In-Season Chum Salmon Assessment in the Shoreside B-Season Bering Sea Pollock Trawl Fishery

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The Bristol Bay Science and Research Institute

State of Alaska House Fisheries Committee
May 2025

Roadmap

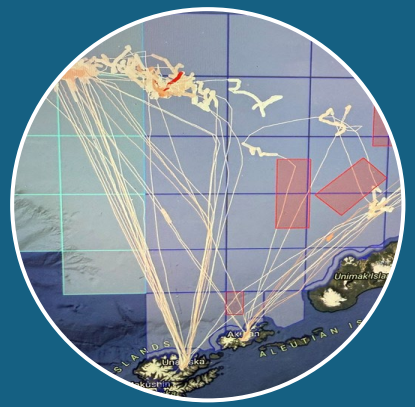
Who are we

&

What do we do

Fishery & Chum Bycatch Background

2024 In-season Genetics Feasibility



2025 & Future Plans

Introduction – Who is BBSRI

- Non-Profit, 501.C3 Research Institute Established in 1998
- Subsidiary of the Bristol Bay Economic Development Corp.
- Board of Directors – 7 Bristol Bay Watershed Community Leaders.
- Work closely with resource managers, fishing industry, municipalities, and communities to improve the management of area fish stocks.

Who are we – Our Mission

To undertake scientific research and management that will provide social benefits and economic yield to the residents and communities of Bristol Bay to ensure sustainability of the region's renewable natural resources, with an emphasis on its fish stocks and fisheries.

What do we do?

Monitoring

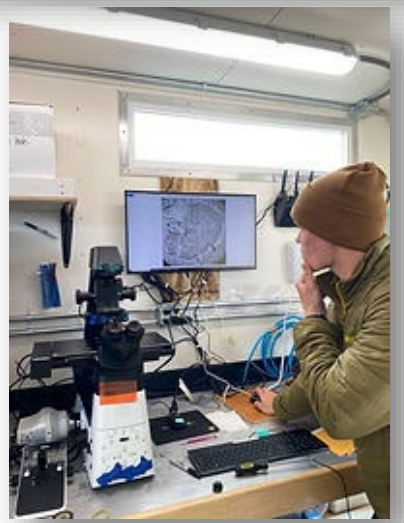
Research / Technology Development

Policy / Management analyses

We Focus on important topics and research needs that government agencies may be unable to address or that fall through the cracks.

