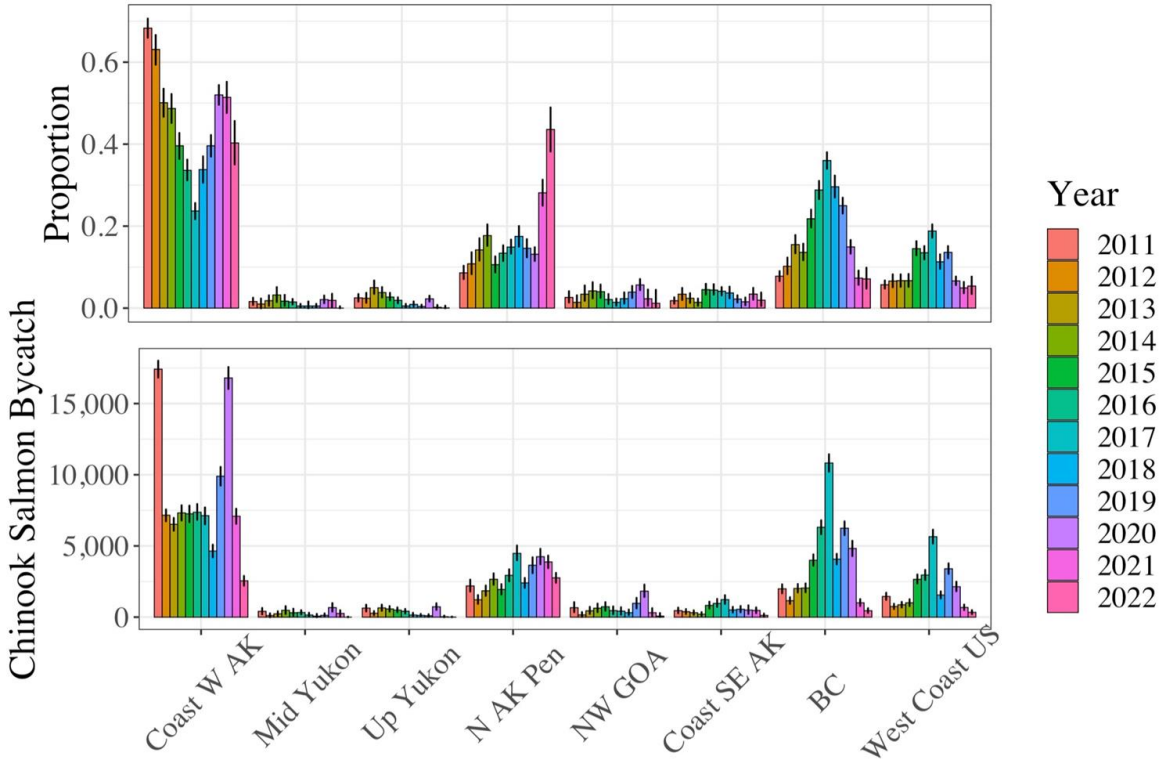
Summary of bycatch genetic analysis and future directions

Wes Larson, PhD
Program Manager, AFSC Genetics Program
Auke Bay Laboratories
Juneau, AK

Reduced turnaround time: all genetic analyses reflect previous year

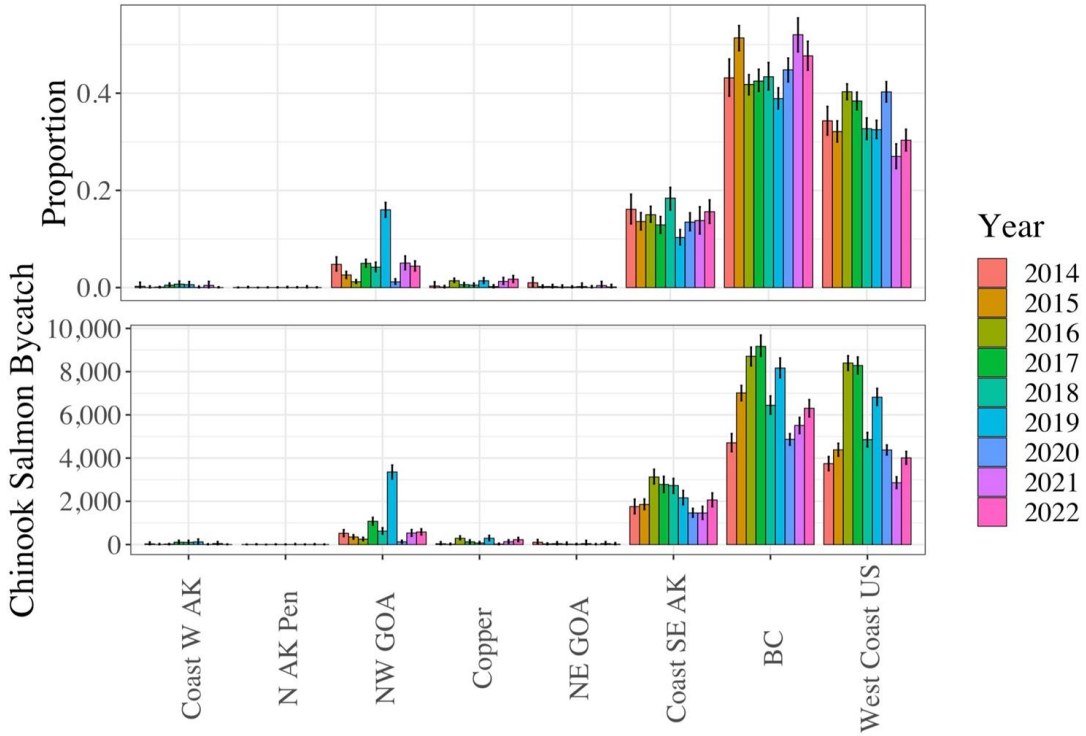
- Reduced turnaround time by ~ a year for both species
- Chum: from June to April
- Chinook: presented 2021 and 2022, will stay current moving forward
- Thanks to observer program and our lab team for getting this done, turnaround time is very tight and this was a major effort

