
# Genetic stock composition of chum salmon bycatch from the 2022 BSAI pollock trawl fishery

## **Preliminary Results**:

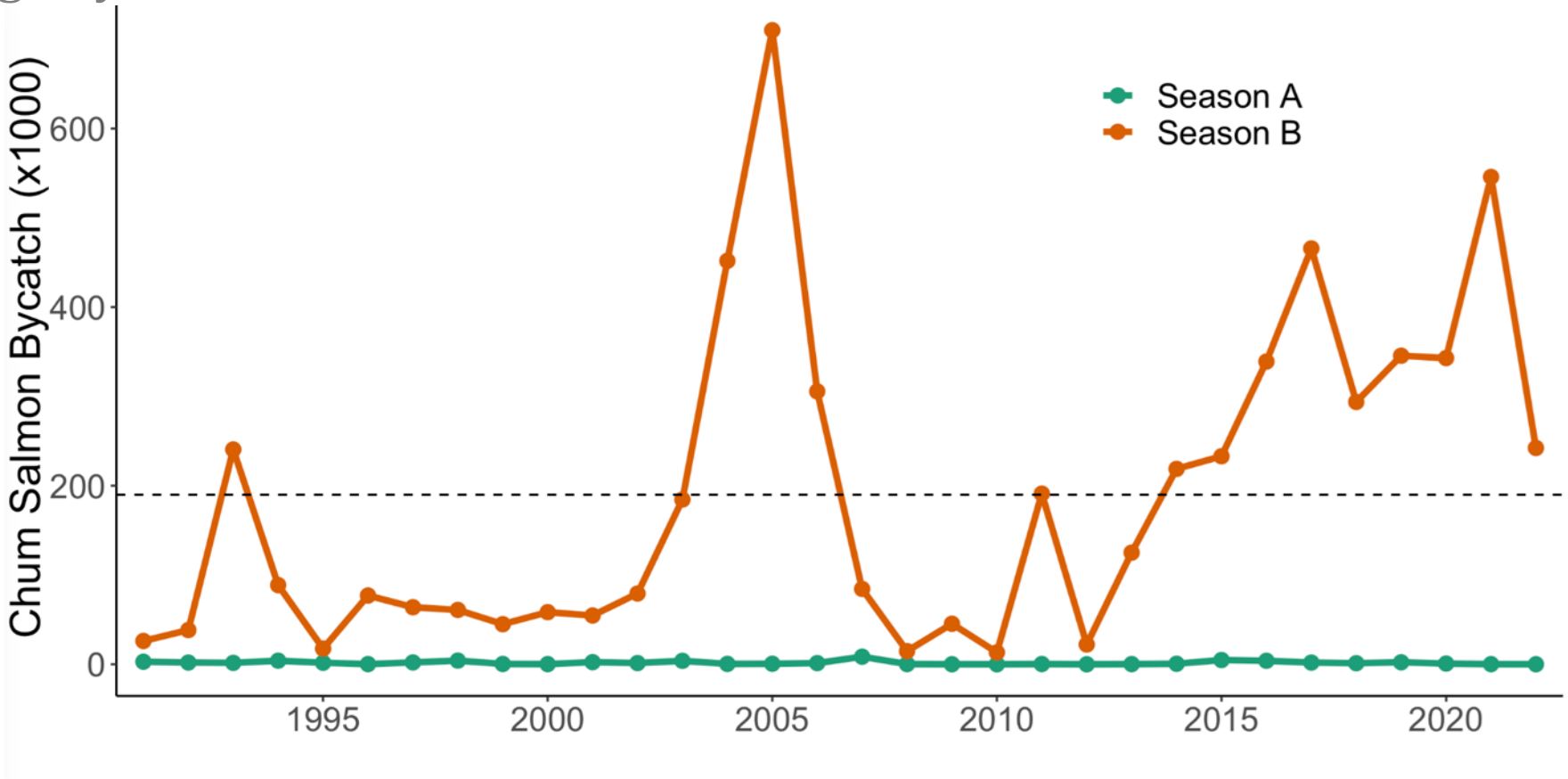
Presented to the North Pacific Fisheries Management Council April 2023

P Barry, C Kondzela, J Whittle, K D'Amelio, D. Nicolls, K. Karpan, & W Larson

# Chum salmon Prohibited Species catch (Bycatch)

99% in B-season

Average bycatch 1991-2021 ~ 188,000 chum salmon



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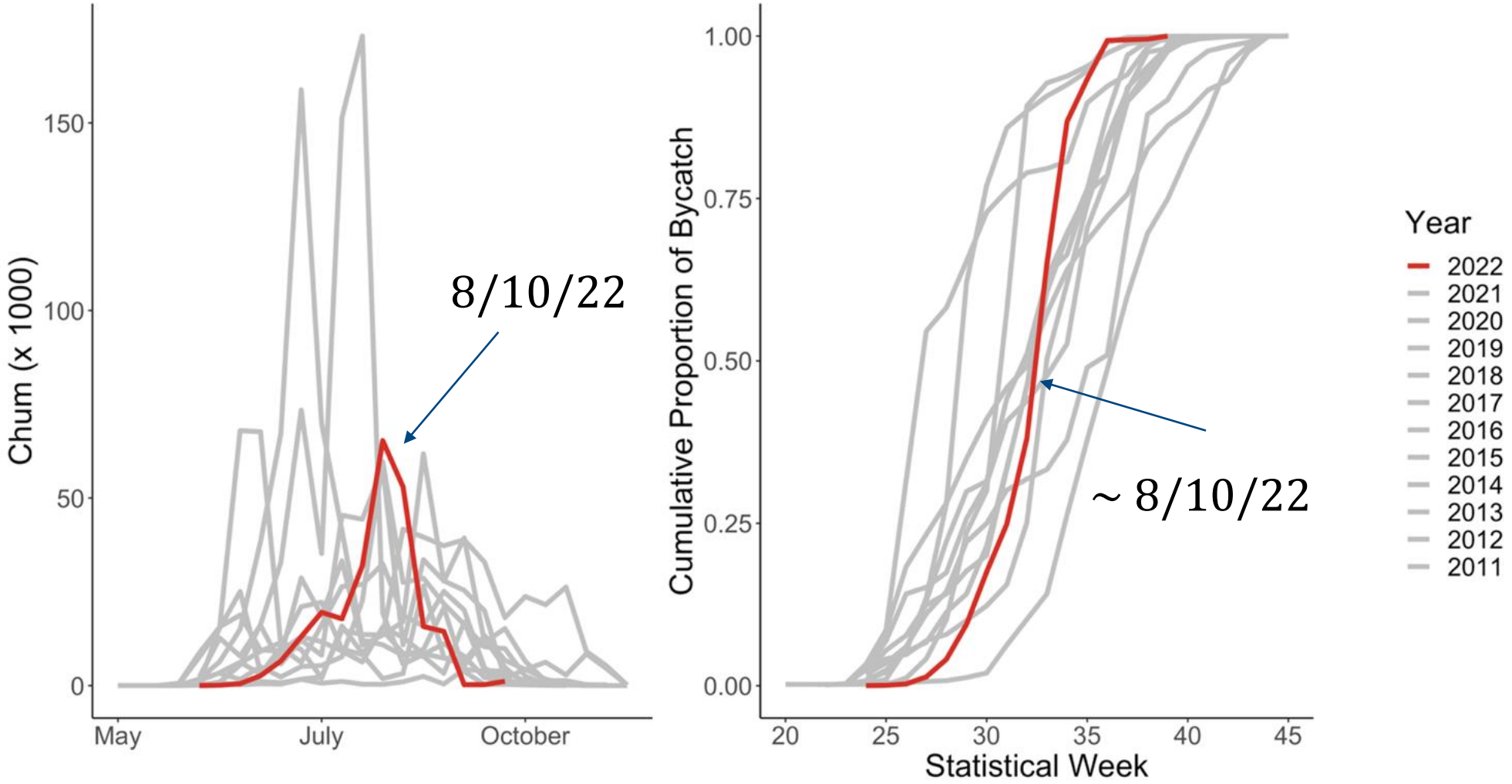
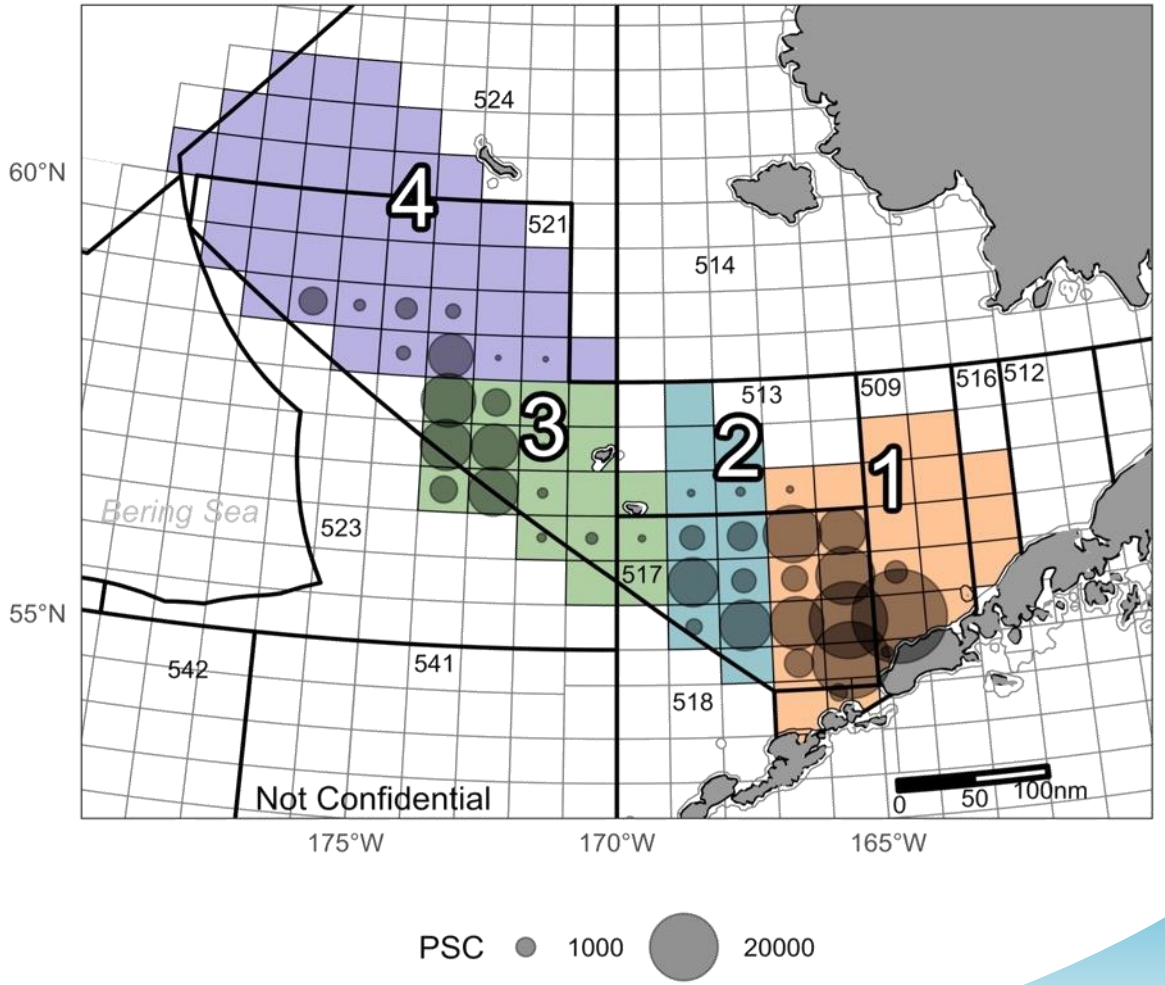
# Timing of chum salmon bycatch



