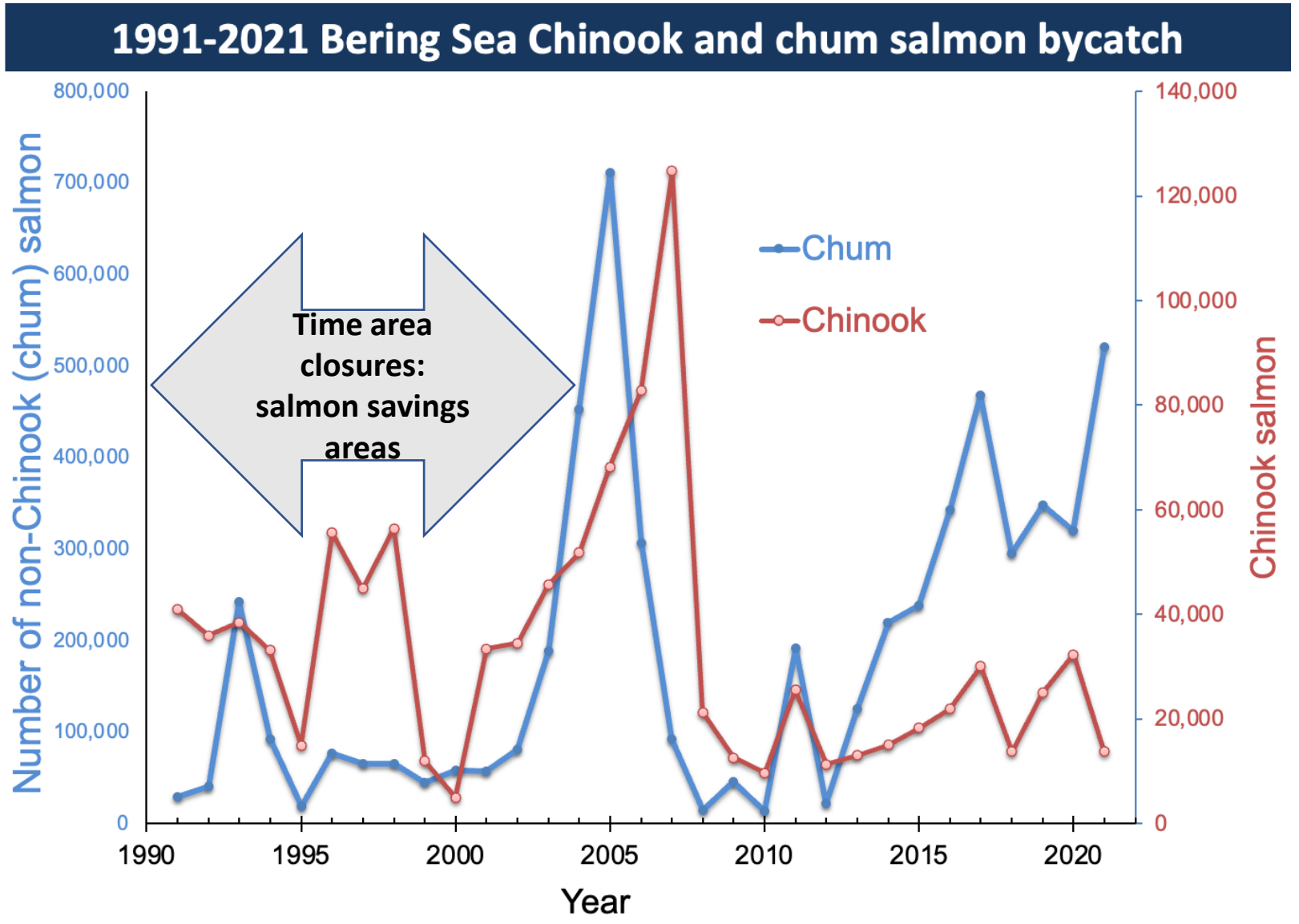
- a coarse estimate of an AEQ but several assumptions would need to be made where data are not available (i.e., maturity and natural mortality rate).