BSAI Chinook salmon



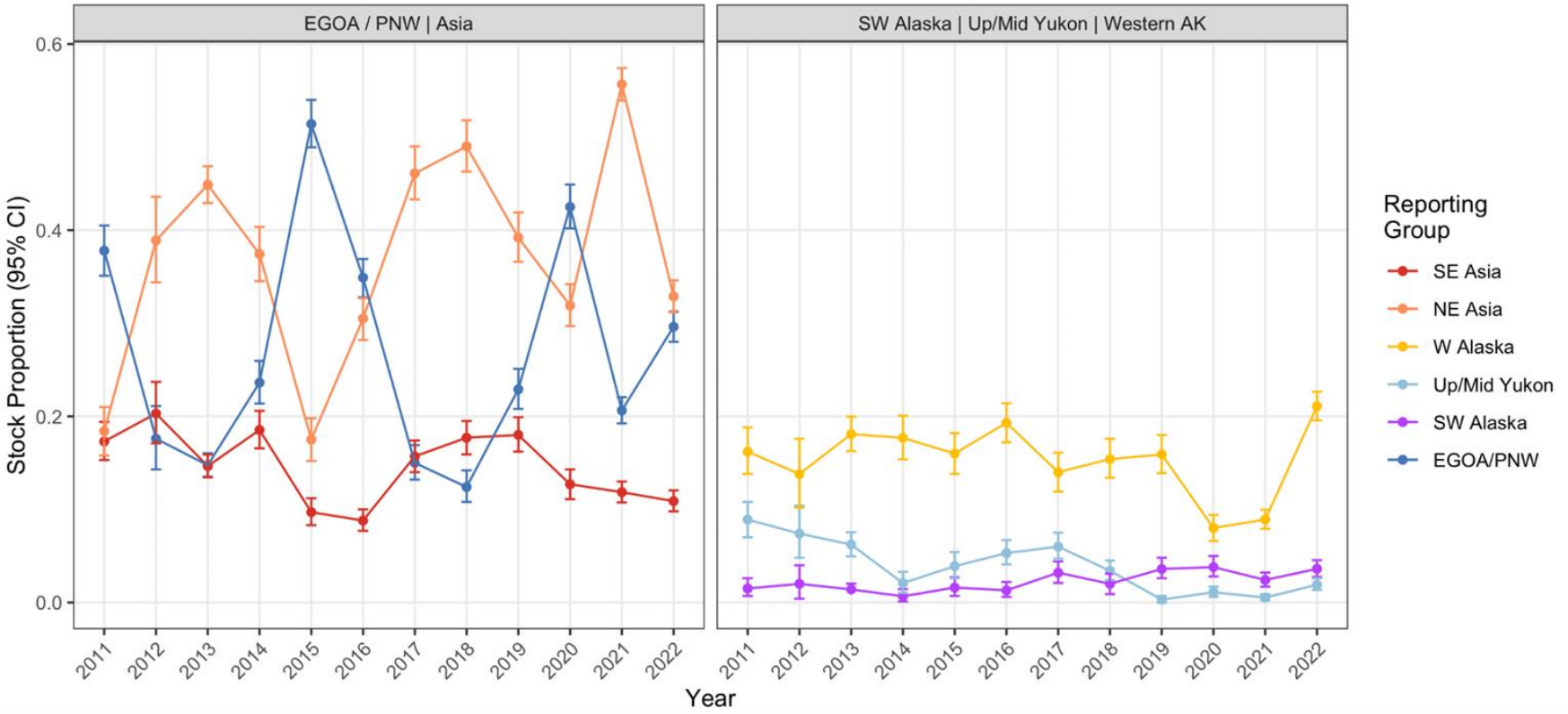
- WAK catches down, especially in 2022
- Proportions of southern stocks down (BC) or consistent (lower 48)
- Increase in proportion of North Peninsula

GOA Chinook salmon



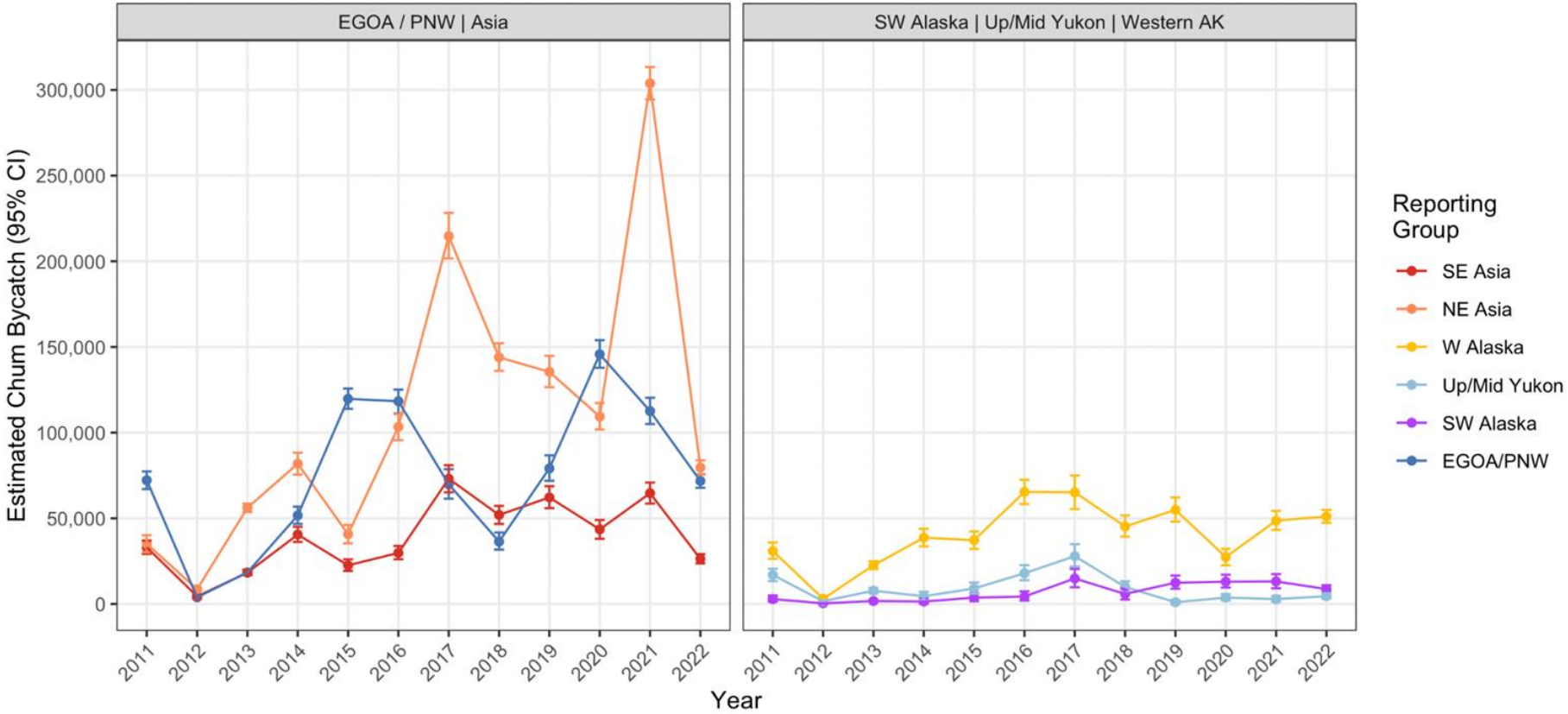
- Proportions similar to long term averages
- Catches of BC and lower 48 stocks lower than average due to lower overall PSC