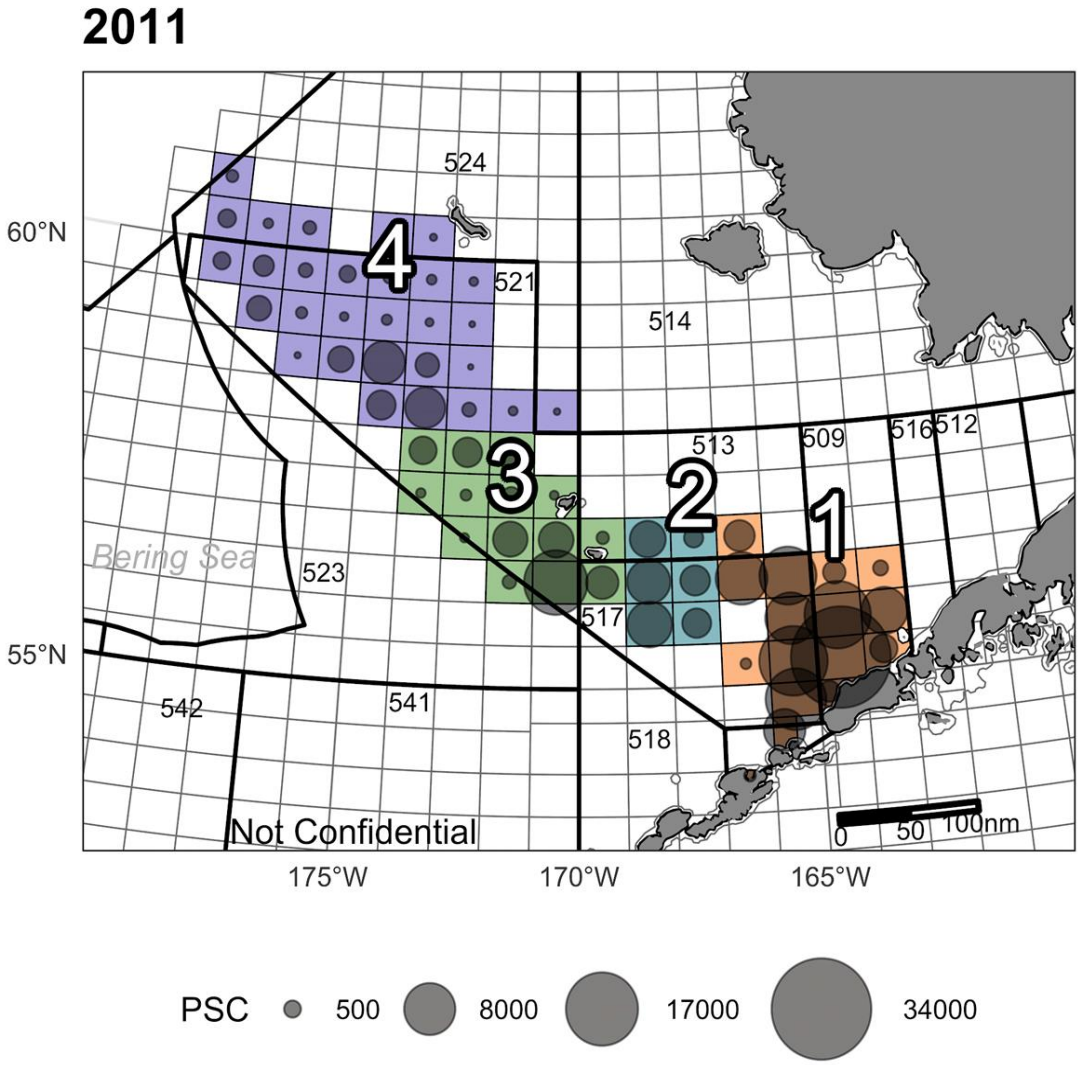
# Spatial distribution of chum salmon bycatch

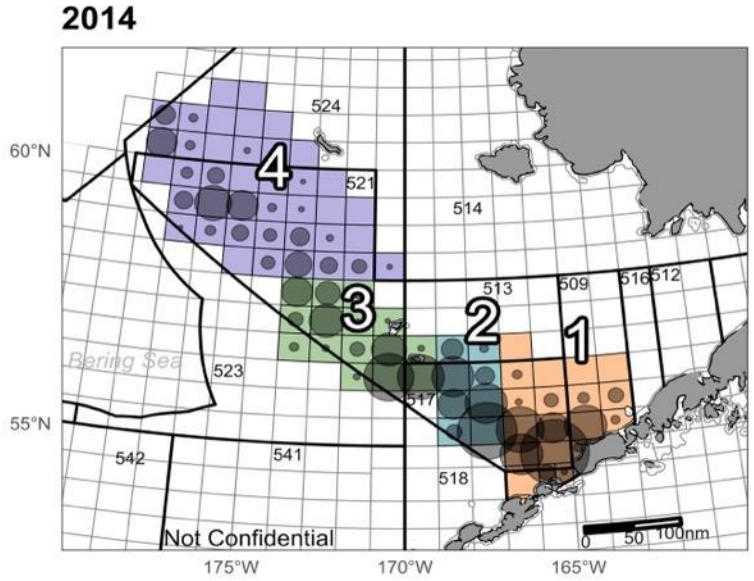
- 63% in Cluster 1
- 12% in Cluster 2
- 19% in Cluster 3
- 6% in Cluster 4

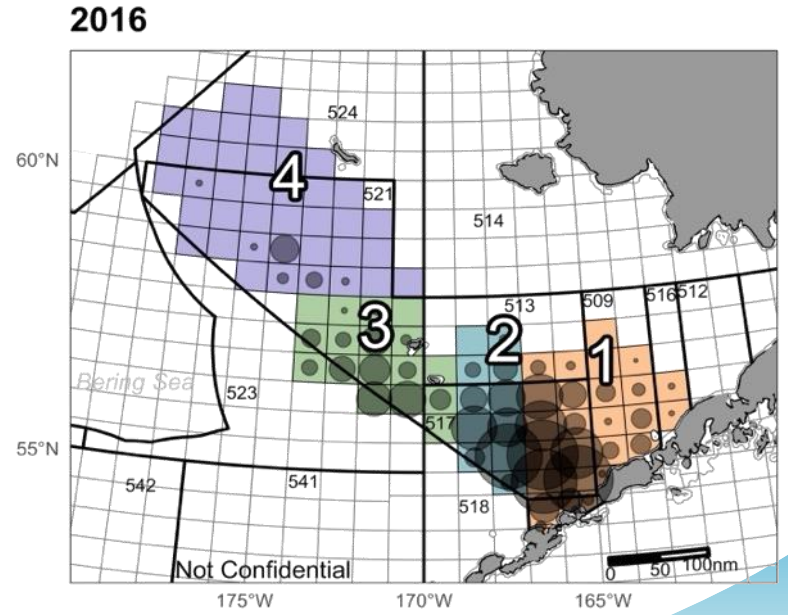
- Little fishing effort in Cluster 4



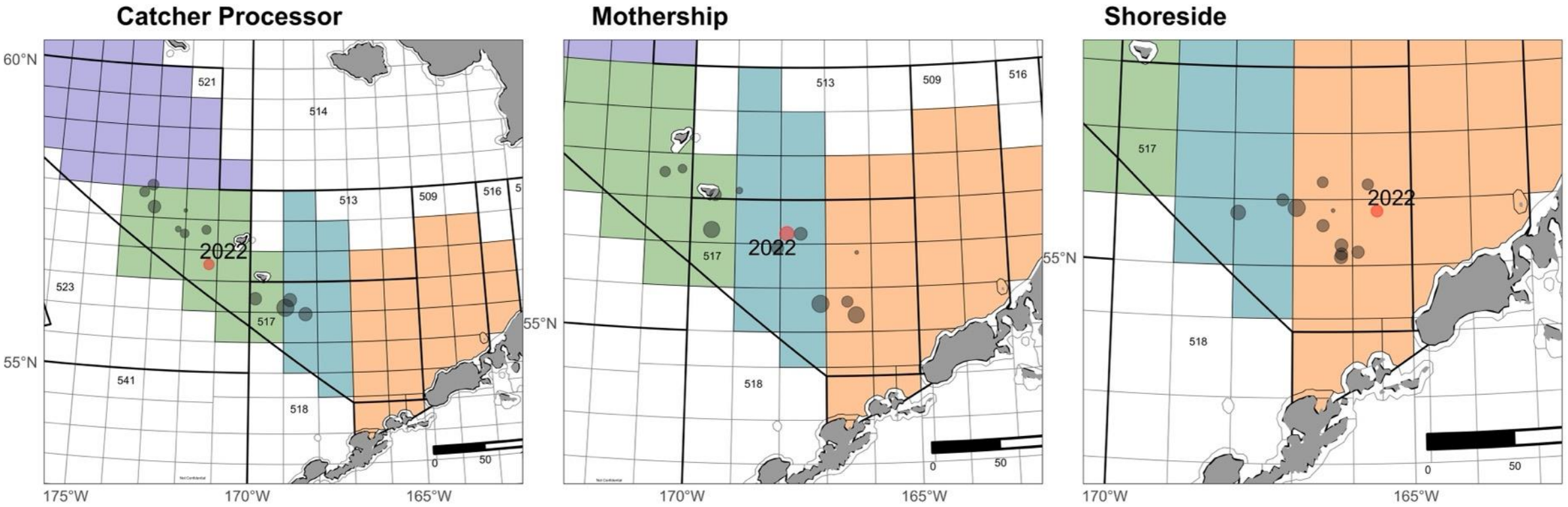
# How has it changed over time?