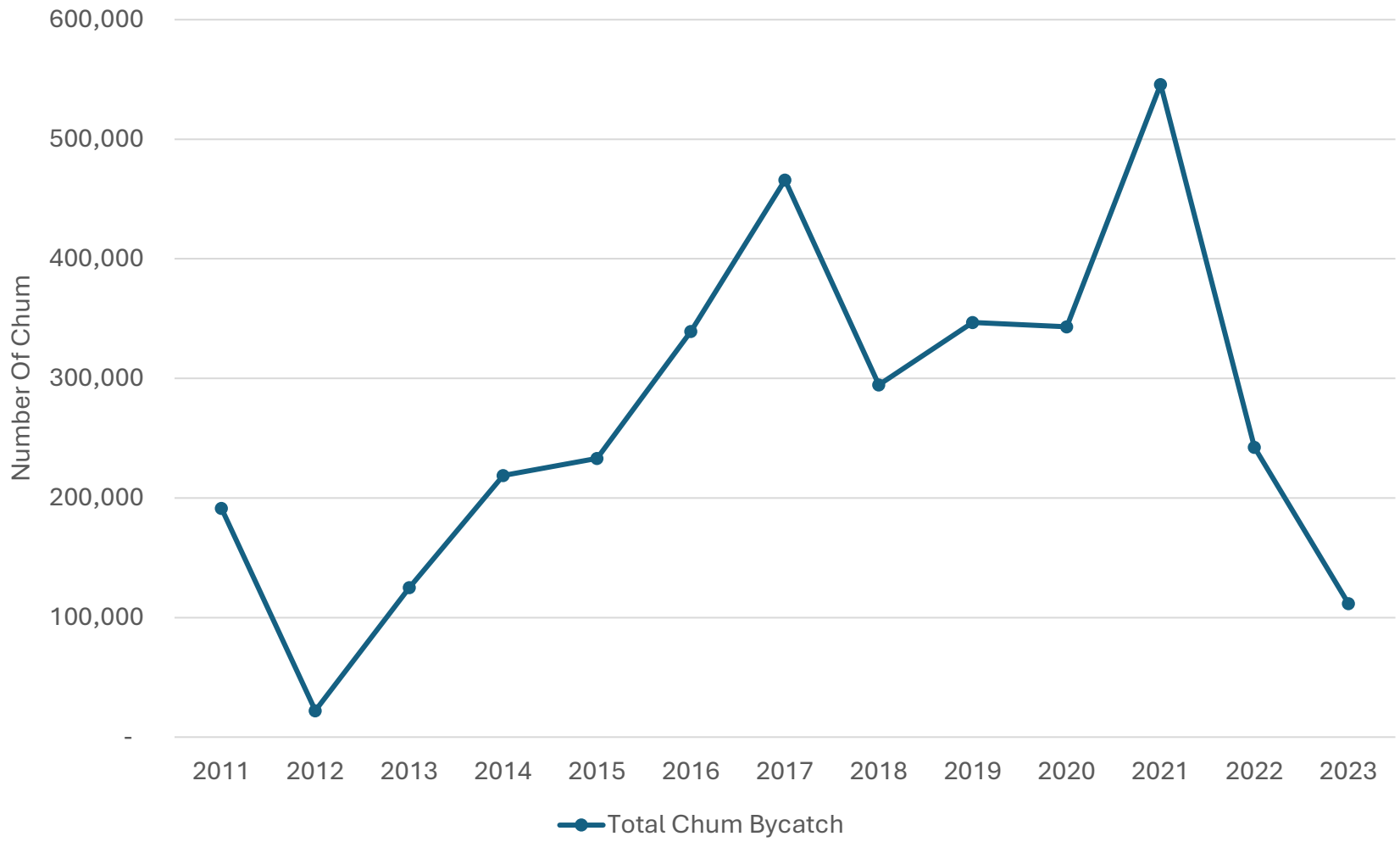
Example – Port Moller Test Fishery

The At-Sea Genetics Lab

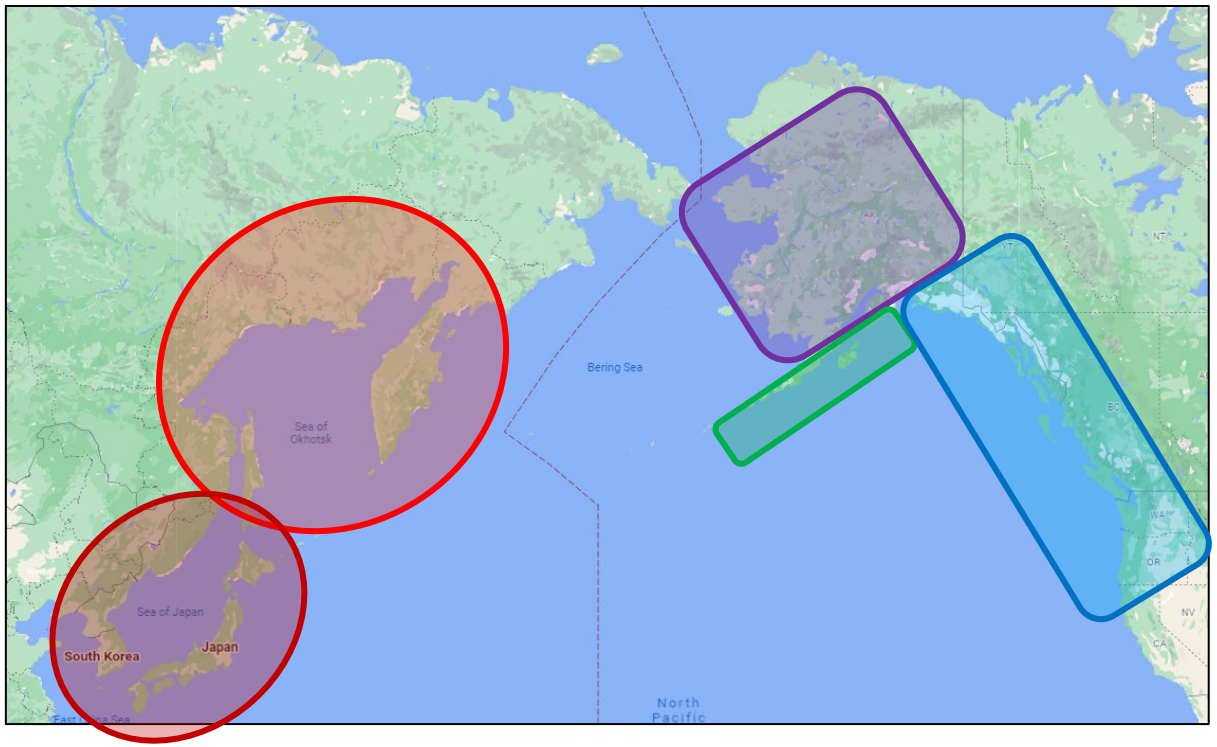


www.bbsri.org/projects

Chum Bycatch in The Pollock Fishery

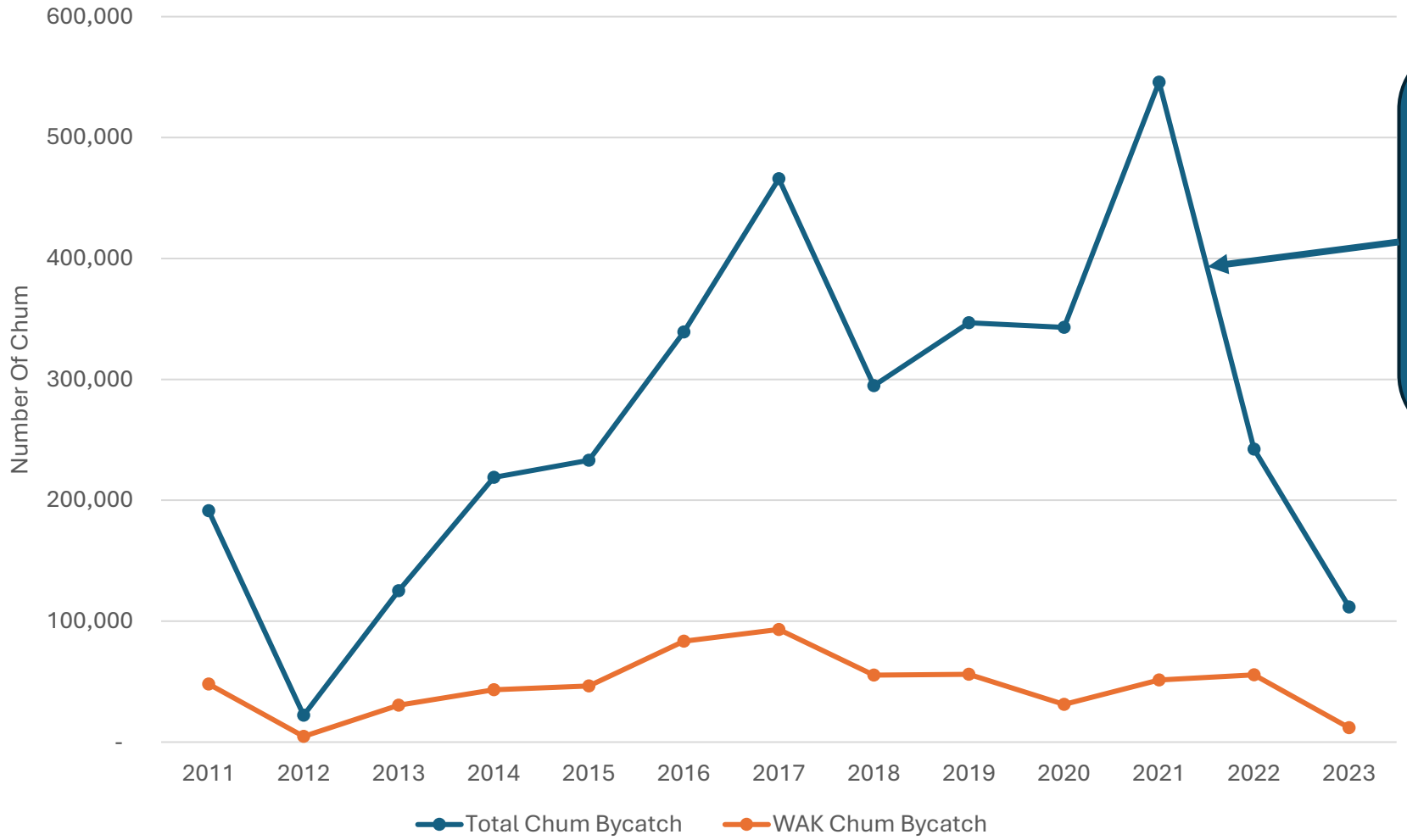


What Chum are Being Caught in the Pollock Fishery? (2011-2023)



- Asian – 52% Range (27-68%)
  - SE Asia – 15% Range (9-20%)
  - NE Asia – 37% Range (17-55%)
- SW Alaska – 2% Range (1-4%)
- E GOA/PNW – 27% Range (12-51%)
- Costal Western Alaska – 19% Range (9-25%)
  - W Alaska – 15% Range (8-21%)
  - Up/Mid Yukon – 4% Range (0.2-9%)

Chum Bycatch in The Pollock Fishery



Driven by PNW, GOA, and NE Asia

(Large Hatchery Component)

Challenges to reducing Western Alaska Chum Bycatch

- Proportion of Western Alaska stocks varies year-over-year
- High Proportion of Asian, Gulf of Alaska, and PNW hatchery chum
- Genetic analysis of bycatch occurs 8-10 months after catch
- In-season avoidance efforts by fishery focus on total chum

Does reducing Total Chum Catch help Western Alaska?