BSAI Chum



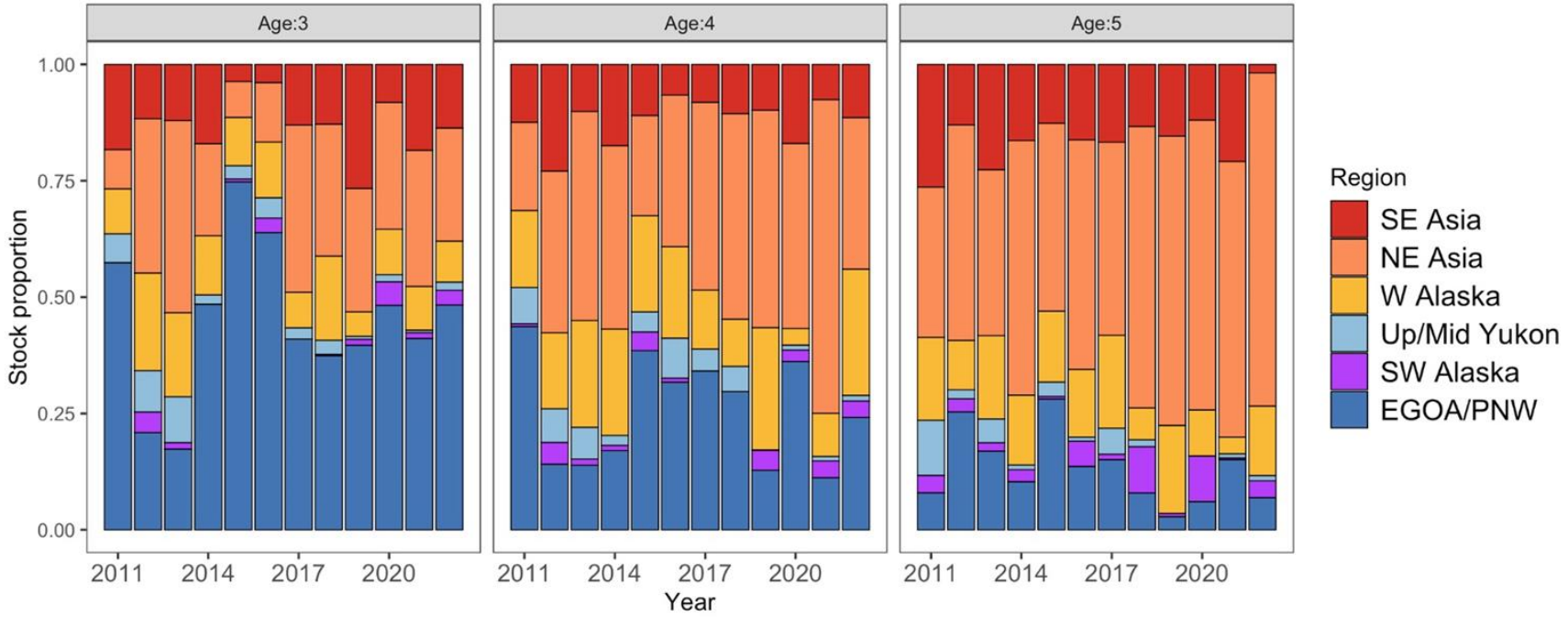
Stock proportions of WAK chum up substantially from last two years

BSAI Chum



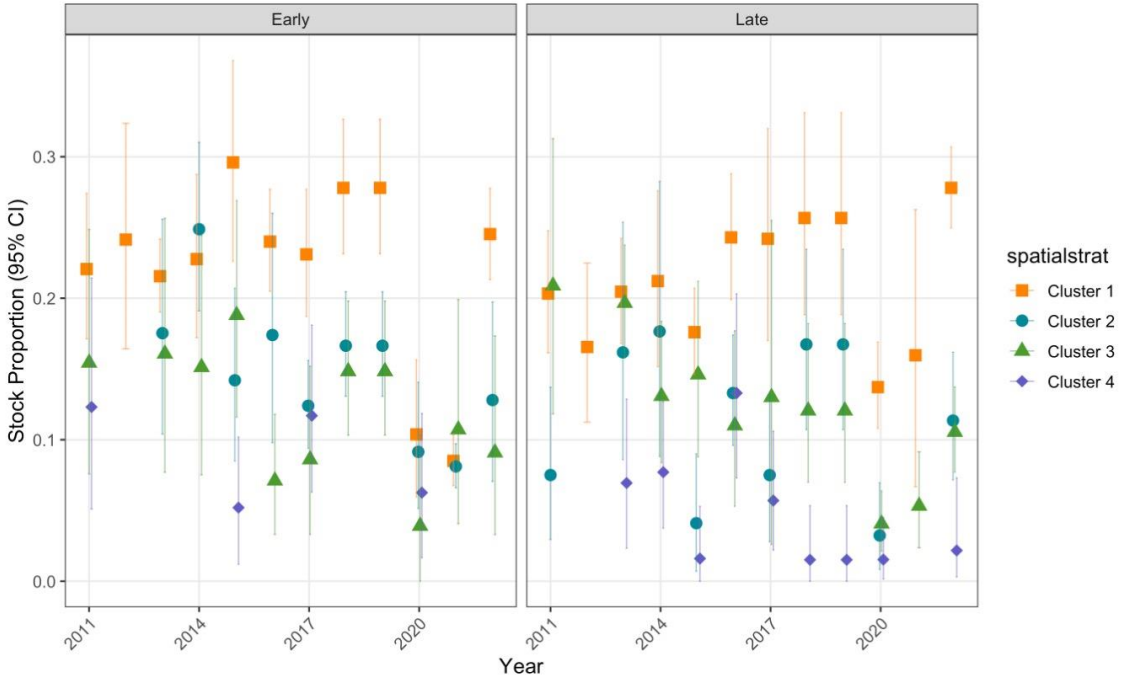
Numbers of WAK chum similar to long term average and similar to last year (when PSC was approximately double)

Why did WAK chum proportions go up so much in 2022?



Not because of high contribution of a new cohort (age 3s)

Why did WAK chum proportions go up so much in 2022?



- Reversion to mean in cluster 1 after 2020-2021 outliers
- Optimistic interpretation was higher proportion could mean better 2023 return but we have no data to support that

Utility of an in-season test fishery

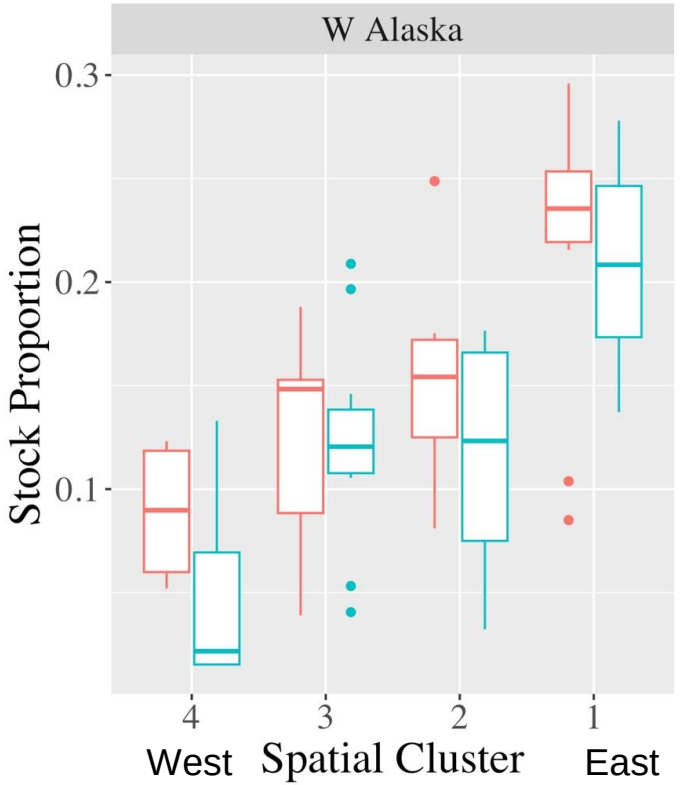
- Initial indication of WAK Chum proportions (only need to screen hundreds of fish)
- WAK bycatch accounting to track total catch
- Dynamic management to avoid WAK stocks