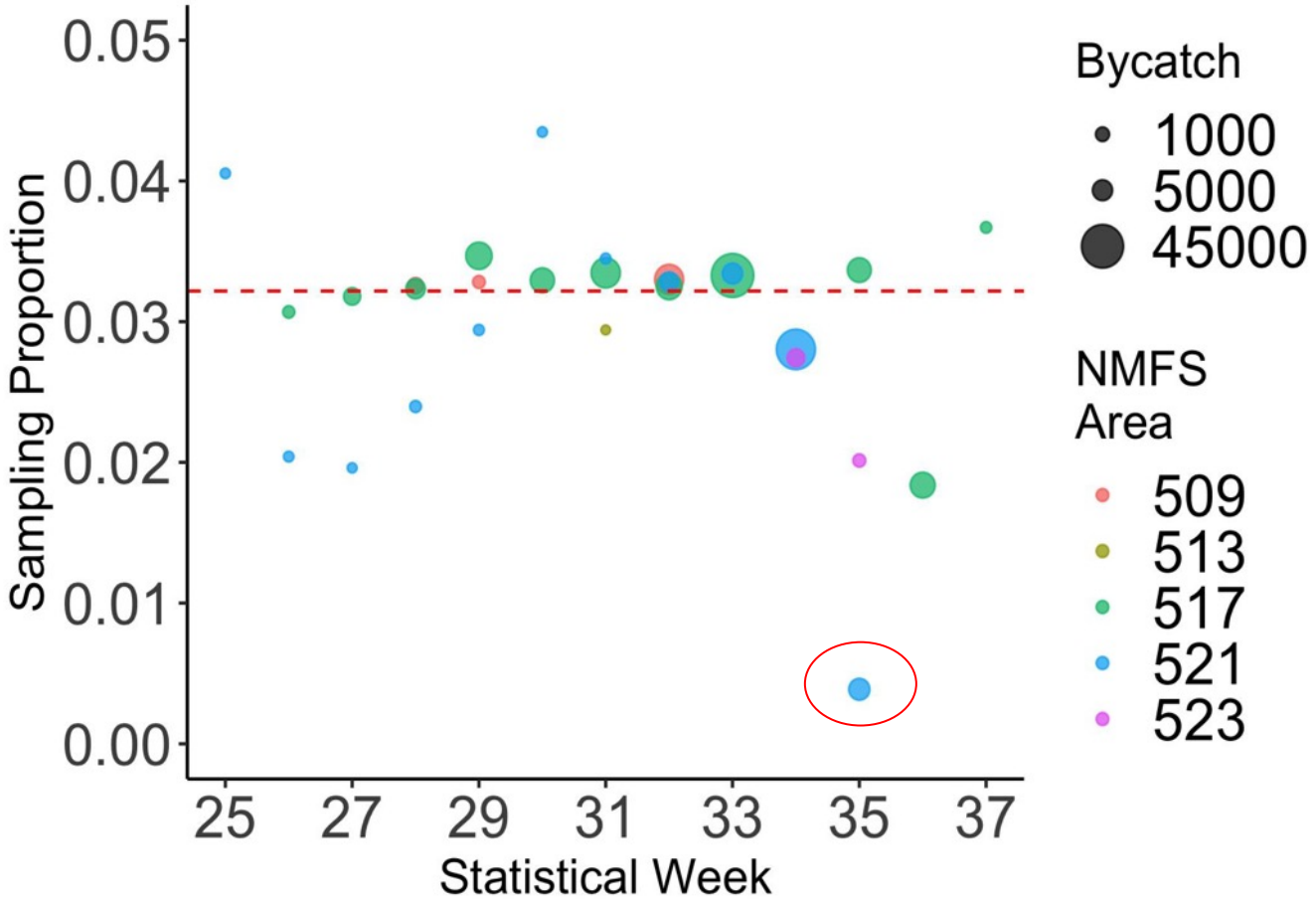



# Variability in spatial distribution by sector



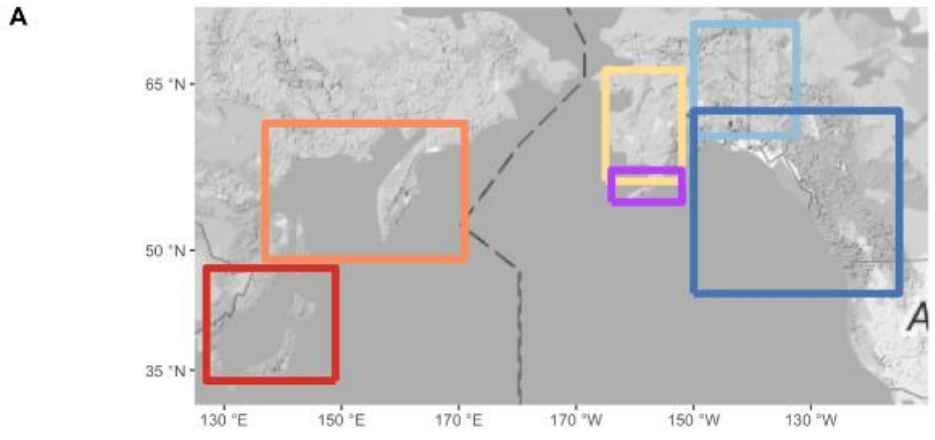
# Genetic sampling by week and area

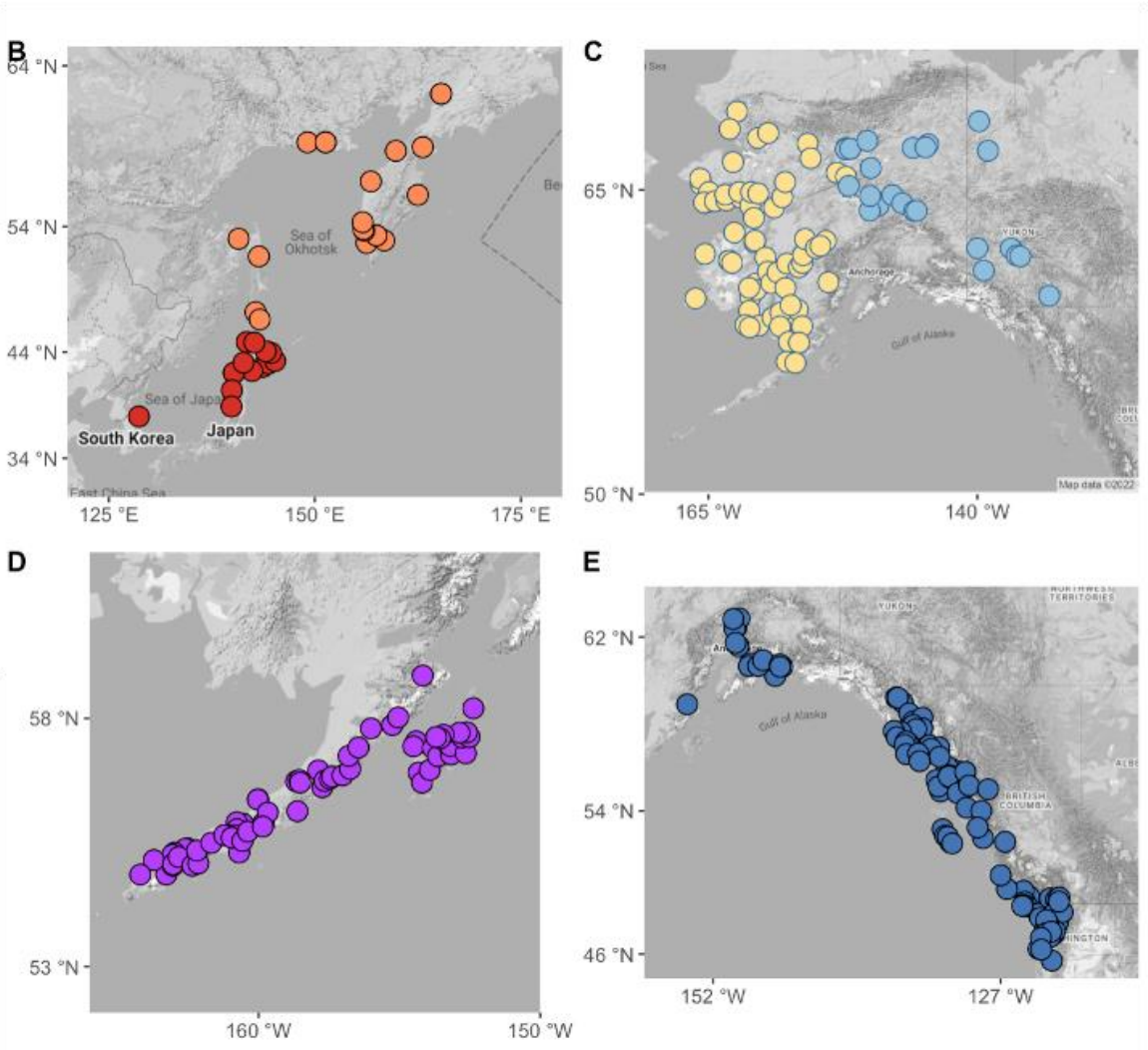



Observer on catcher-processor ran out of envelopes

Undersampled by ~70 samples after 1 in 2 subsampling in lab

# Chum salmon
# Genetic baseline




## 6 reporting groups

**B.** SE Asia, NE Asia
**C.** Coastal Western Alaska, Upper Midc
Yukon
**D.** Southwest Alaska
**E.** EGOA / PNW



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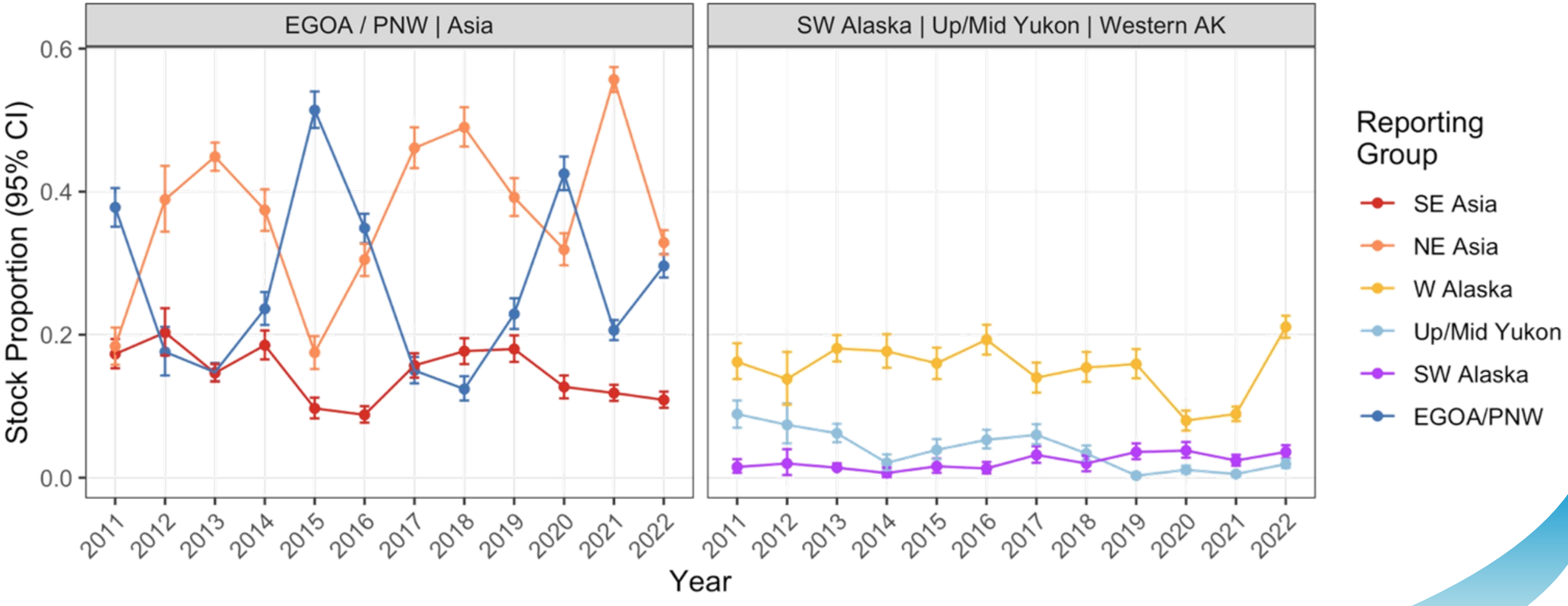
# Chum salmon stock proportions: 2022 B-season