- The Percentage of Western Alaska Chum catch is not well correlated to overall chum catch.

2021 Chum Catch

Total: 546,000

WAK: 51,315

10% WAK

Ongoing Avoidance Efforts

2022 Chum Catch

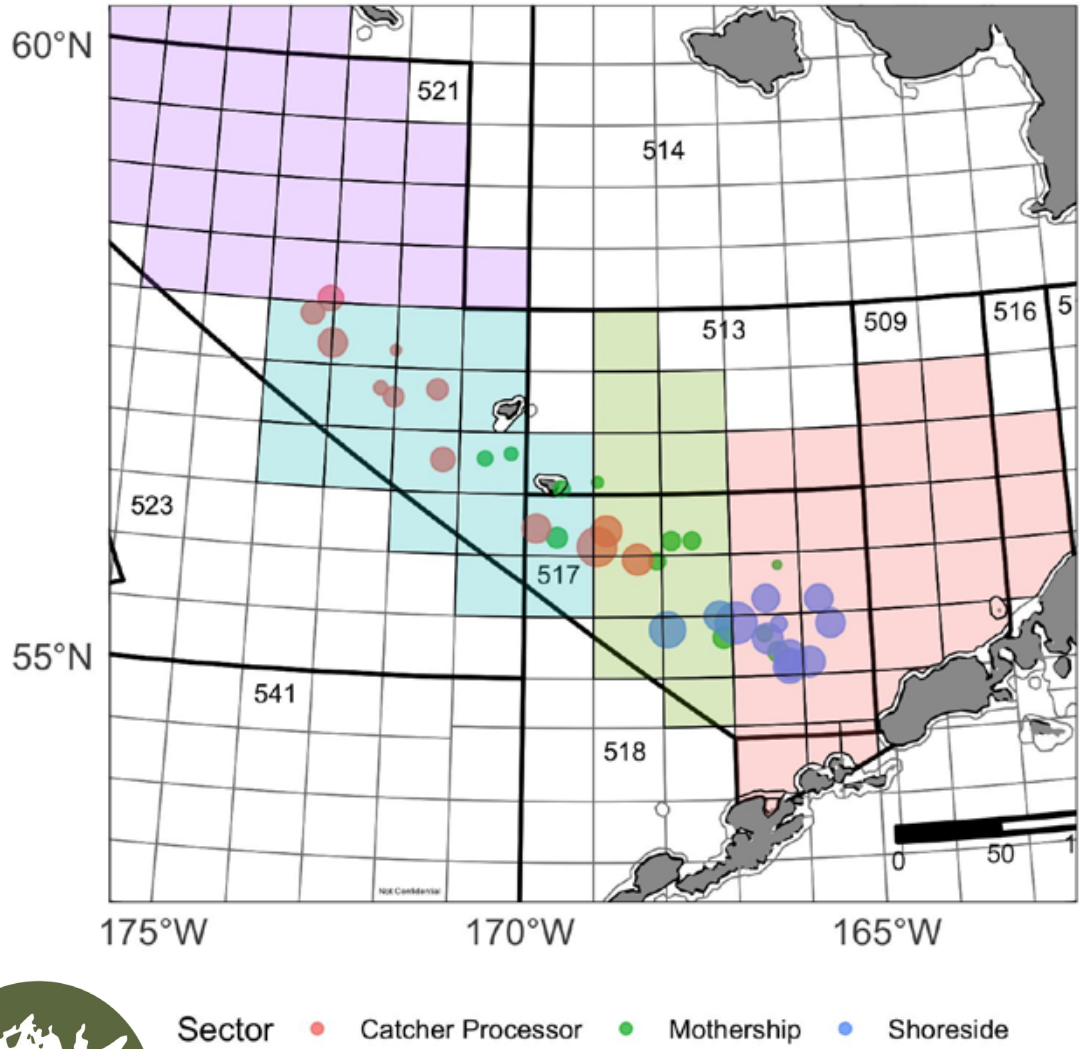
Total: 242,901

WAK: 55,731

23% WAK

Simply Reducing Total Chum Harvest does not necessarily Reduce WAK Chum Catch

Where are Chum salmon being caught?



Catcher Processor

- Fishes primarily out NorthWest
- Primarily Asian, EGO, PNW chum

Mothership

- Fishes throughout
- Lowest overall chum bycatch
- Small proportion of WAK chum

Shoreside

- Fish closer to shore.
- Largest contributor to Chum bycatch
- Highest taker of WAK Chum (~70%)

Goals and Objectives

- Main Objective:
  - Produce weekly in-season estimates of the stock-specific chum salmon bycatch in the shoreside sector of the B-season Bering Sea Aleutian Islands pollock fishery
- Goals:
  - Provide more timely information on the stock composition of bycatch than is currently available
  - Provide a tool for the shoreside fleet that aids in the avoidance of WAK chum salmon bycatch

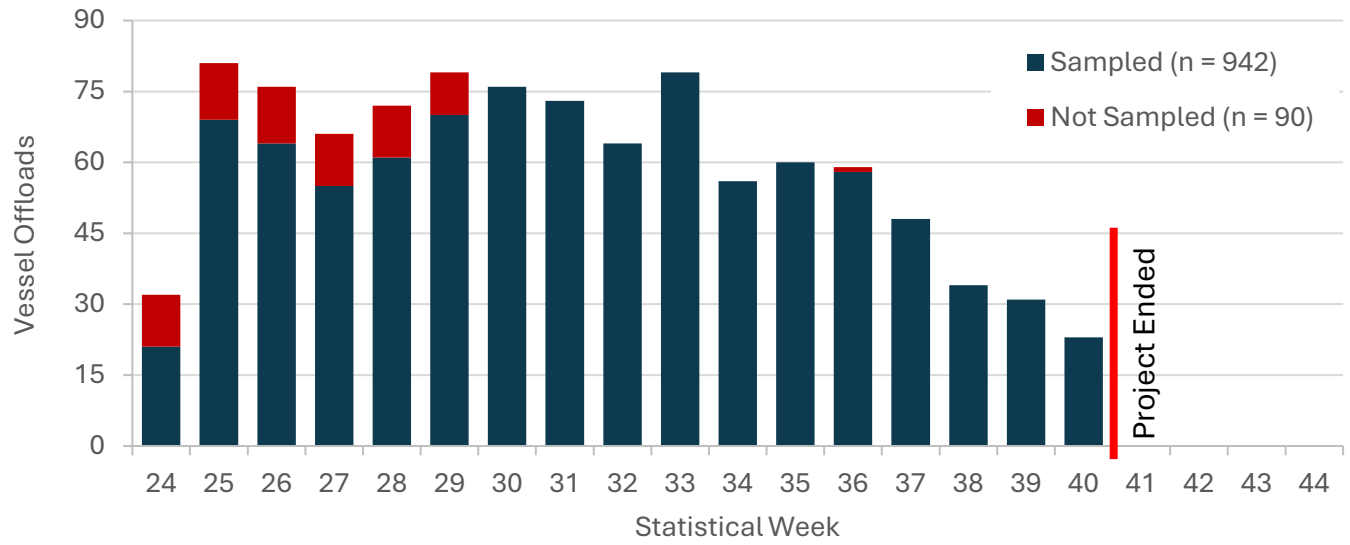
Project steps – from landing to stock comps.