Utility of an in-season test fishery

- Initial indication of WAK Chum proportions (only need to screen hundreds of fish)
- WAK bycatch accounting to track total catch
- Dynamic management to avoid WAK stocks

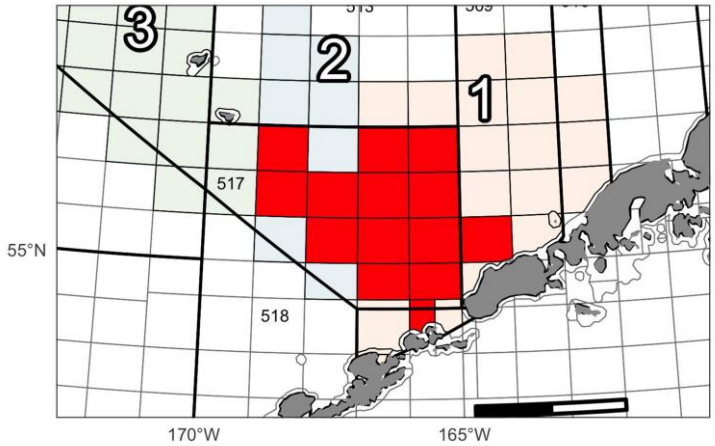
Some trends in eastern Bering Sea

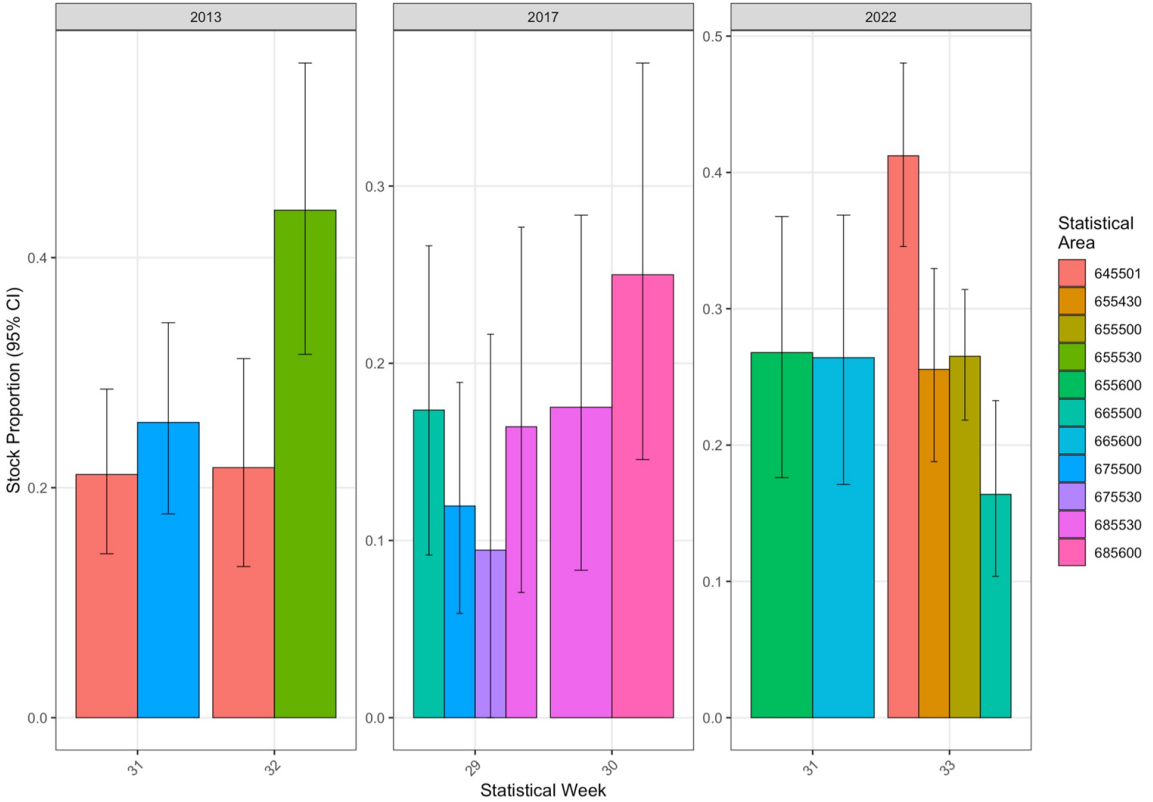
- More CWAK fish further east (strong)
- More CWAK fish early (weaker)
- Consistent variation at finer scales?



Fine-scale variation

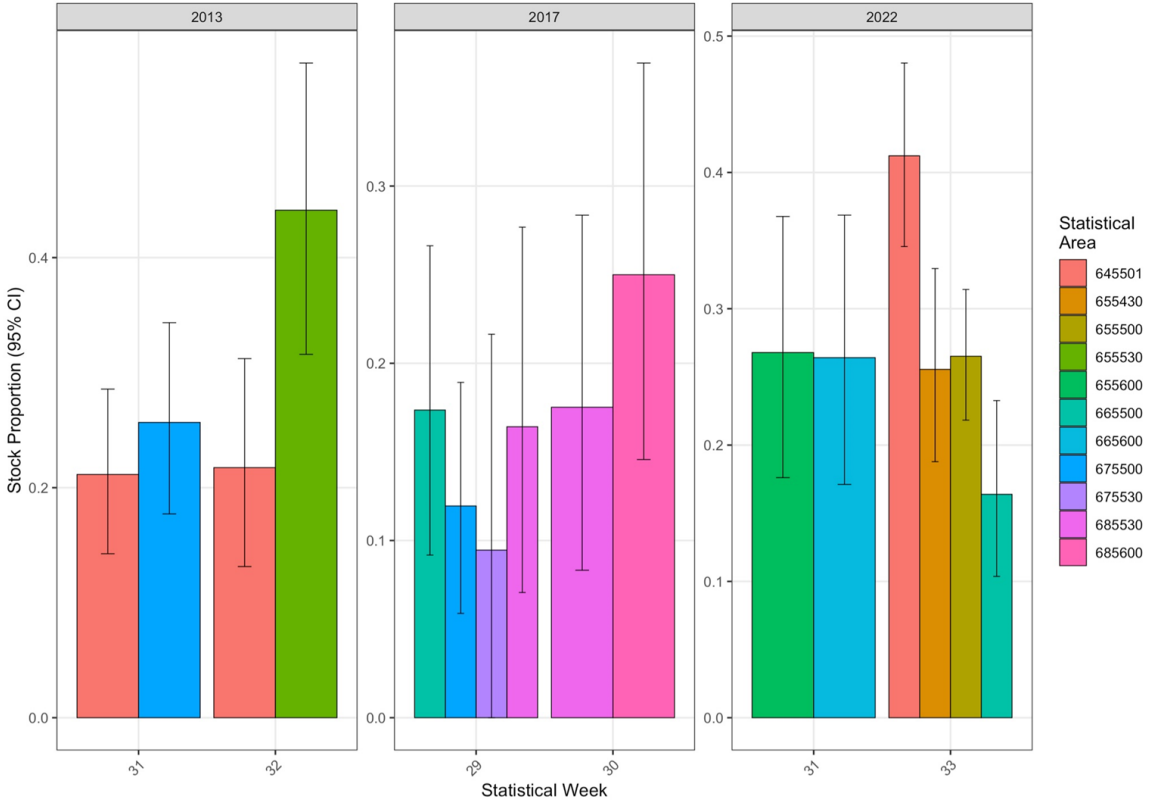
How much do Western Alaska chum stock proportions vary across weeks and ADFG stat areas?