B-season (PSC = 242,244; n = 3346)

| Region | Est. num. | Est. CI | Mean | 2.5% | 97.5% |
|---|---|---|---|---|---|
| SE Asia | 26,369 | 23,704-29,174 | 0.109 | 0.098 | 0.120 |
| NE Asia | 79,662 | 75,551-83,840 | 0.329 | 0.312 | 0.346 |
| W Alaska | 51,092 | 47,380-54,865 | 0.211 | 0.196 | 0.226 |
| Up/Mid Yukon | 4,616 | 3,257-6,280 | 0.019 | 0.013 | 0.026 |
| SW Alaska | 8,746 | 6,639-11,006 | 0.036 | 0.027 | 0.045 |
| E GOA/PNW | 71,755 | 67,824-75,744 | 0.296 | 0.280 | 0.313 |

# Chum salmon stock proportions through time



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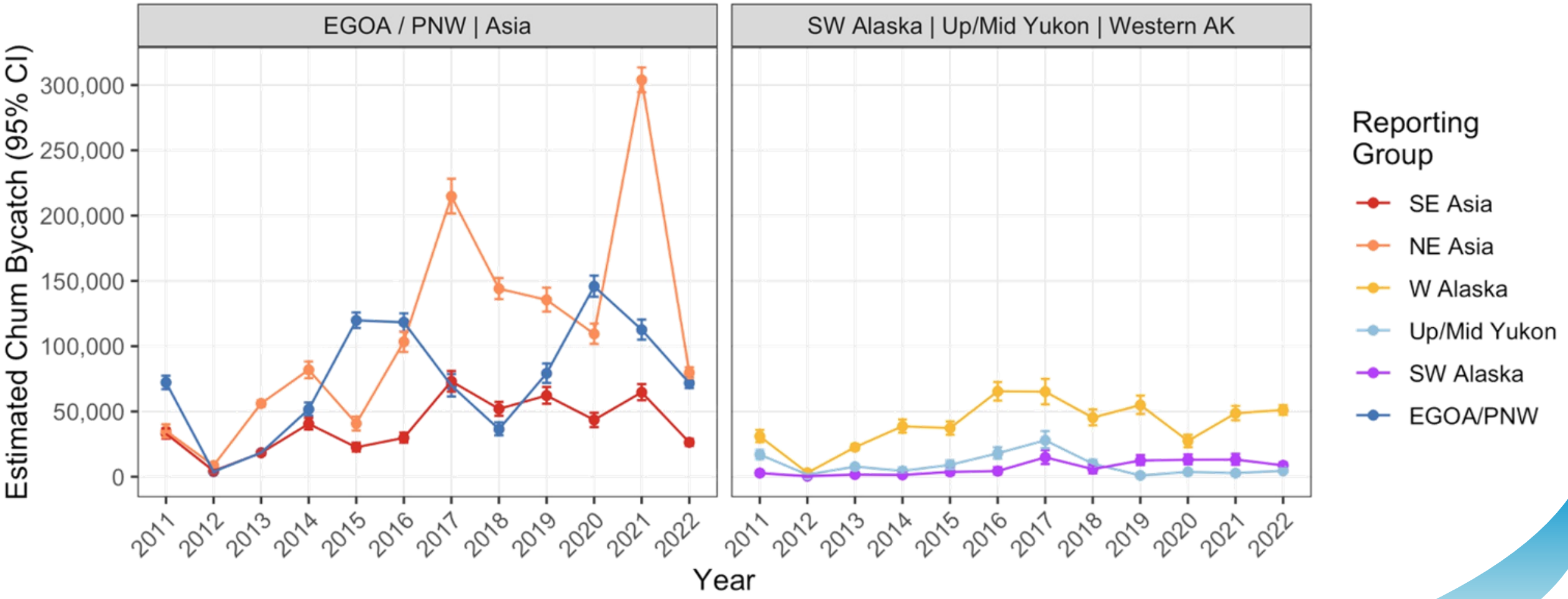
# Chum salmon numbers through time



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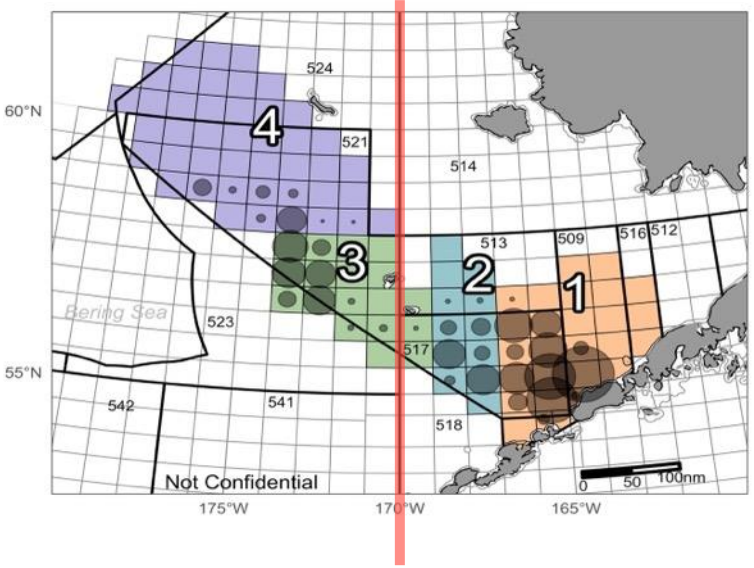
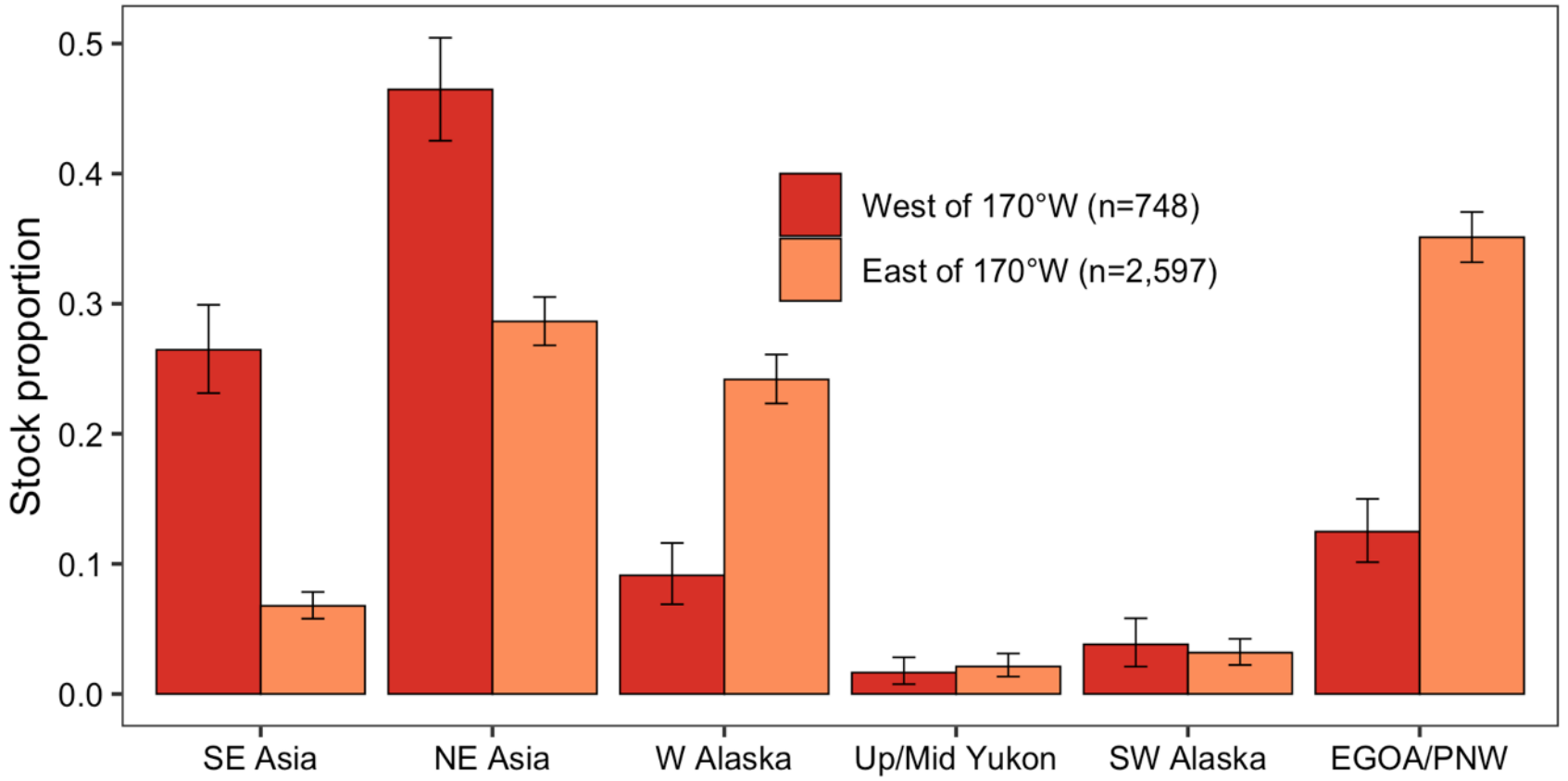
# West and East of 170°



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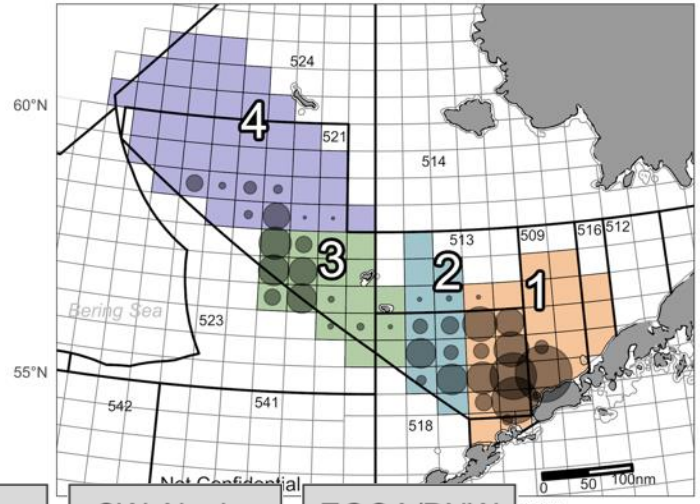
# Spatiotemporal variation in 2022