Impact rate for chum

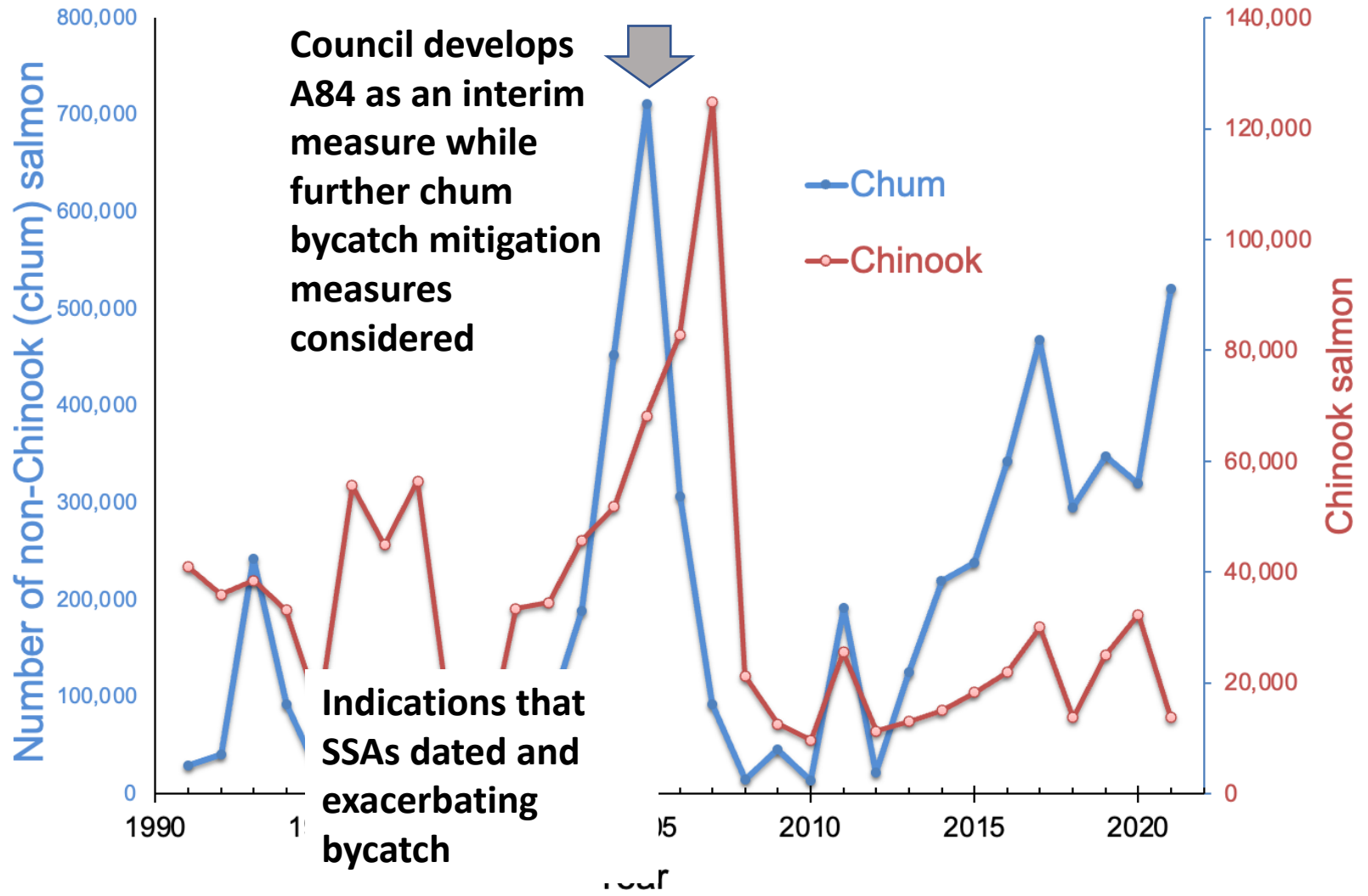
- For CWAK this is not possible.
- Run reconstructions are currently only available for Yukon River summer and fall chum salmon and Kwiniuk River chum salmon. This excludes large populations in Kuskokwim River and throughout Bristol Bay, Kotzebue Sound, and Norton Sound. Unlike Chinook salmon, the lack of run reconstructions for large populations of W. Alaska chum salmon means that a good approximation of total W. Alaska chum salmon abundance cannot be provided at this time.
- Impact rate for Yukon fall would be possible but may not reflect trends across all western AK chum stocks