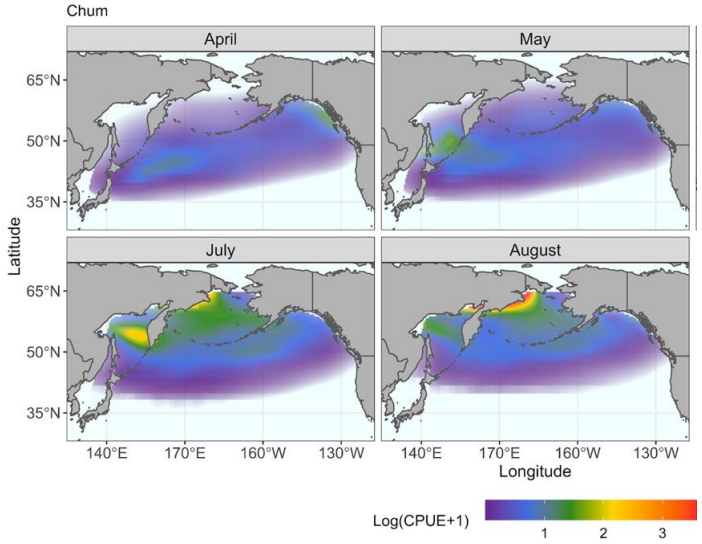
Fine-scale variation

- 2013 fewer WAK east, 2020 opposite pattern, 2017 spike east and west
- Lots of variation but consistency is questionable
- Pilot study this year will help clarify utility

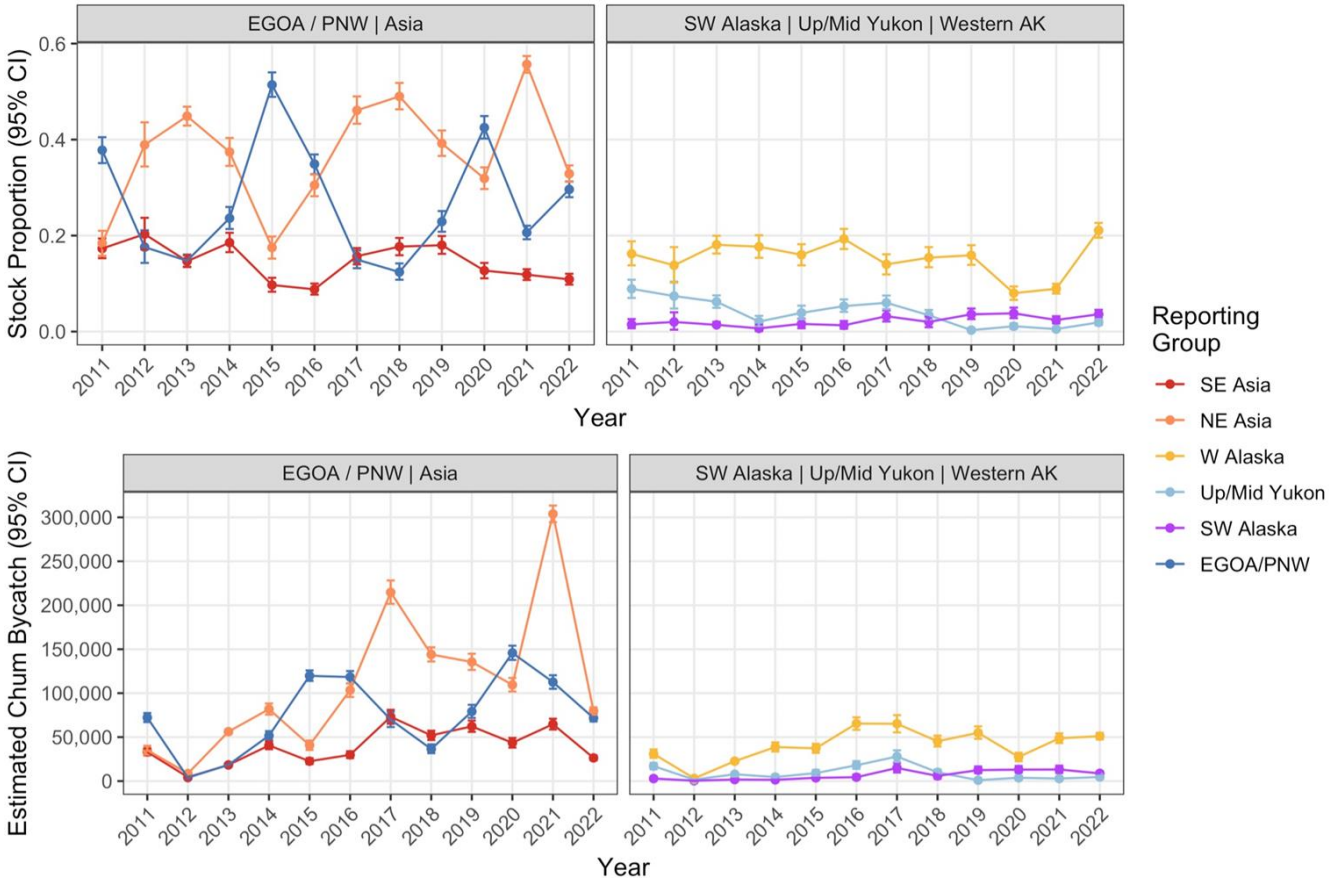


Future goals and updates

- Partner with BBSRI on in-season analysis pilot study
- AYKSSI funded project to investigate spatiotemporal dynamics of chum salmon stocks (postdoc Joe Langan)
- New salmon quantitative ecologist at AFSC (Lukas DeFilippo)
- Exploring new rangewide baseline for Chinook