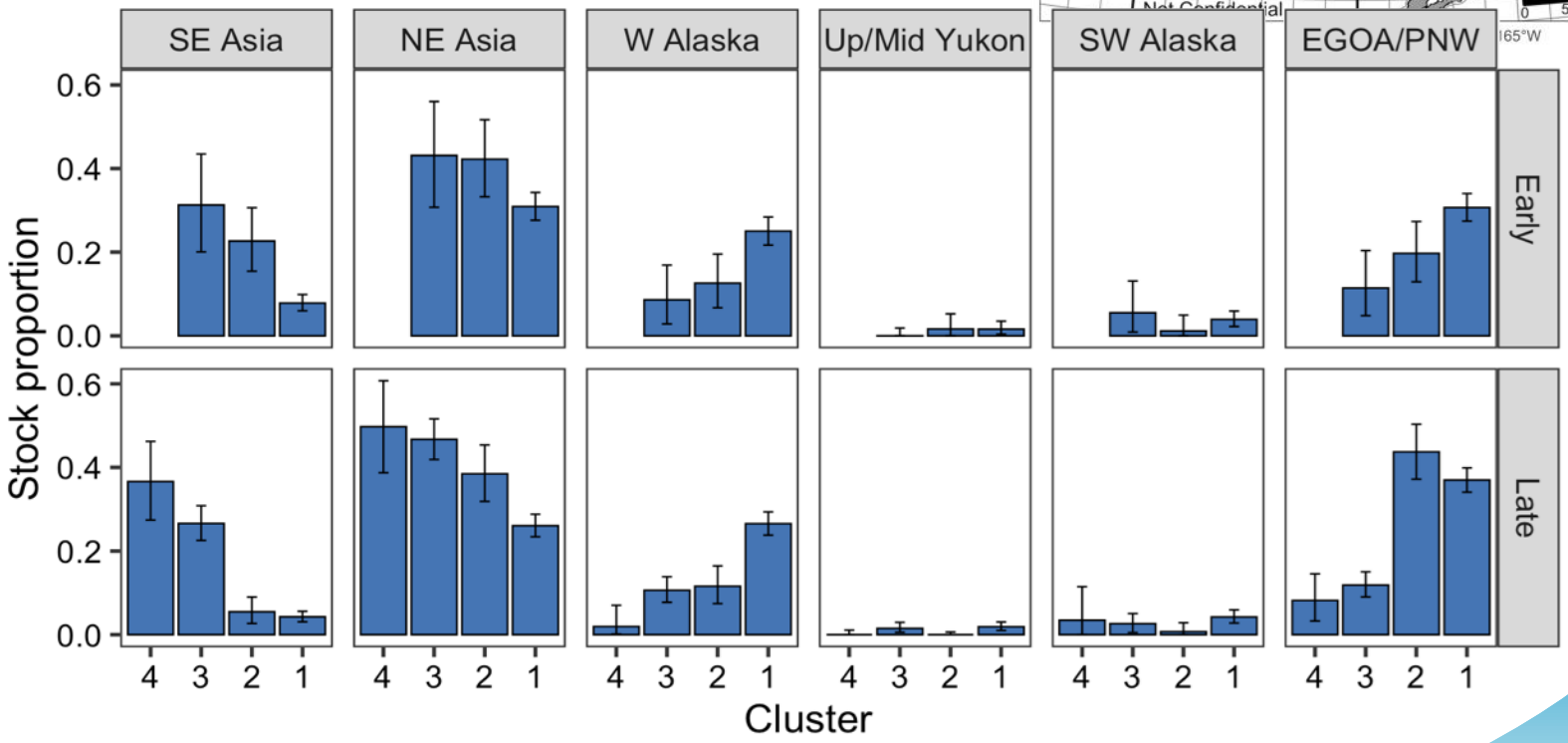
## W Alaska

- East to West
- Early to Late

## SW Alaska & Yukon

- East to West
- Early to Late



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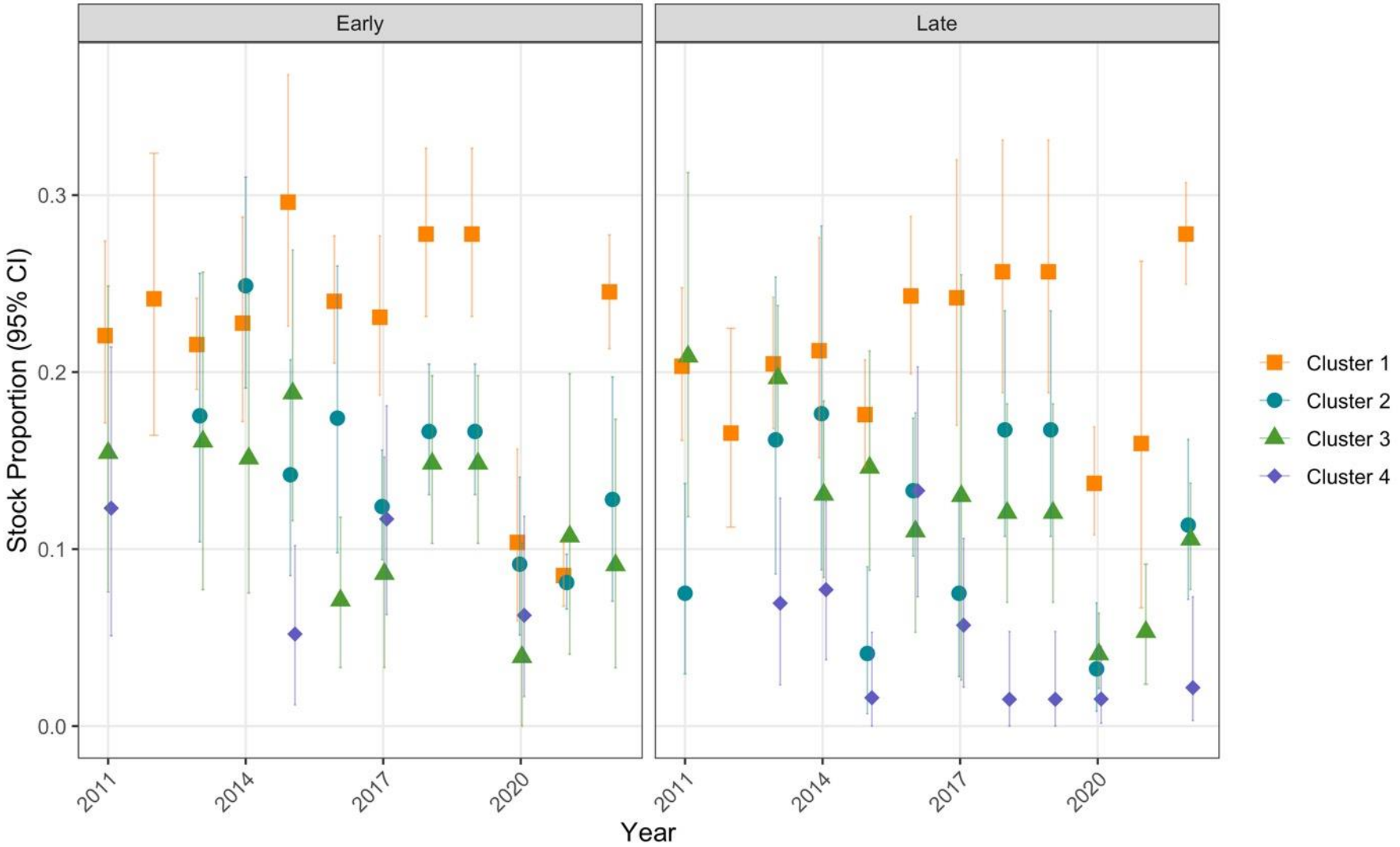
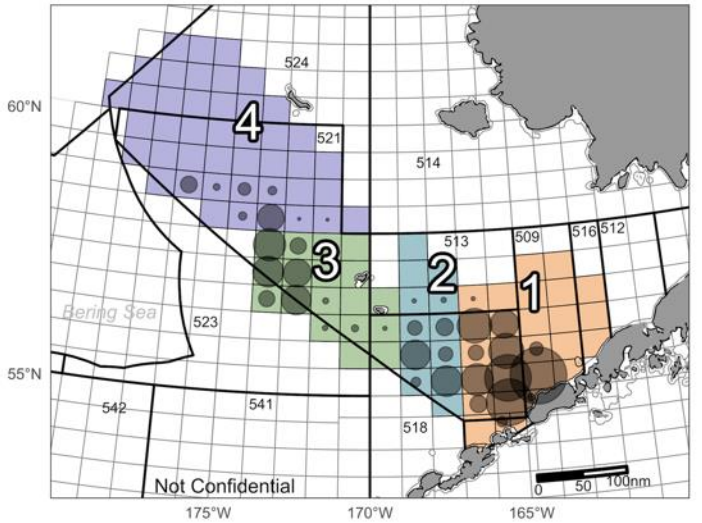
# Spatiotemporal variation W Alaska (2011-2022)