Brief history of actions related to Chinook and chum salmon bycatch management

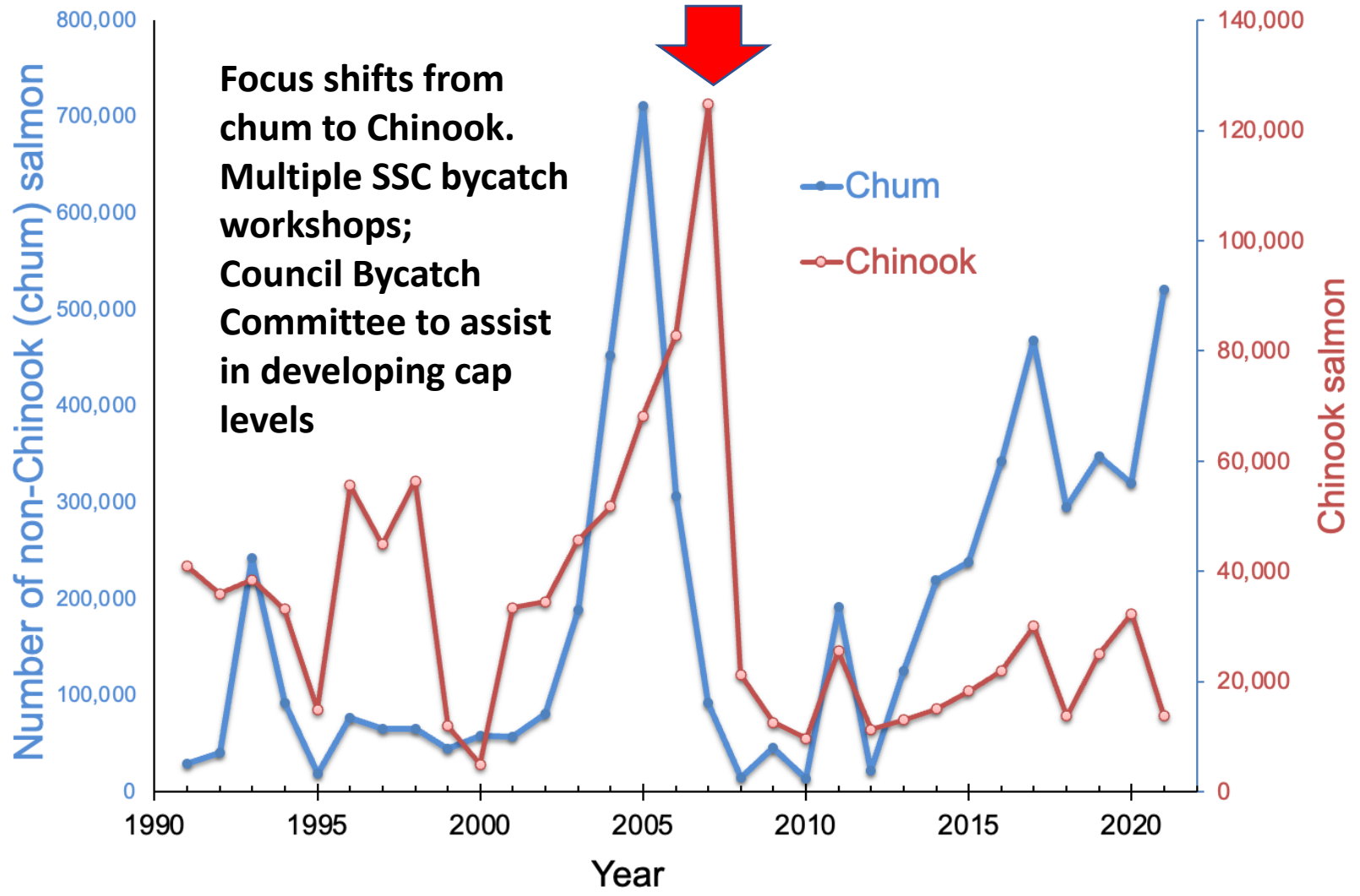

1991-2021 Bering Sea Chinook and chum salmon bycatch
Number of non-Chinook (chum) salmon
800,000
700,000
600,000
500,000
400,000
300,000
200,000
100,000
0
Chinook salmon
140,000
120,000
100,000
80,000
60,000
40,000
20,000
0
Chum
Chinook
1990
1995
2000
2005
2010
2015
2020
Year