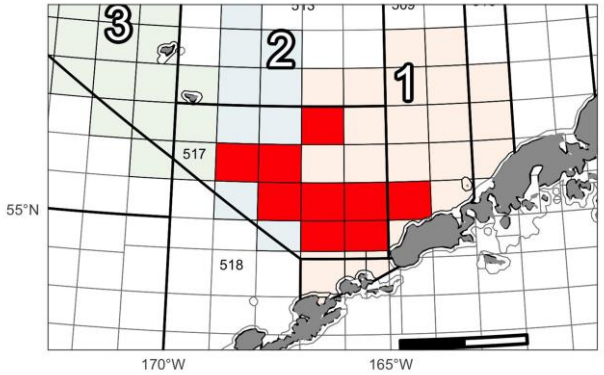


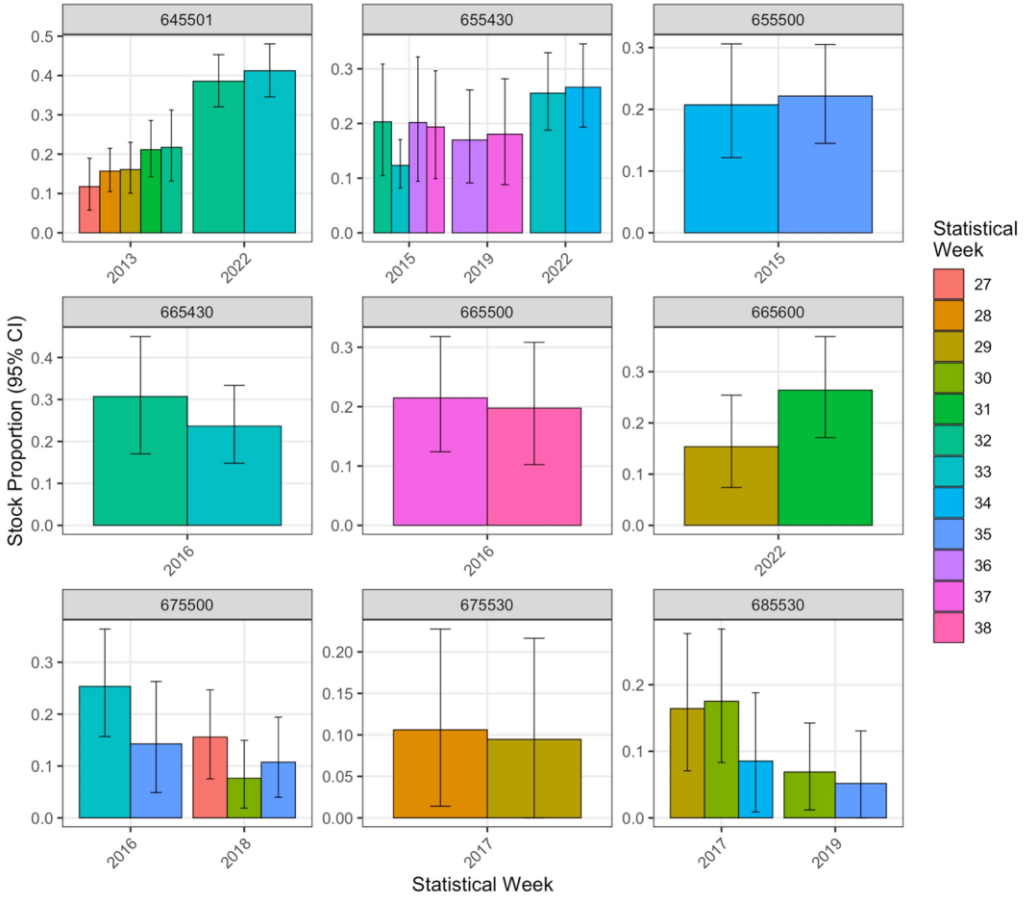
BSAI Chum Salmon



Utility of an in-season test fishery

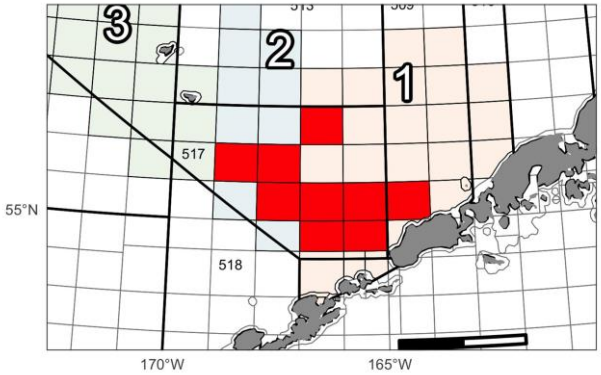
How much does Western Alaska chum stock proportions vary across weeks?