Port Sampling	Vessel Offloads & NOAA Enumerates and Samples bycatch	BBSRI Port Samplers collect tissue samples	Samples are delivered to BBSRI Lab	Occurs throughout the week
Genotyping	BBSRI PM Randomly selects for a genetics sample	BBSRI Lab Processes samples	Genotypes and Metadata sent to NOAA	Takes roughly 3 days
Stock Composition	NOAA Runs Mixture model and produces stock comp.	NOAA Generates stock comp report.	***BBSRI Posts Stock comp report.	Occurs in Hours

Results – Port Sampling Deliveries/Fish

Port Sampling

- 942 (91%) of 1032 deliveries were sampled
  - Dutch Harbor: Jun 13 – Sep 25
  - Akutan: Jun 14 – Oct 5

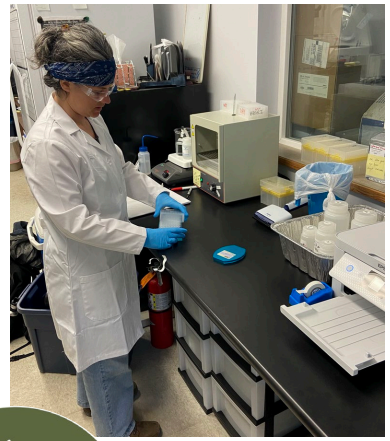


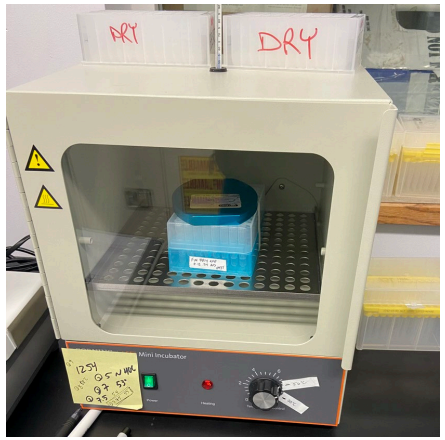
- 7034 chum tissue-sampled (32% of 21,710 landed)

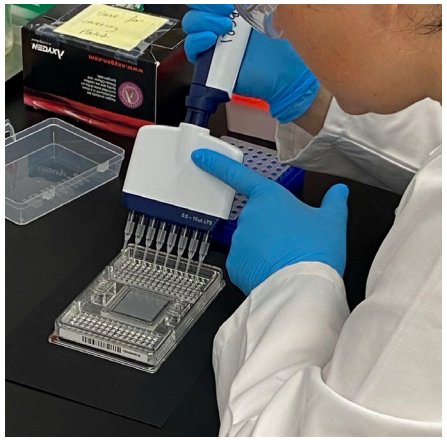
Methods & Results – Genotyping

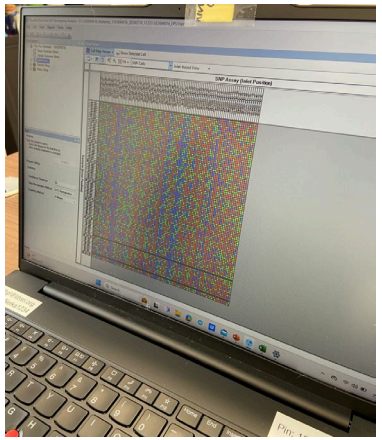
Genotyping

- BBSRI established a laboratory in Dutch Harbor
  - Operational on July 1, 2024; trials & fine-tuning thru July 17
- Genotyped tissue samples on a weekly basis inseason
  - Turnaround for a statistical week was ~3 days
- Successfully Genotyped 3,062 samples. (The amount necessary to perform the weekly estimates)
- Results from BBSRI's Lab have been independently verified by two labs