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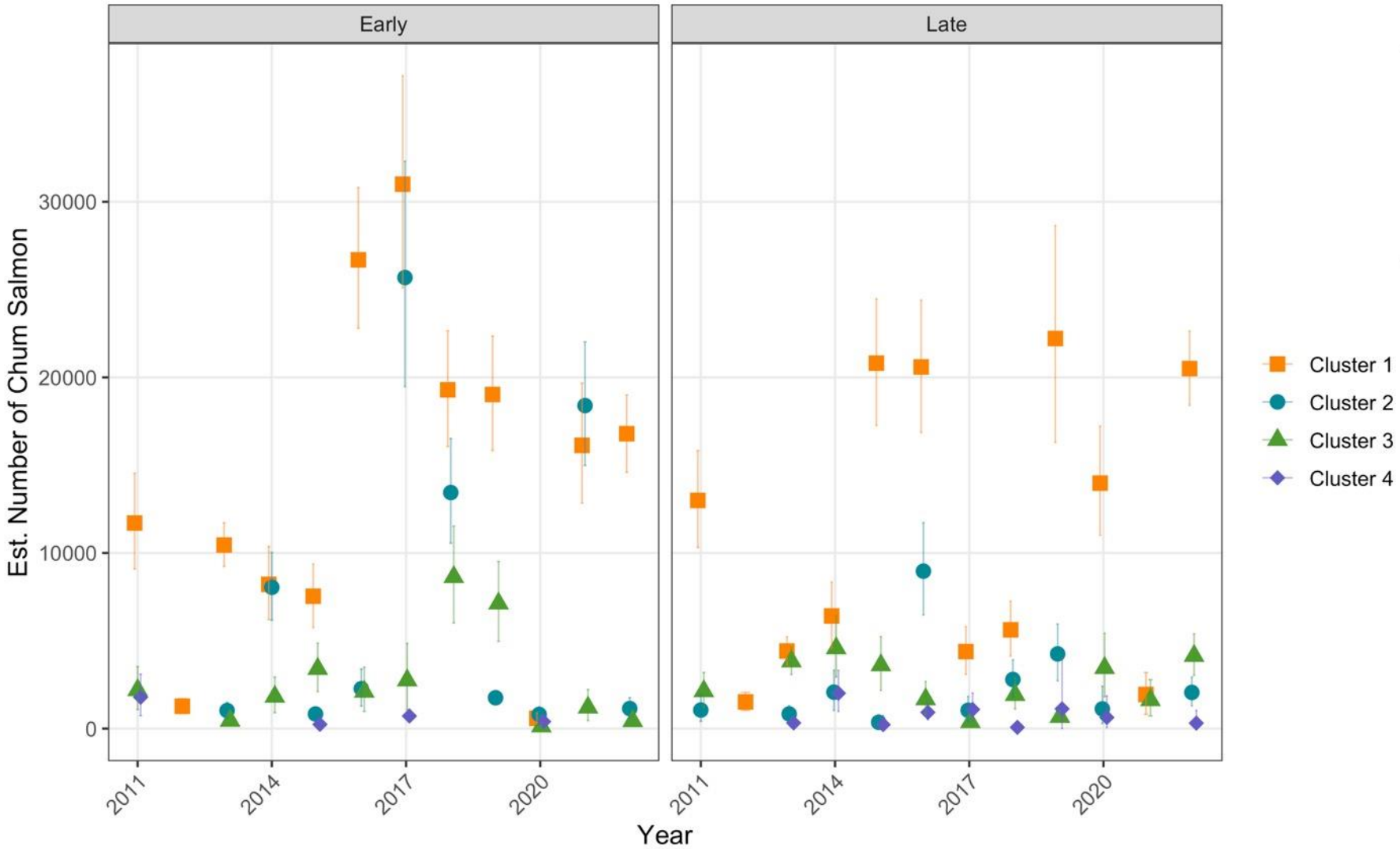
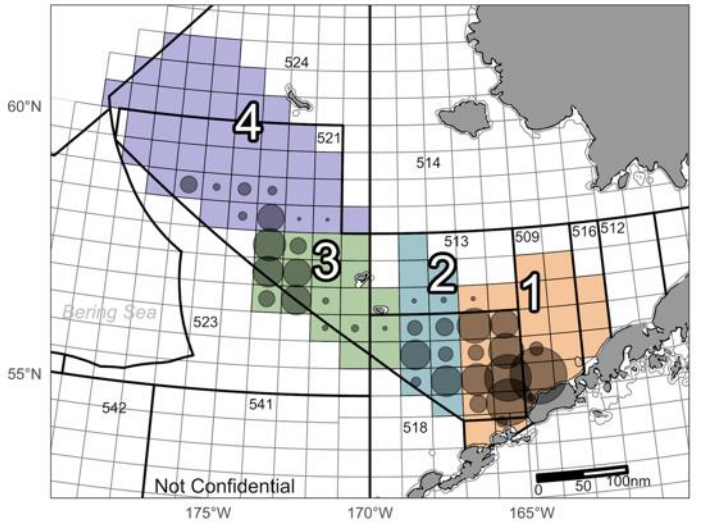
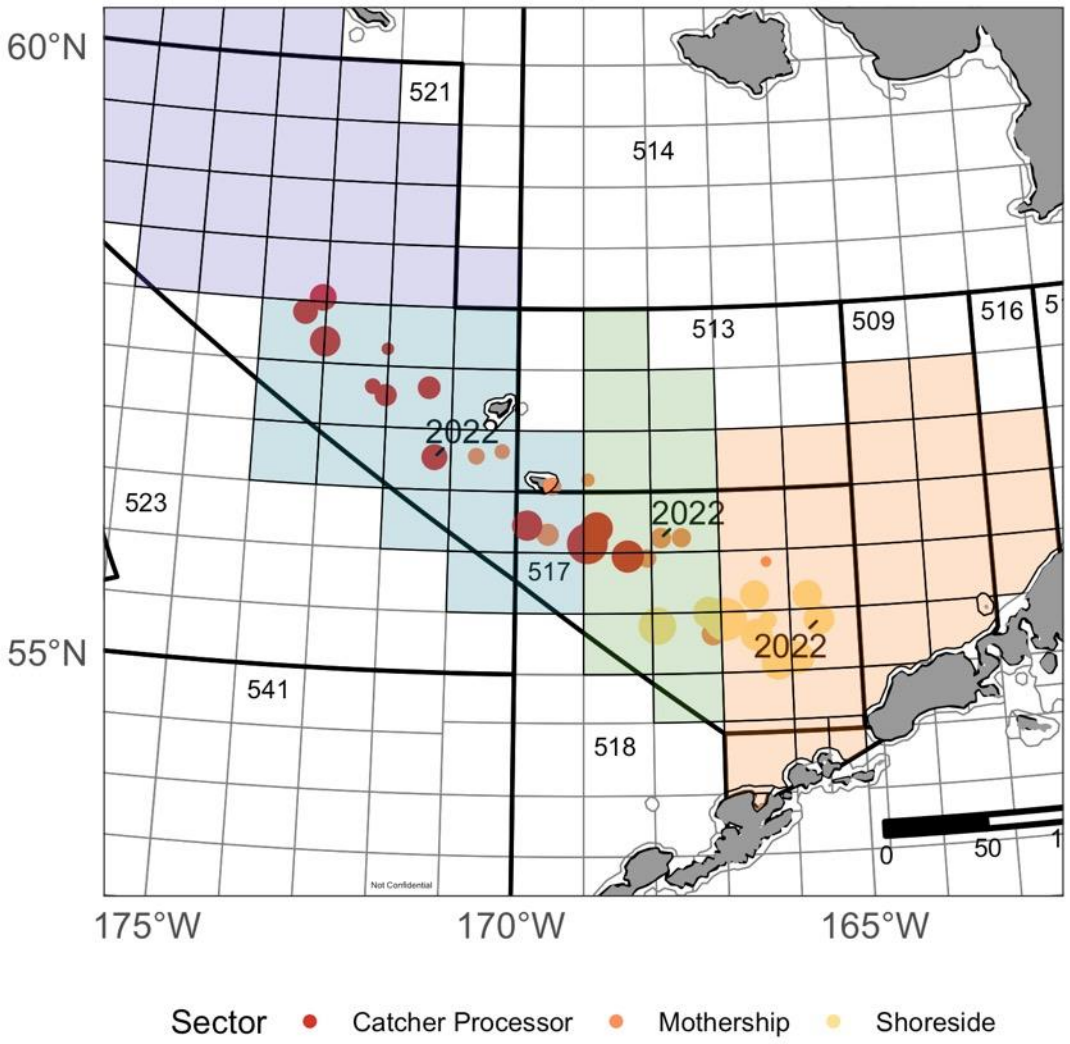
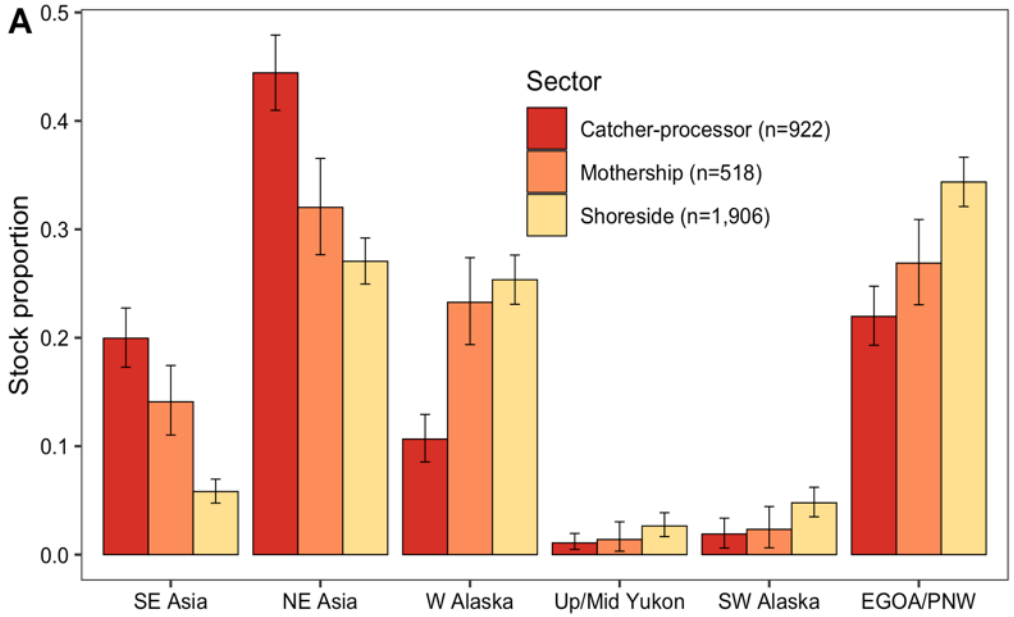