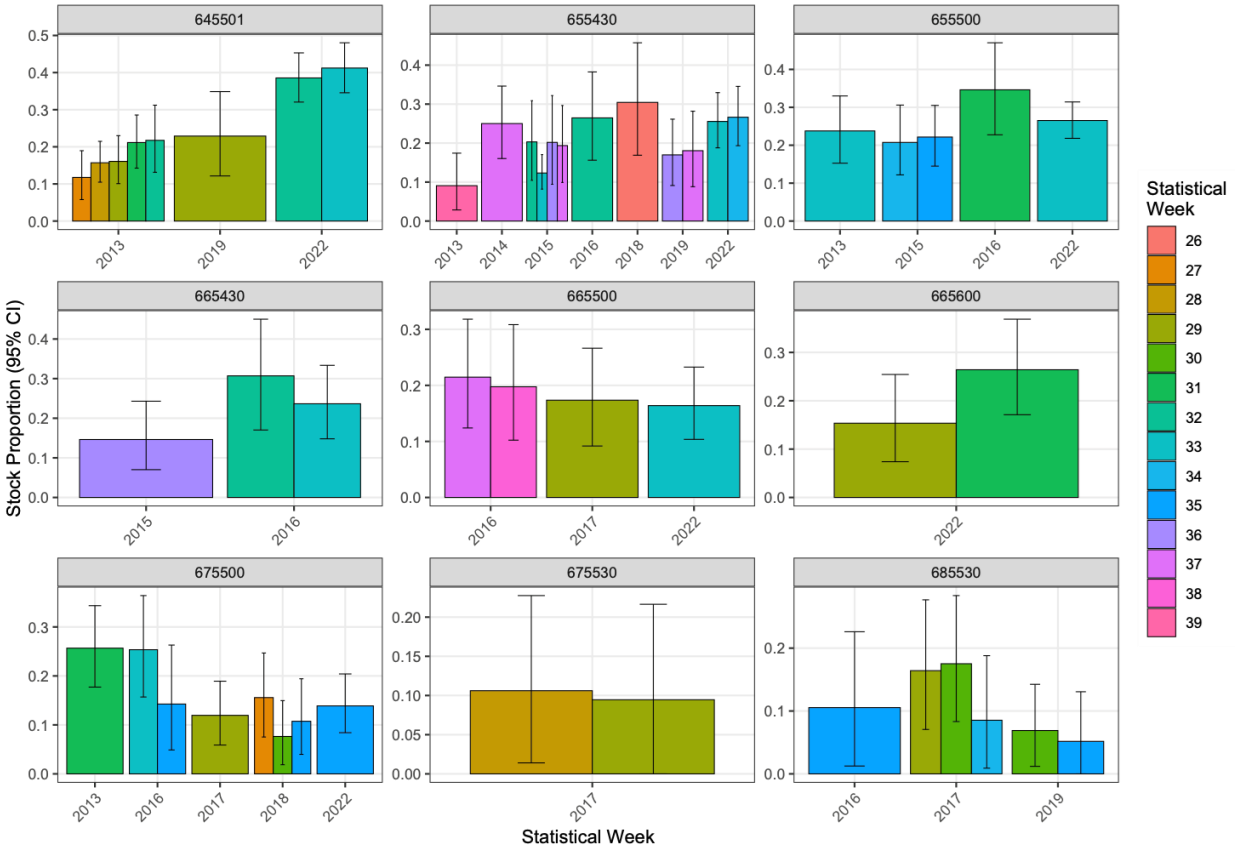




Utility of an in-season test fishery

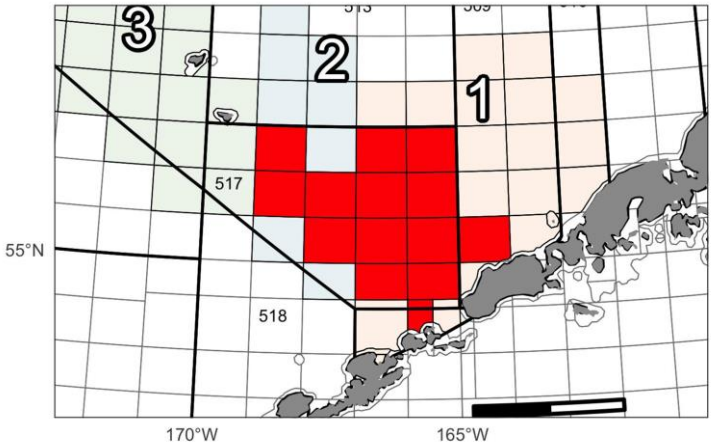
How much does Western Alaska chum stock proportions vary across weeks?

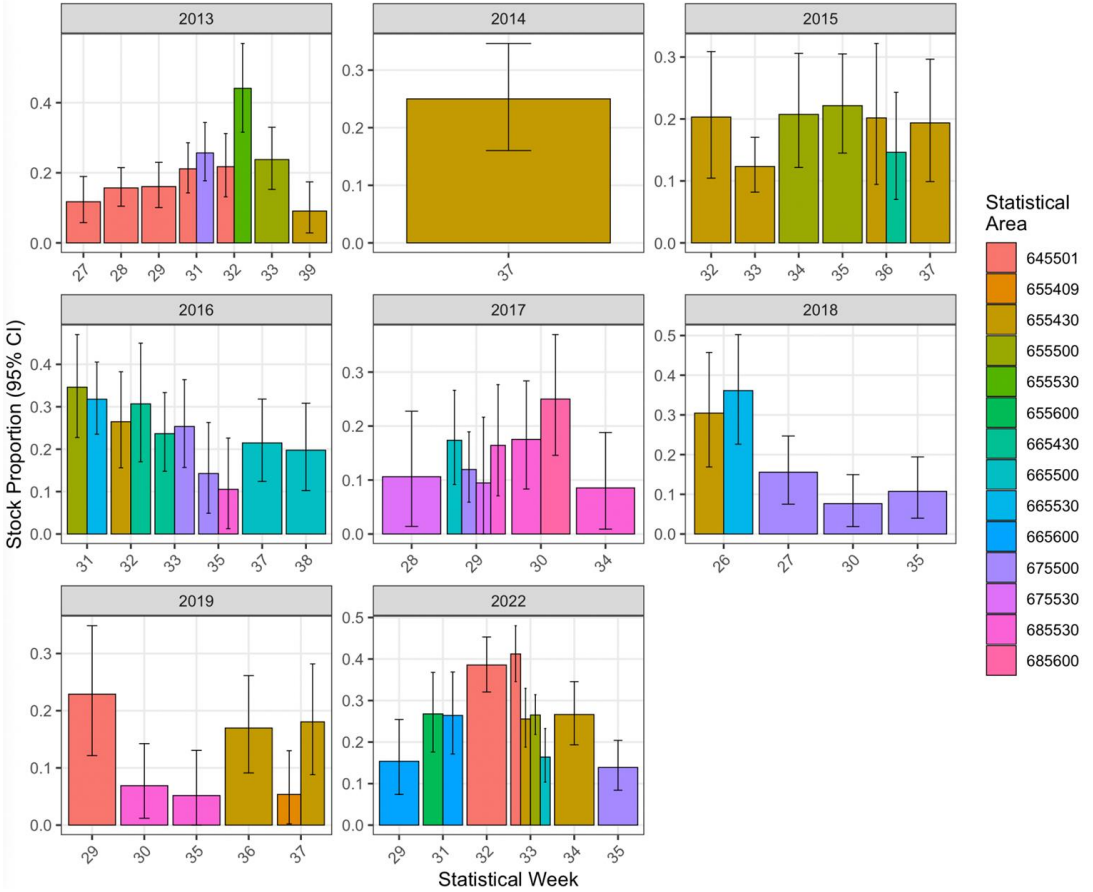




Utility of an in-season test fishery

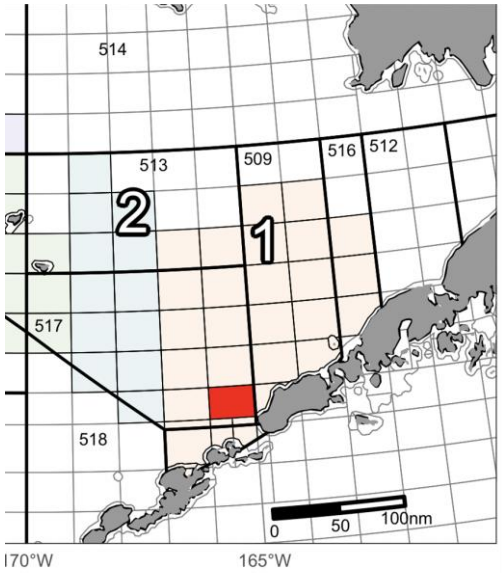
How much does Western Alaska chum stock proportions vary across space within a week?



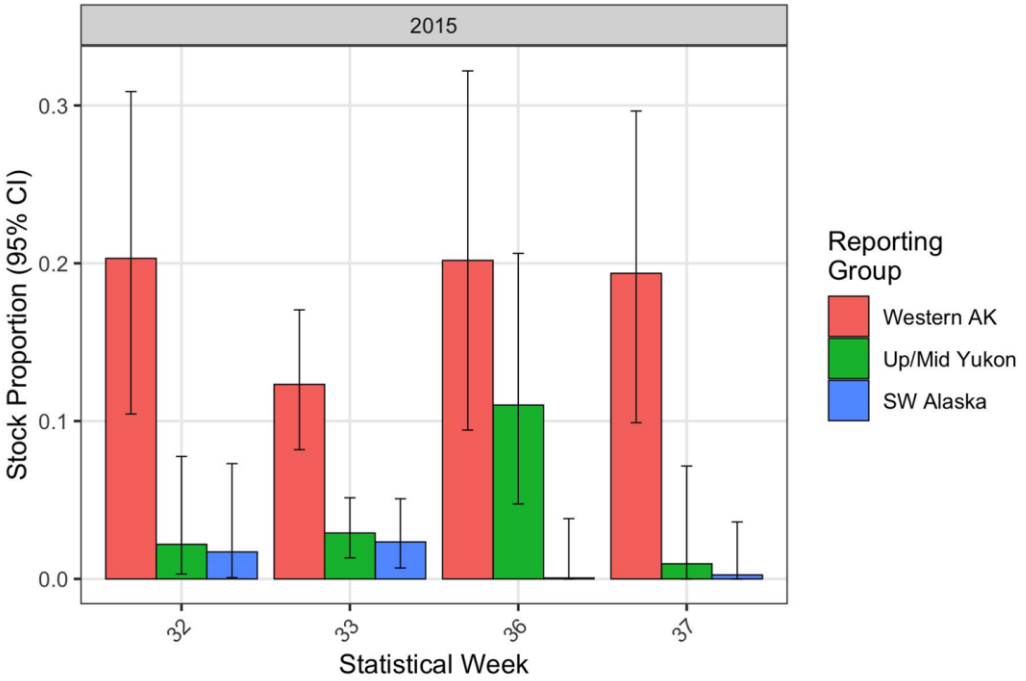


Utility of an in-season test fishery

For a given area, how much do chum stock proportions vary across weeks?