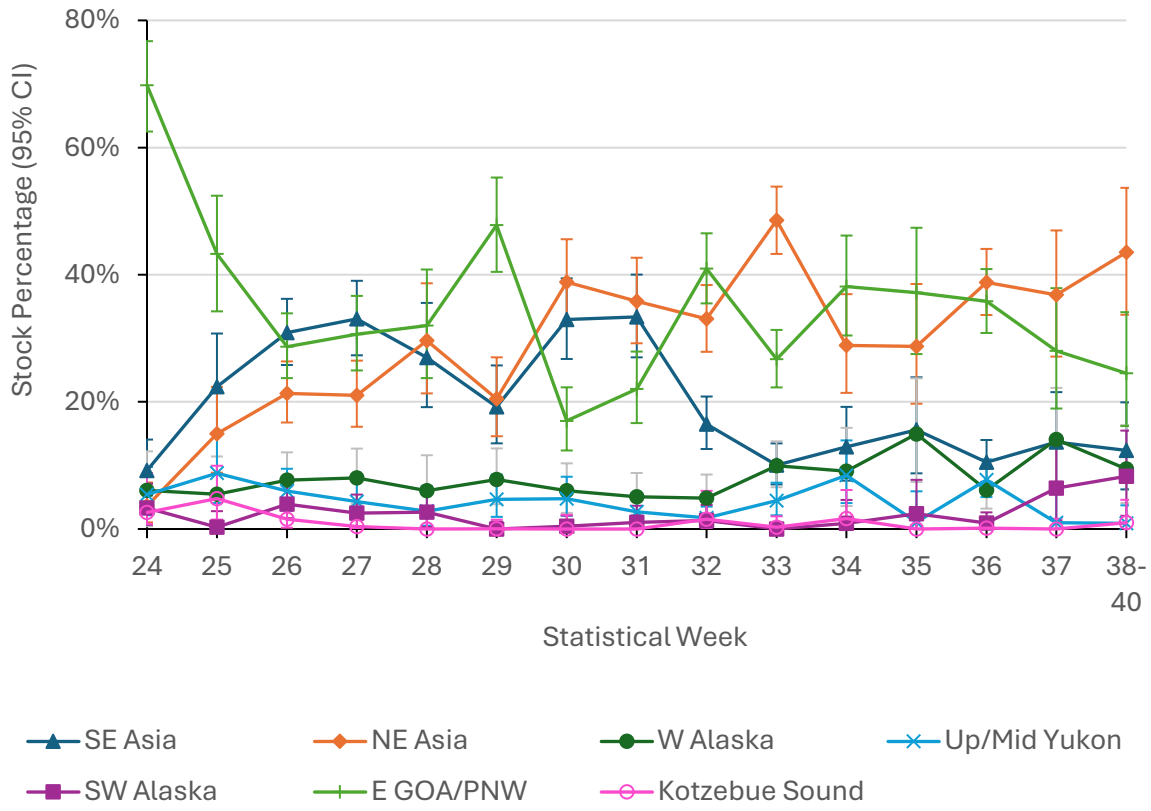


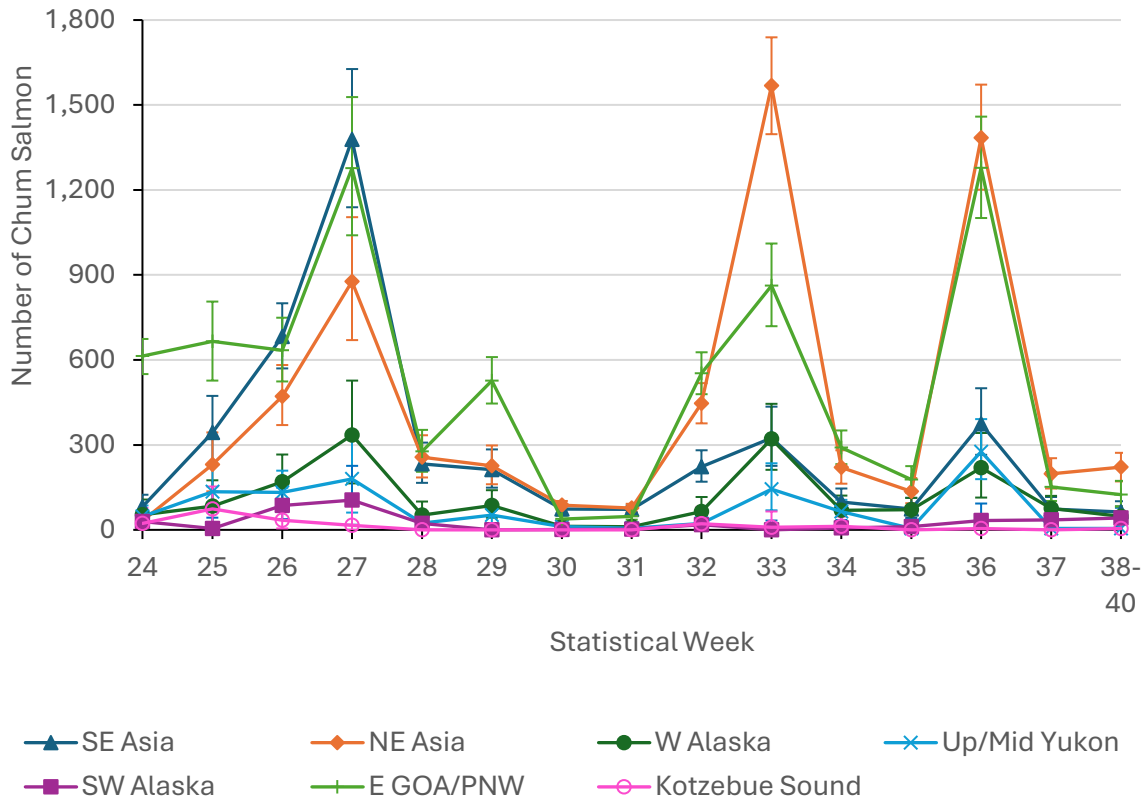




Results – Weekly Stock Composition

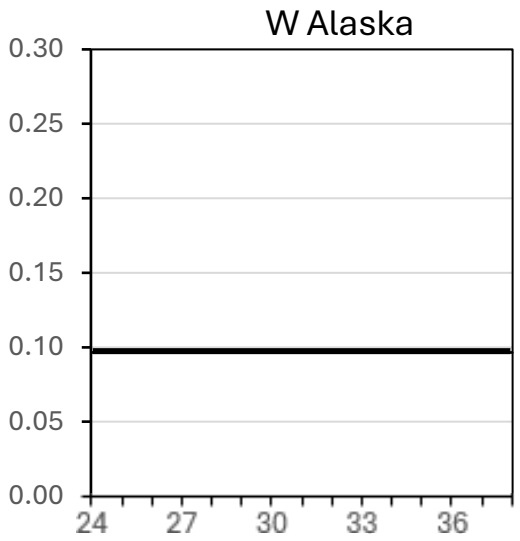
Stock Comp

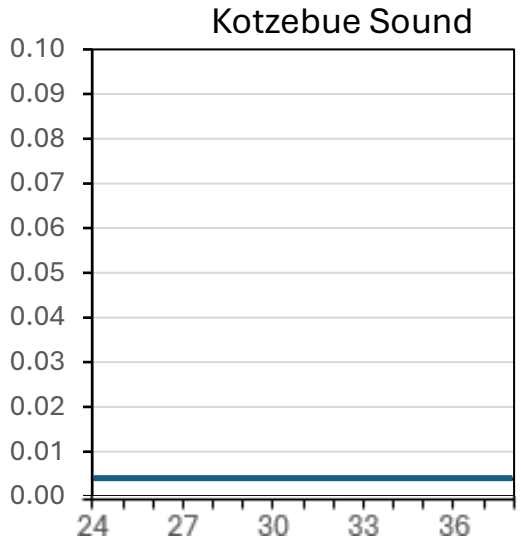


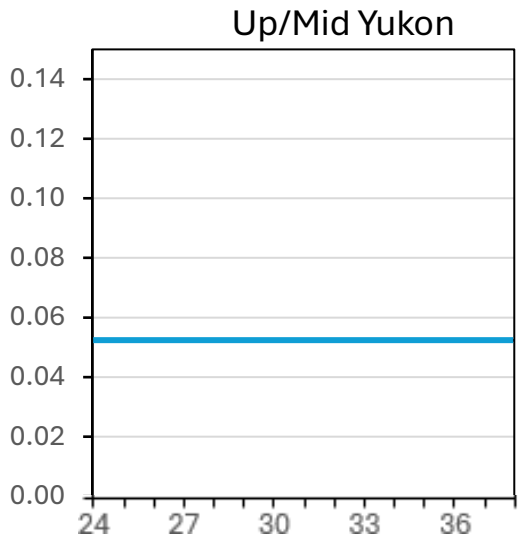


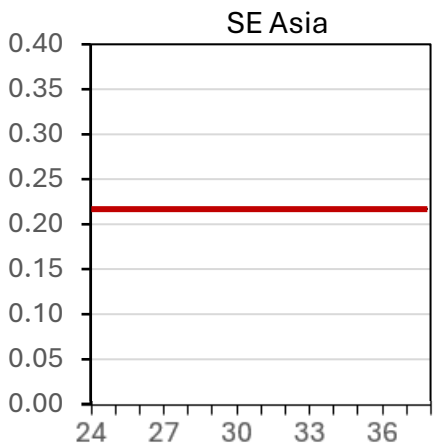
Results – Comparison to Post Season