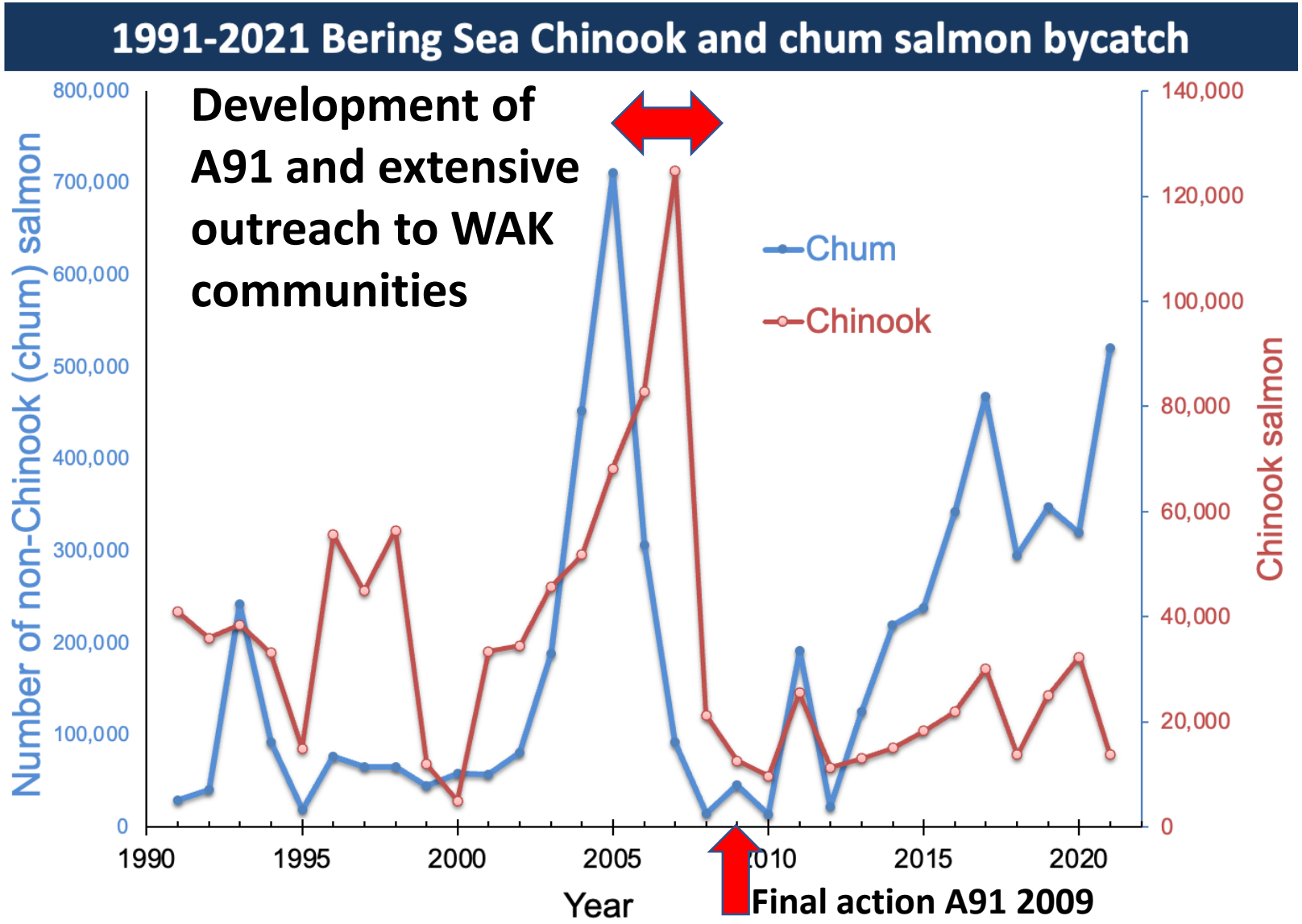

1991-2021 Bering Sea Chinook and chum salmon bycatch
Number of non-Chinook (chum) salmon
Chinook salmon
Year
Chum
Chinook
Time area closures: salmon savings areas
800,000
700,000
600,000
500,000
400,000
300,000
200,000
100,000
0
140,000
120,000
100,000
80,000
60,000
40,000
20,000
0
1990
1995
2000
2005
2010
2015
2020