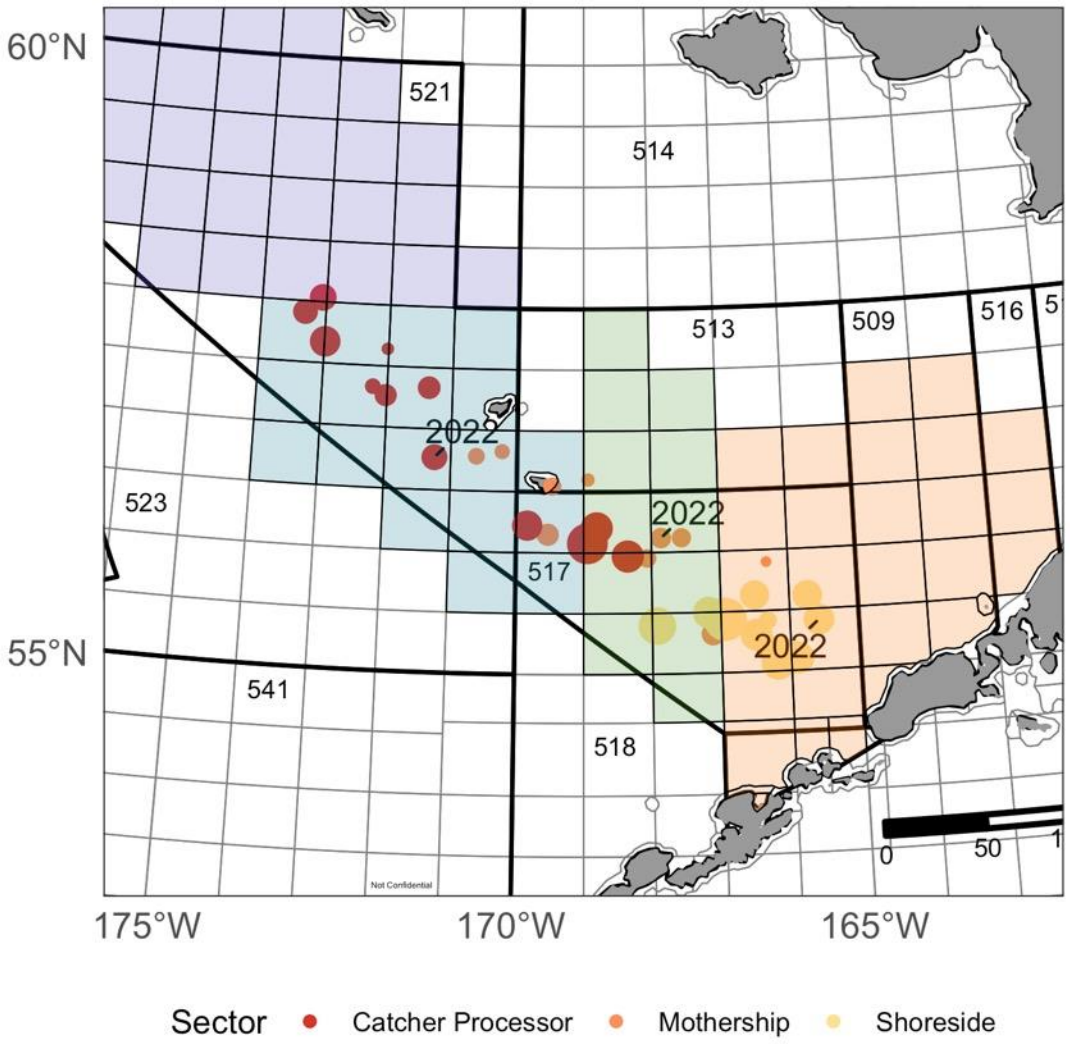



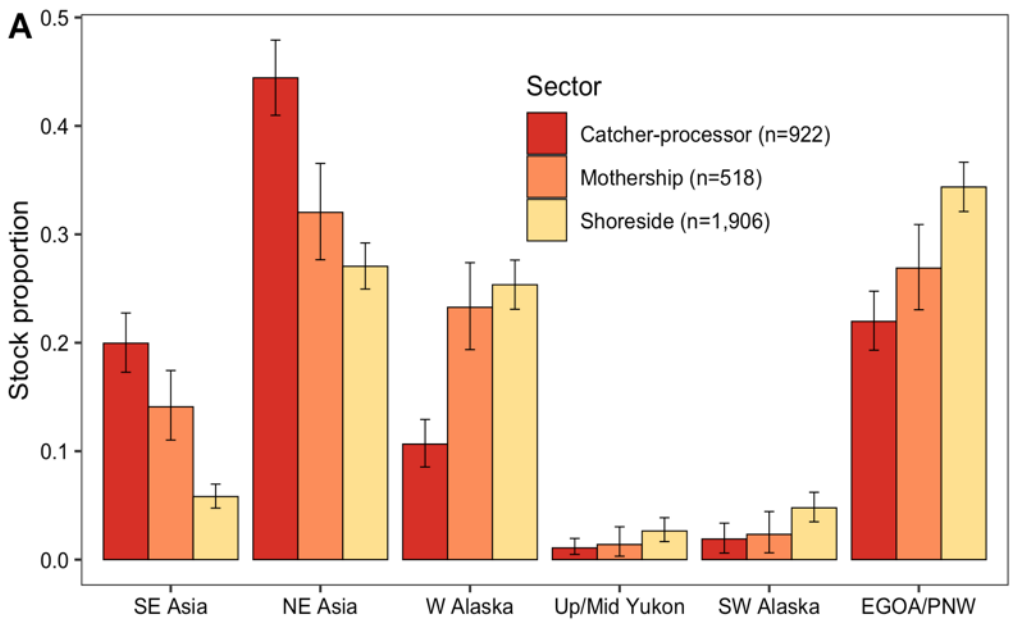
# Fishing sectors

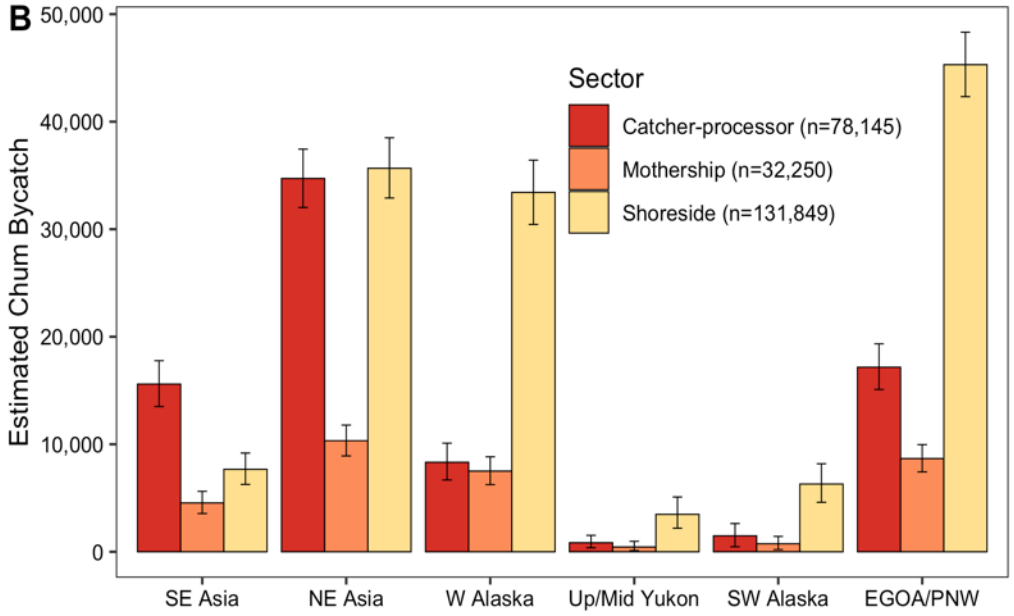


# Fishing sectors

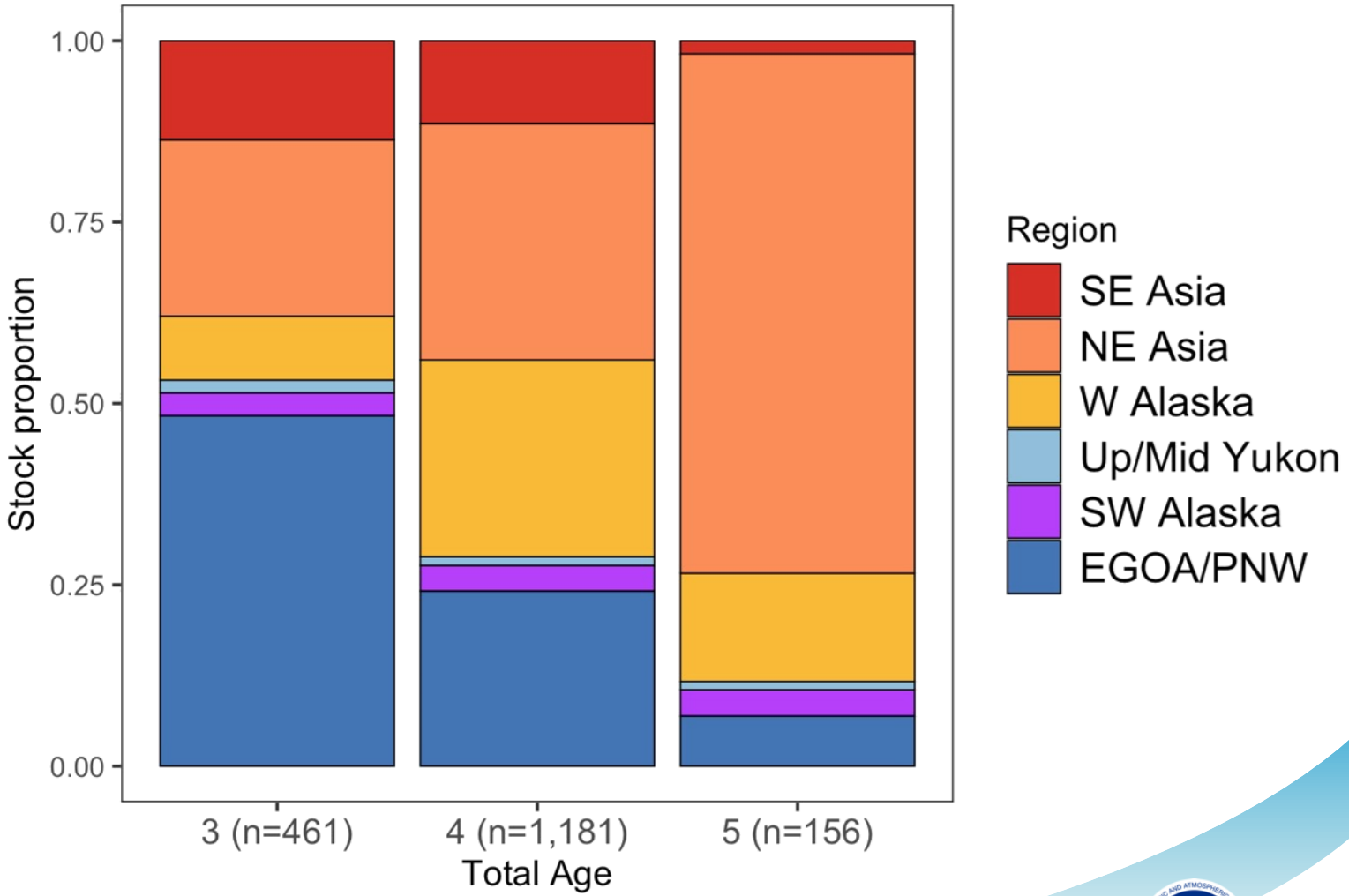


# Age specific mixtures - Chum Salmon 2022*

- Younger ages mostly EGOA/PNW
- Oldest age mostly NE Asia
- * ~50% complete



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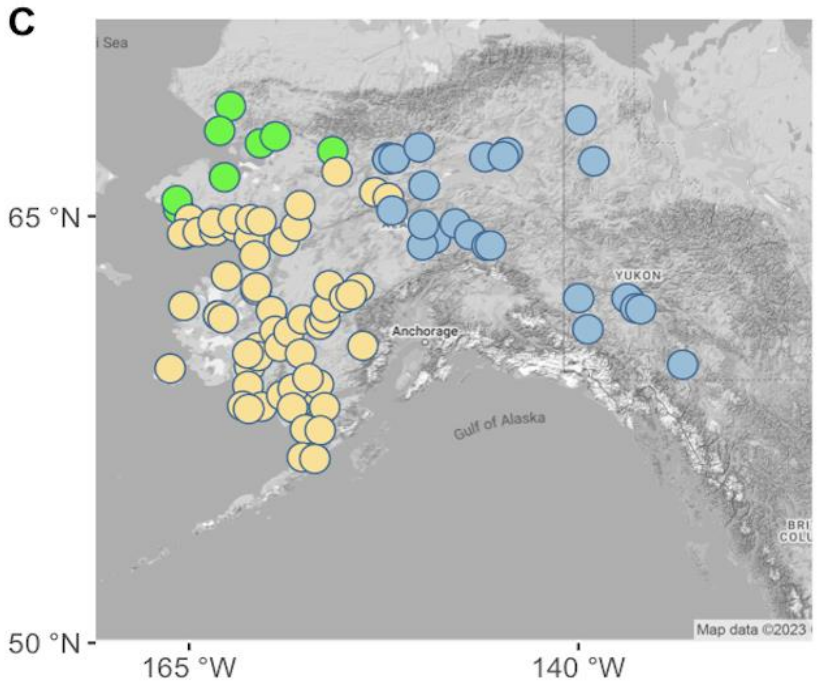
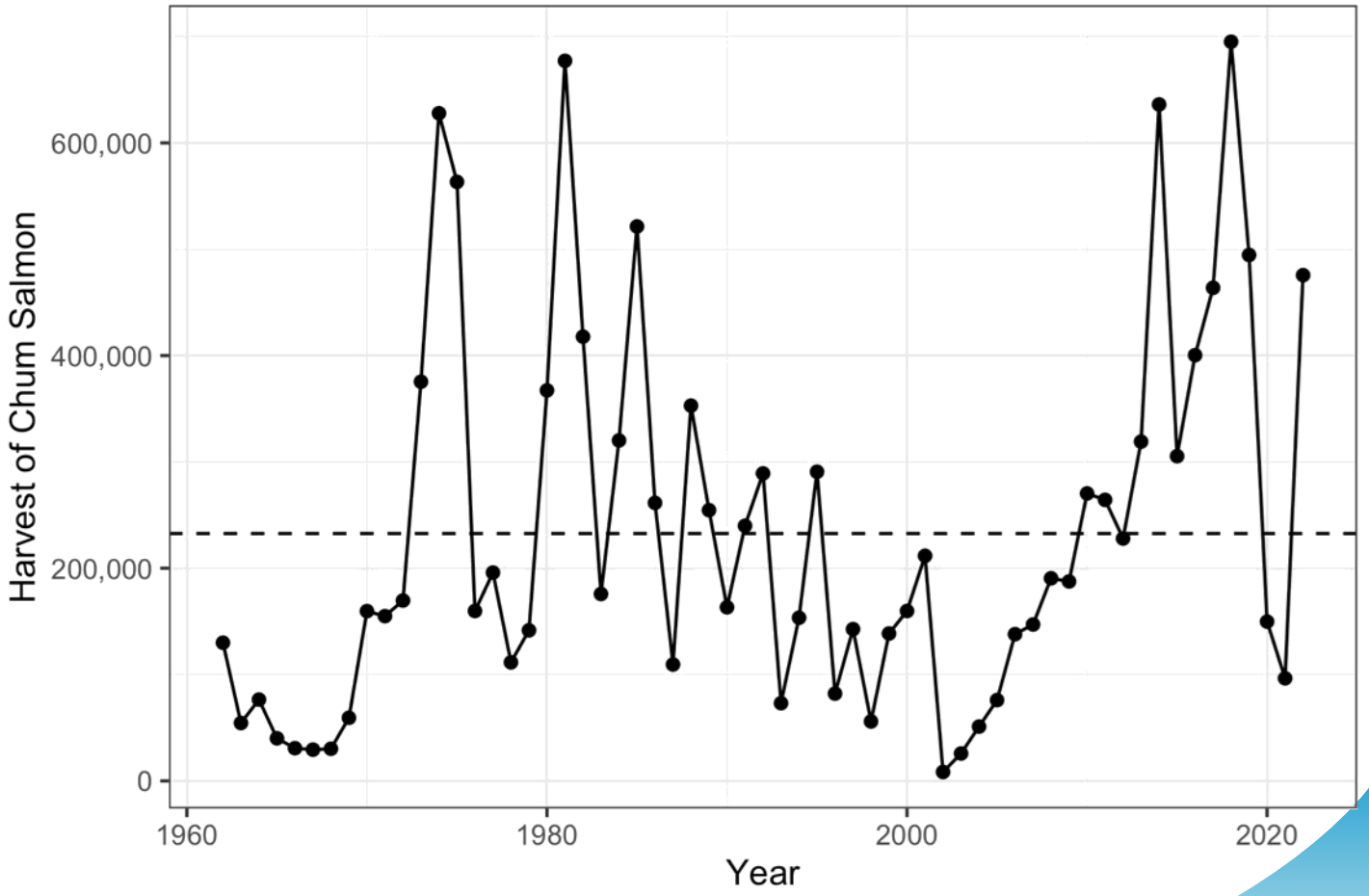
# Kotzebue Sound analysis