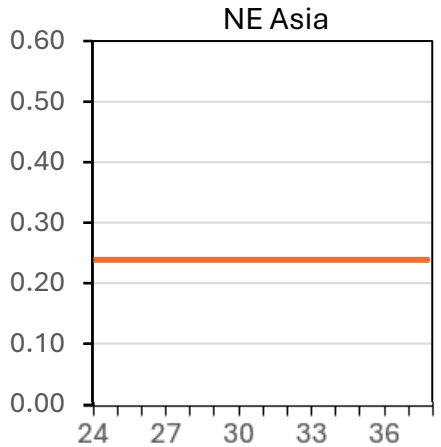
Stock Comp

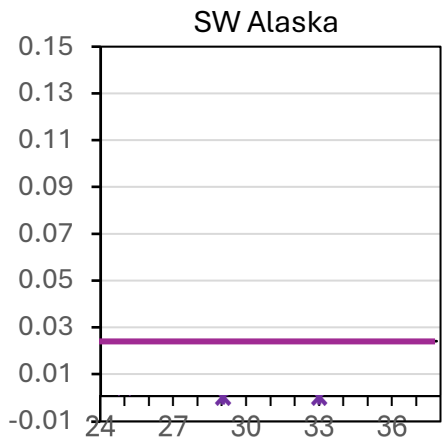


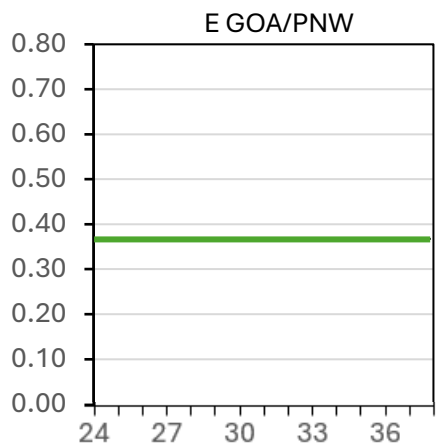






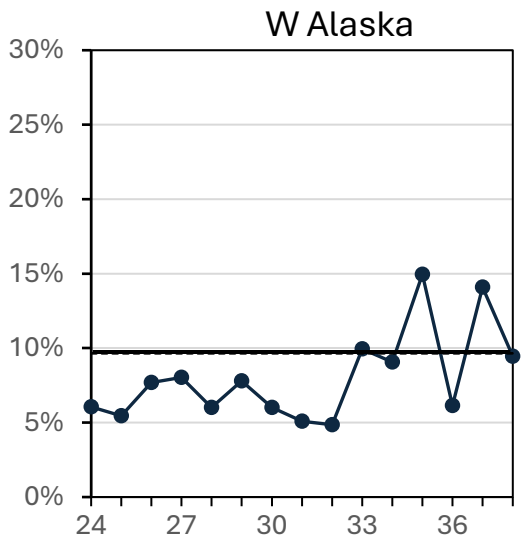


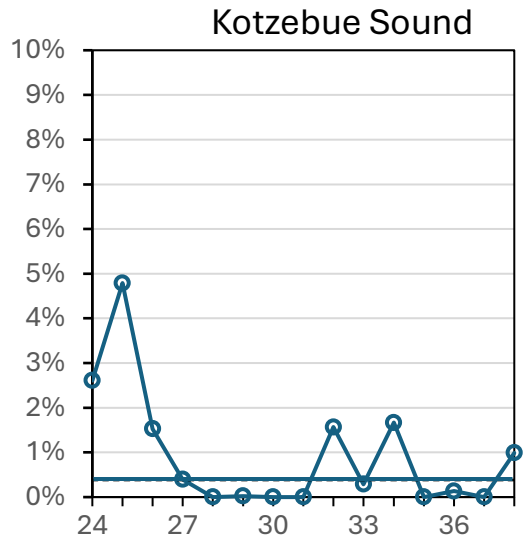


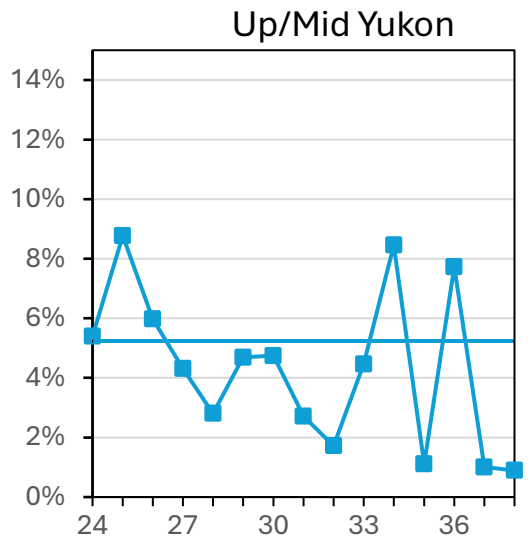


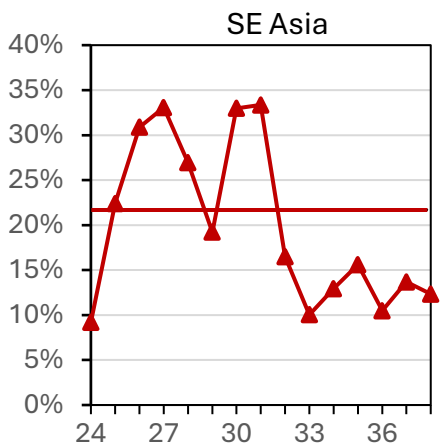
Results – Comparison to Post Season