1991-2021 Bering Sea Chinook and chum salmon bycatch

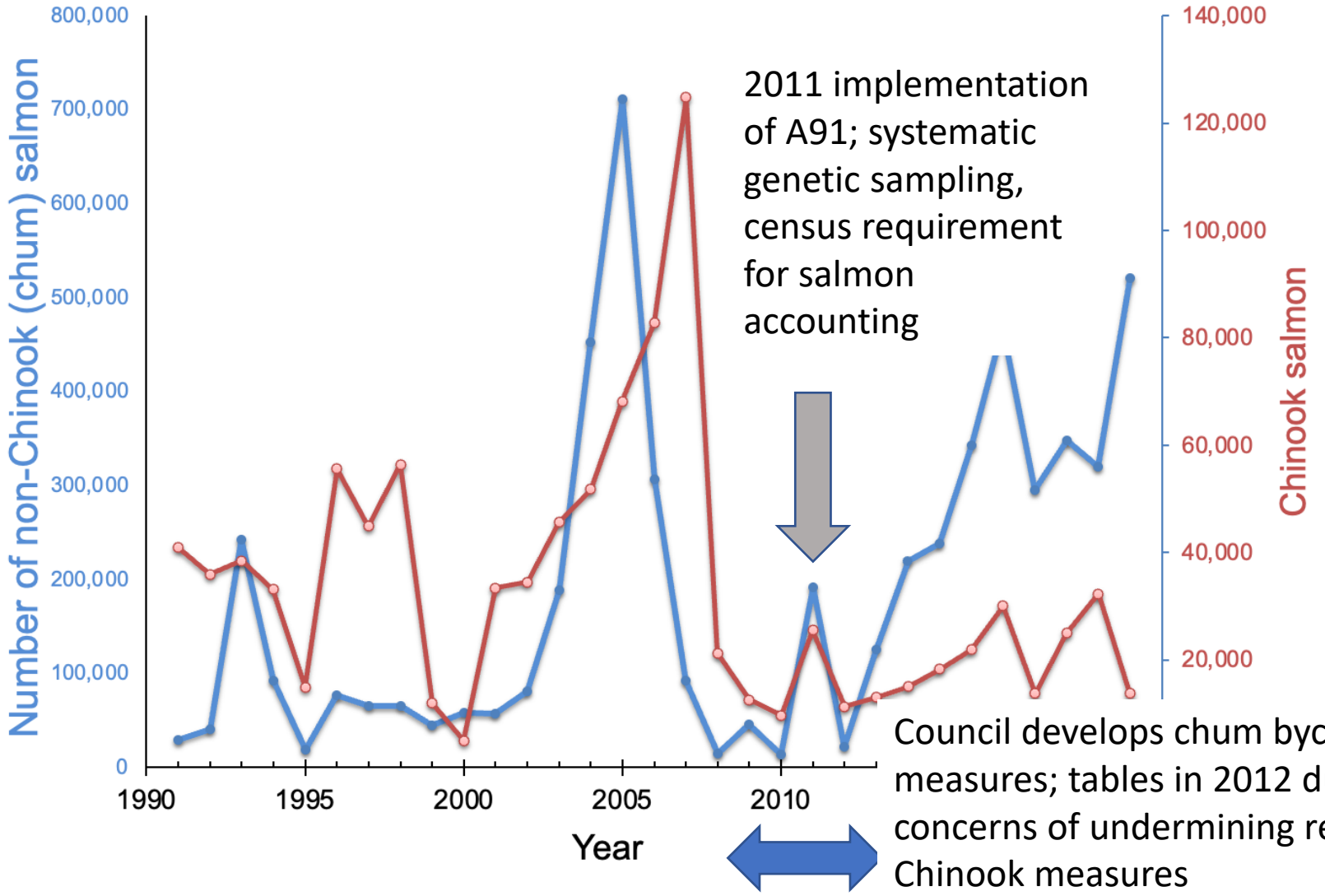


1991-2021 Bering Sea Chinook and chum salmon bycatch

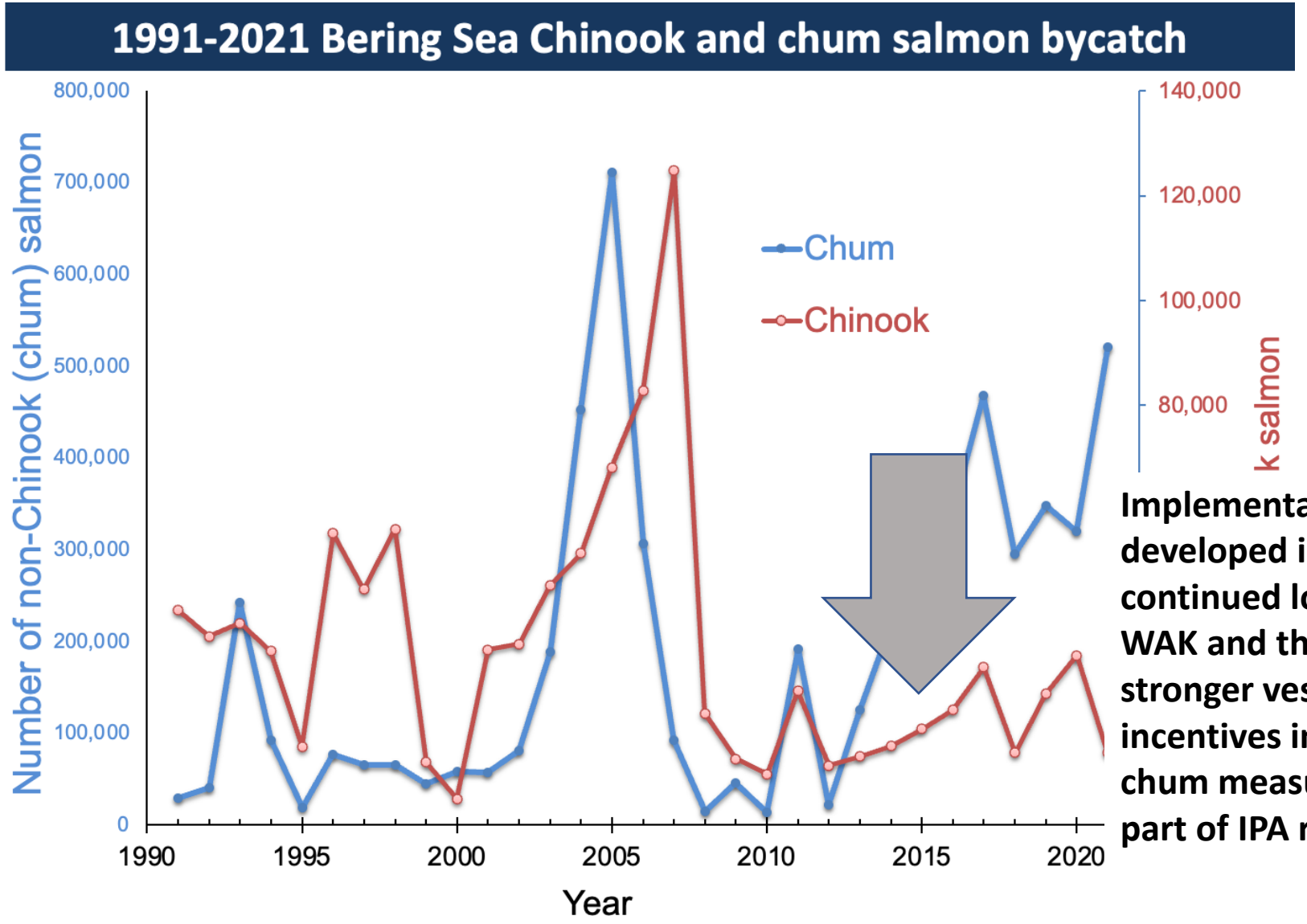



1991-2021 Bering Sea Chinook and chum salmon bycatch
Development of A91 and extensive outreach to WAK communities
Number of non-Chinook (chum) salmon
Chinook salmon
Chum
Chinook
800,000
700,000
600,000
500,000
400,000
300,000
200,000
100,000
0
140,000
120,000
100,000
80,000
60,000
40,000
20,000
0
1990
1995
2000
2005
2010
2015
2020
Year
Final action A91 2009

1991-2021 Bering Sea Chinook and chum salmon bycatch



Council develops chum bycatch measures; tables in 2012 due to concerns of undermining recent Chinook measures



Implementation of A110; developed in response to continued low Chinook in WAK and the need for stronger vessel level incentives in IPA structure; chum measures included as part of IPA requirements

Council Action in June 2022

Part 1

The Council acknowledges the western Alaska salmon crisis and the impact it is having on culture and food security throughout western Alaska. Science indicates climate as the primary driver of poor salmon returns in western Alaska. The Council commits to continued improvements in bycatch management with a goal of minimizing bycatch at all levels of salmon and pollock abundance. Towards this end,