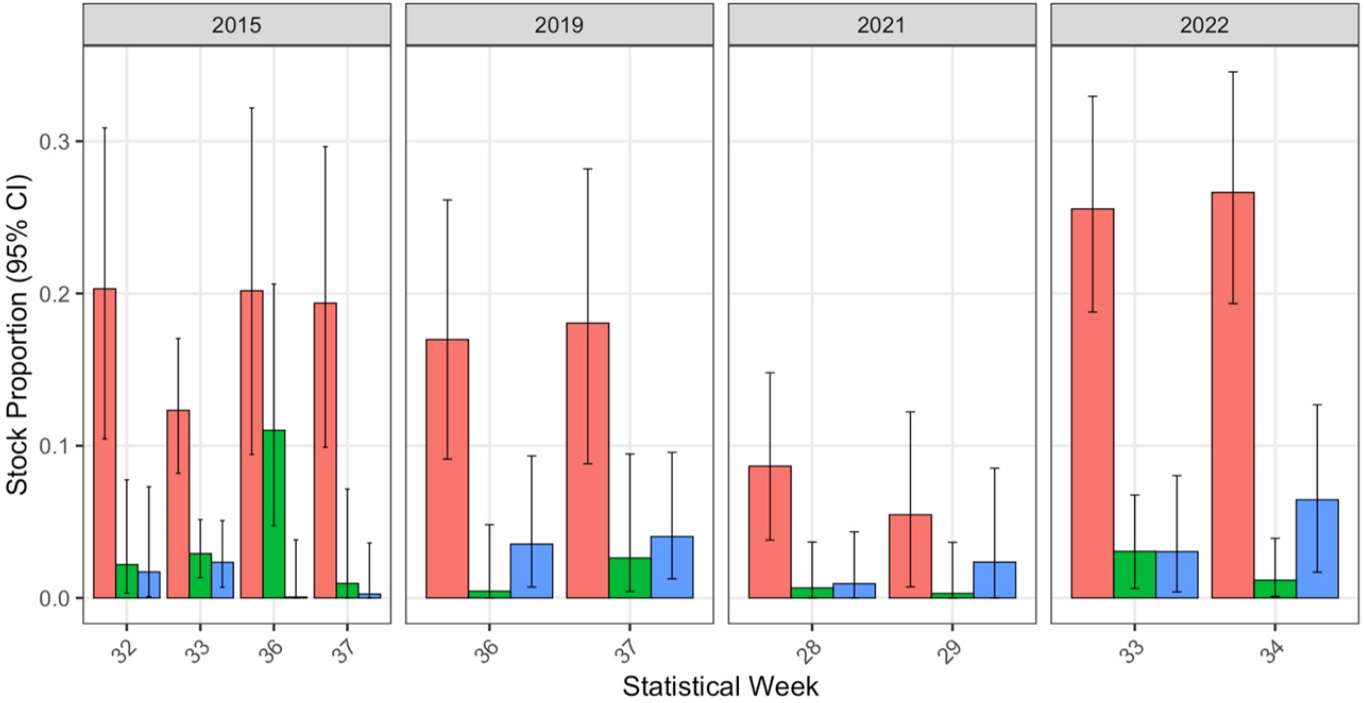


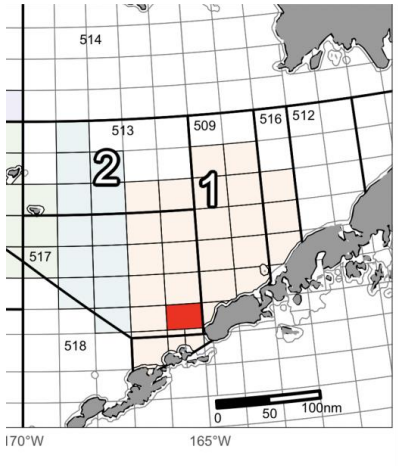
ADFG stat area 655430



Utility of an in-season test fishery

Is this consistent across years?



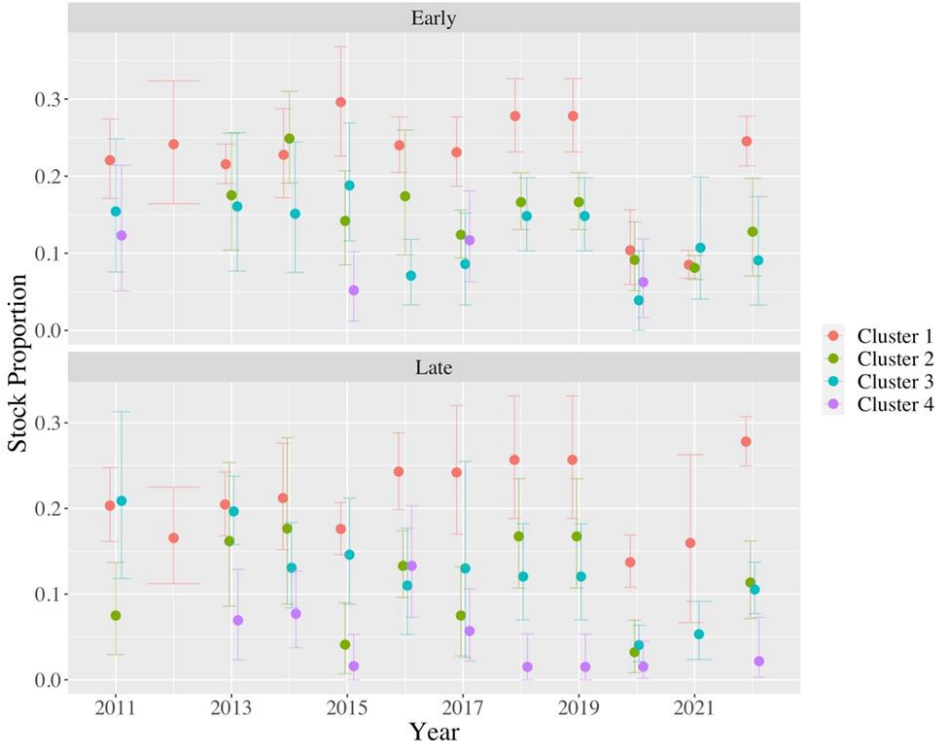


ADFG stat area 655430

Reporting Group

- Western AK
- Up/Mid Yukon
- SW Alaska

Why did WAK proportions go up so much in 2022?



- Reversion to mean in cluster 1 after 2020-2021 outliers
- Optimistic interpretation was higher proportion could mean better 2023 return but we have no data to support that