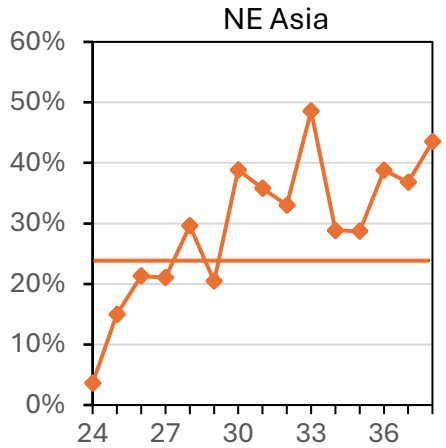
Stock Comp

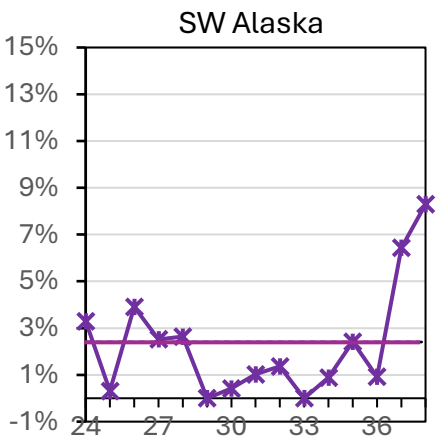


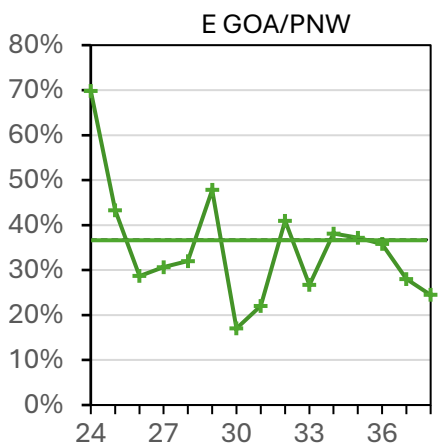




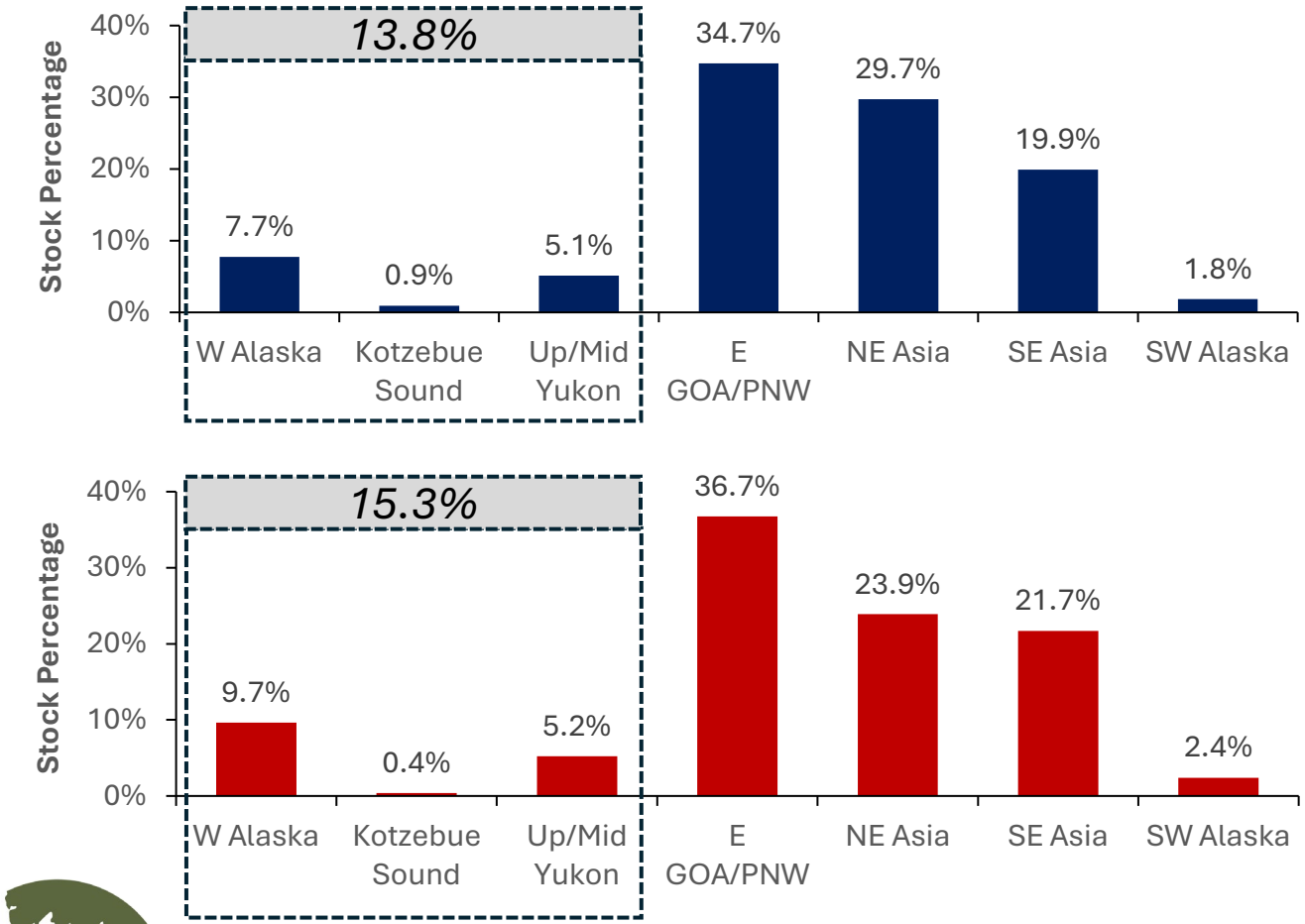








Results – Overall Season Proportions



Weighted Average of BBSRI In-season Estimates

(Based on ~3000 samples, 15 Temporal Strata)