- **The Council requests the pollock industry implement additional chum salmon bycatch avoidance measures beginning immediately**. The Council recognizes that these new chum salmon avoidance measures may have limited ability to target the proportion of chum salmon (9%) destined to return to western Alaska but can reduce overall salmon bycatch.
- **The Council requests a discussion paper updating the 2012 analysis of chum salmon bycatch**. The paper should include:
  - updated chum salmon bycatch and genetic stock composition data, including a discussion of how the genetic composition data vary across space and time;
  - a description of the Council's rationale for establishing the current Bering Sea chum salmon bycatch management program;
  - a discussion of tradeoffs in the Bering Sea pollock fishery associated with avoiding different PSC 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).

Part 2

- **The Council intends to consider the findings and recommendations of the State of Alaska's Bycatch Task Force as it considers how to improve salmon bycatch management**.
- **The Council intends to collaborate with western Alaska salmon users by forming a working group of Tribal members, scientists, industry representatives, and other experts.** The working group will review and provide recommendations on: 1) the discussion paper on chum salmon bycatch referenced above; 2) the findings and recommendations from the State of Alaska's Bycatch Task Force and the work of the Western Alaska salmon subcommittee; and 3) current information, including Local, Traditional, and Subsistence knowledge, and needed research to determine what is driving western Alaska salmon declines.

Part 3

- **The Council prioritizes research on Bering Sea salmon**.
  - The Council supports NOAA and ADF&G prioritizing development of models to predict where and when specific salmon stocks will be located in the Bering Sea. This work will inform development of management measures focused on avoiding western Alaska salmon bycatch in the pollock fishery.
  - The Council supports and prioritizes work to reduce the time for analysis of genetic data, increased survey work in the nearshore environment in the Bering Sea as proposed by ADF&G, and continued industry innovation on gear modifications that may reduce bycatch.

What is next?

August

Call for nominations to Salmon Bycatch Committee will be posted in August

- Appointments to be made and then announced during October Council meting

November

First meeting of Committee in November to review Chum Discussion paper

- IF Task Force recommendations available also to be reviewed

December

Council meeting:

- Review Chum discussion paper and Committee recommendations
- Follow up meeting of committee after overall Bycatch Task Force Recommendations available