NOAA Post Season Estimate

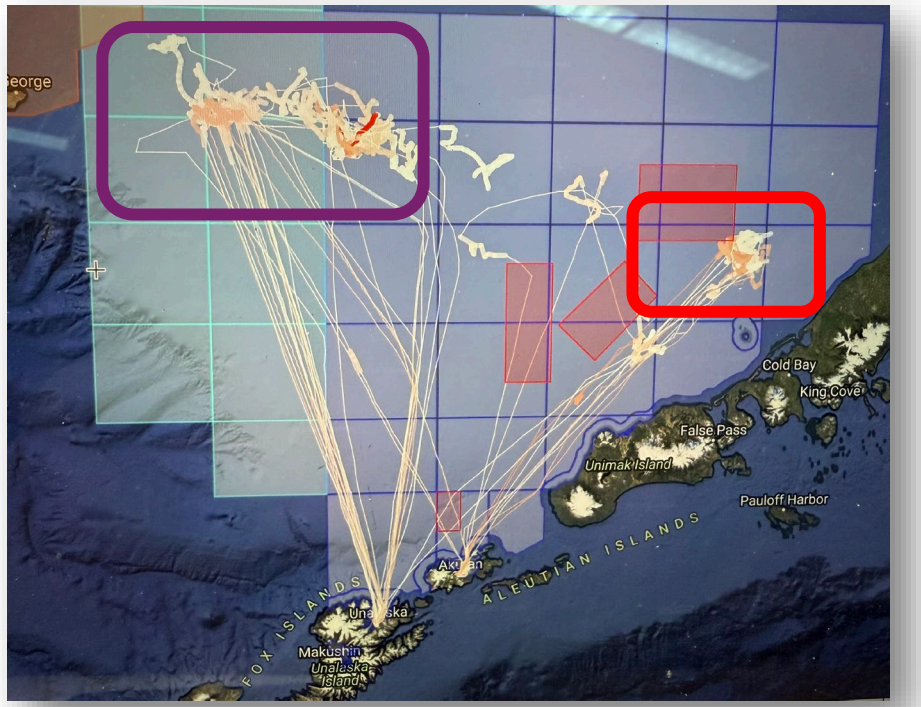
(Based on ~700 samples, 1 Strata)

Conclusions From 2024

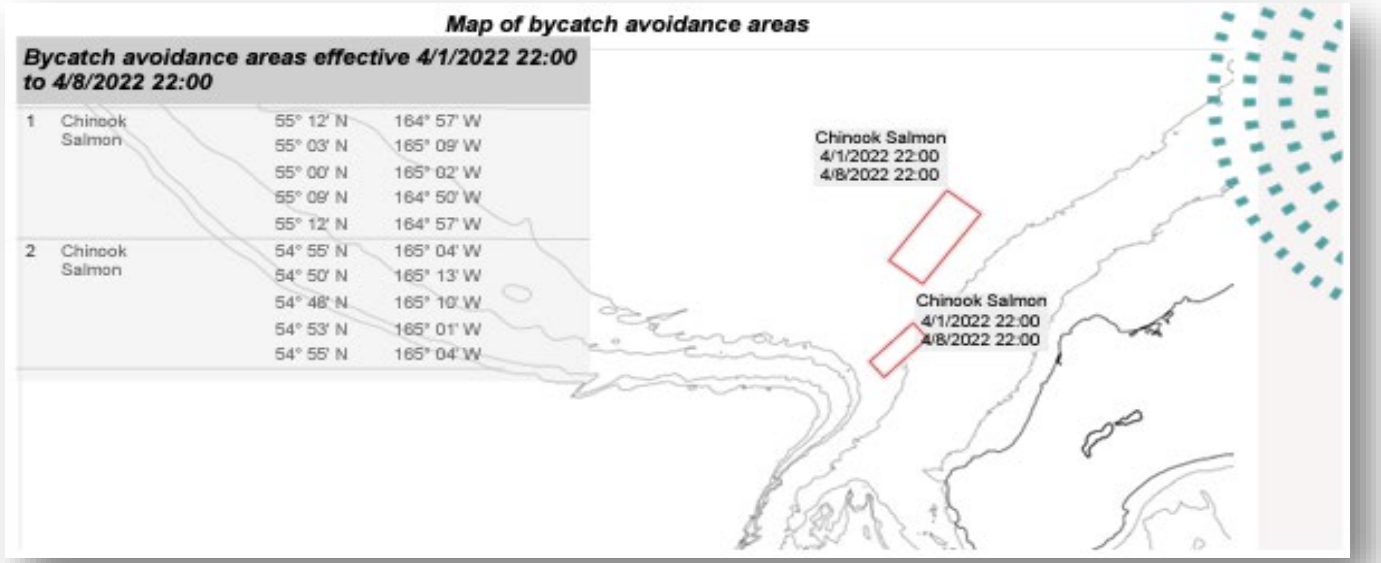
- Demonstrated it is possible to produce in-season stock composition estimates
- NOAA post season and BBSRI In-season projects corroborate each other.
- Project can track the number of WAK chum caught in-season
- Project can indicate if it is a high or low WAK chum year
    - Inform fleet whether larger-scale efforts should be made to avoid chum

Improvements / Additions for 2025 Fishery

In-season Vessel Aggregation Analyses



In-season Hot Spot Closure Analyses



Map of bycatch avoidance areas

Bycatch avoidance areas effective 4/1/2022 22:00 to 4/8/2022 22:00

1	Chinook Salmon	55° 12' N	164° 57' W
		55° 03' N	165° 09' W
		55° 00' N	165° 02' W
		55° 09' N	164° 50' W
		55° 12' N	164° 57' W
2	Chinook Salmon	54° 55' N	165° 04' W
		54° 50' N	165° 13' W
		54° 48' N	165° 10' W
		54° 53' N	165° 01' W
		54° 55' N	165° 04' W

www.bbsri.org/inseason-data

Final Comments

- The Pollock Fishery is a large economic driver and Job Creator in the State.
- Can not come at the expense of our wild salmon populations and subsistence users who depend on them.
- Investing in science-based management tools like this can focus avoidance efforts on Western Alaska Chum salmon.

Our Goal Moving Forward

Continue Collaborative effort between BBSRI, NOAA, ADF&G, Industry, and Stakeholders to work towards meaningful in-season, data-driven tools, to mitigate the effects of Bycatch on Western Alaska Chum Salmon.

Support for the Project

This project enjoys widespread backing from a diverse array of stakeholders, including Industry, Agencies, the CDQ Sector, Western Alaska Stakeholders, and Tribal Organizations.

Agencies

- Alaska Department of Fish & Game (ADF&G)
- National Oceanic and Atmospheric Admin. (NOAA)

Community Development Quota (CDQ)

- APICDA - Aleutian Pribilof Island
- BBEDC - Bristol Bay
- CVRF - Costal Villages
- NSEDC - Norton Sound
- YDFDA - Yukon Delta
- WACDA - Western Alaska Comm. Development Assn.

Fishing Industry

- United Catcher Boats (UCB)
- Unisea
- Westward Seafoods
- Trident Seafoods
- Pacific Seafood Processors Association (PSPA)

Western Alaska Stakeholders

- Kuskokwim River Intertribal Fish Commission (KRIFC)
- Bristol Bay Native Association (BBNA)

And Many Others…

Acknowledgements

- Funding: State of Alaska Direct Legislative Grant & BBSRI
- Processing Plants
  - Trident Akutan, Westward Seafoods, Alyeska Seafoods, Unisea, and Northern Victor.
- ADF&G's Office of the Commissioner
- ADF&G's Gene Conservation Laboratory
- ADF&G's Mark, Tag and Age Laboratory
- NOAA – Alaska Fisheries Science Center
  - Auke Bay Laboratories
  - Fisheries Monitoring and Analysis Division
- Many individuals and fishing vessels

Questions?