## Baseline collection:

### 8 populations



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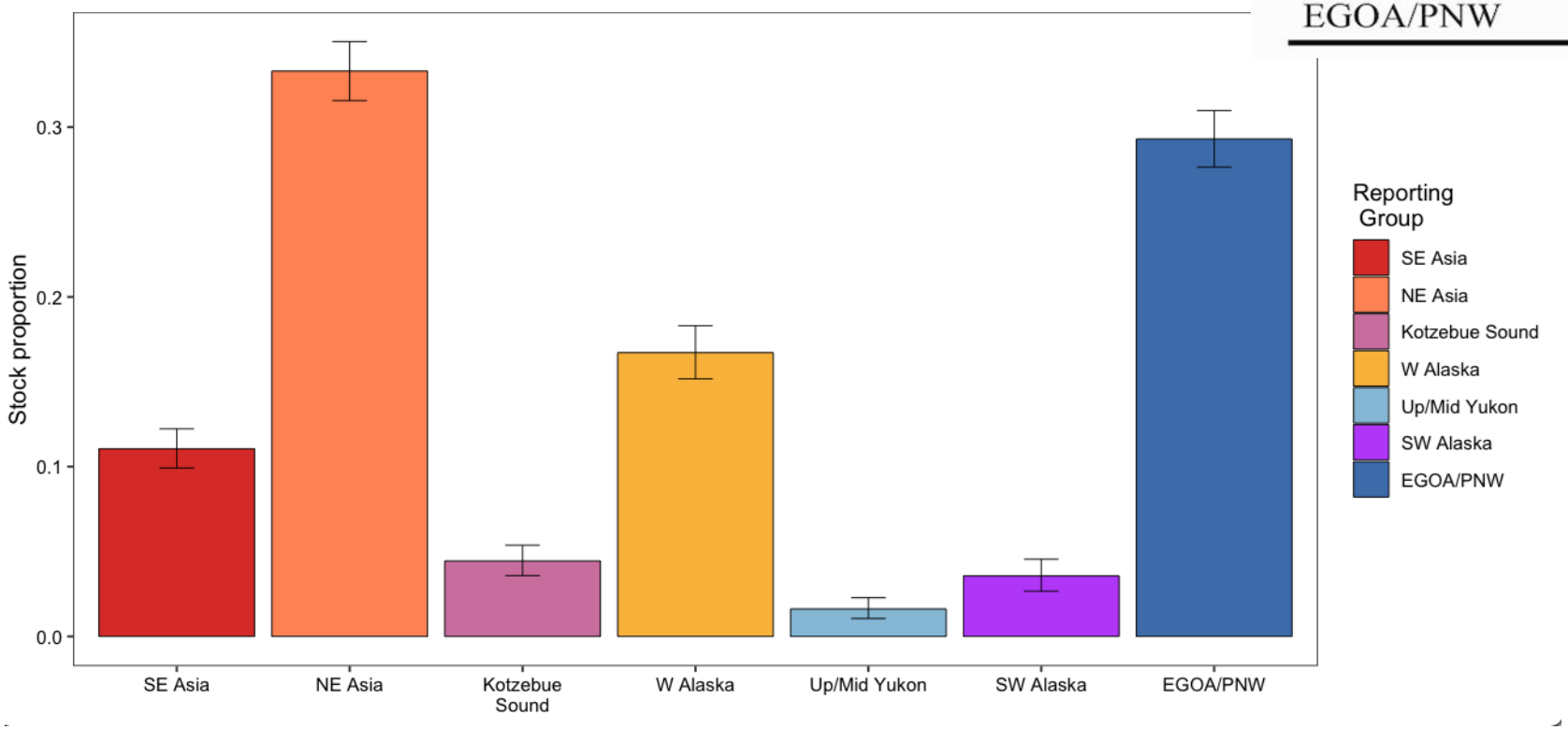
# Kotzebue Sound 2022 B-season

B-season (PSC = 242,244; n = 3,260)

| Region | Est. num. | Est. CI | Mean | 2.5% | 97.5% |
|---|---|---|---|---|---|
| SE Asia | 26,776 | 24,038-29,623 | 0.111 | 0.099 | 0.122 |
| NE Asia | 80,669 | 76,465-84,888 | 0.333 | 0.316 | 0.350 |
| Kotzebue Sound | 10,772 | 8,671-13,023 | 0.044 | 0.036 | 0.054 |
| W Alaska | 40,493 | 36,768-44,324 | 0.167 | 0.152 | 0.183 |
| Up/Mid Yukon | 3,917 | 2,548-5,516 | 0.016 | 0.011 | 0.023 |
| SW Alaska | 8,630 | 6,460-11,012 | 0.036 | 0.027 | 0.045 |
| EGOA/PNW | 70,983 | 66,975-75,024 | 0.293 | 0.276 | 0.310 |



# Summary for Western Alaska

- Proportion - Large increase from 2021 & 2022, slightly above long-term average
  - 21% of the bycatch (17% excluding Kotzebue Sound)
- Estimated number – Similar to long-term average despite large reduction in overall bycatch
  - 51,000 chum salmon (40,500 excluding Kotzebue Sound)
- Higher proportion in eastern fishing grounds
  - East of 170, Clusters 1 & 2

# Acknowledgements

*AFSC ABL* - C. Guthrie, E. Yasumiishi, D. Baetscher, M. Chan
*AFSC FMA* - M. Concepcion, B. Mason, J. Cahalan, and a village
*AKFIN* - C. Kohler, R. Ames, R. Ryznar, M. Callahan
*ADFG GCL* - C. Habicht, T. Dann, E. Lee
*ADFG MTAL* - J. Neil, D. Oxman, B. Agler, T. Frawley

# Questions?

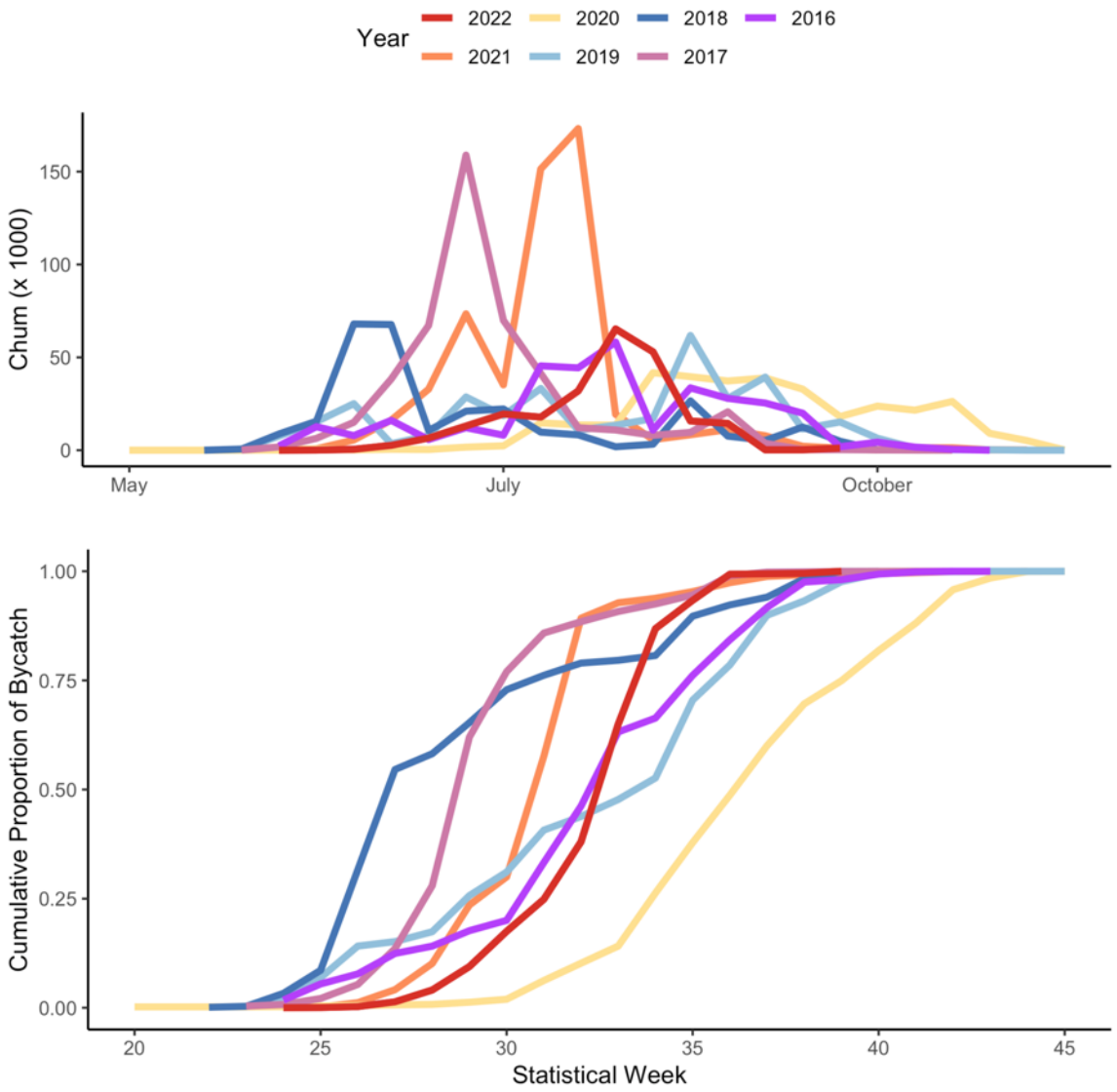
Patrick Barry

Patrick.Barry@noaa.gov

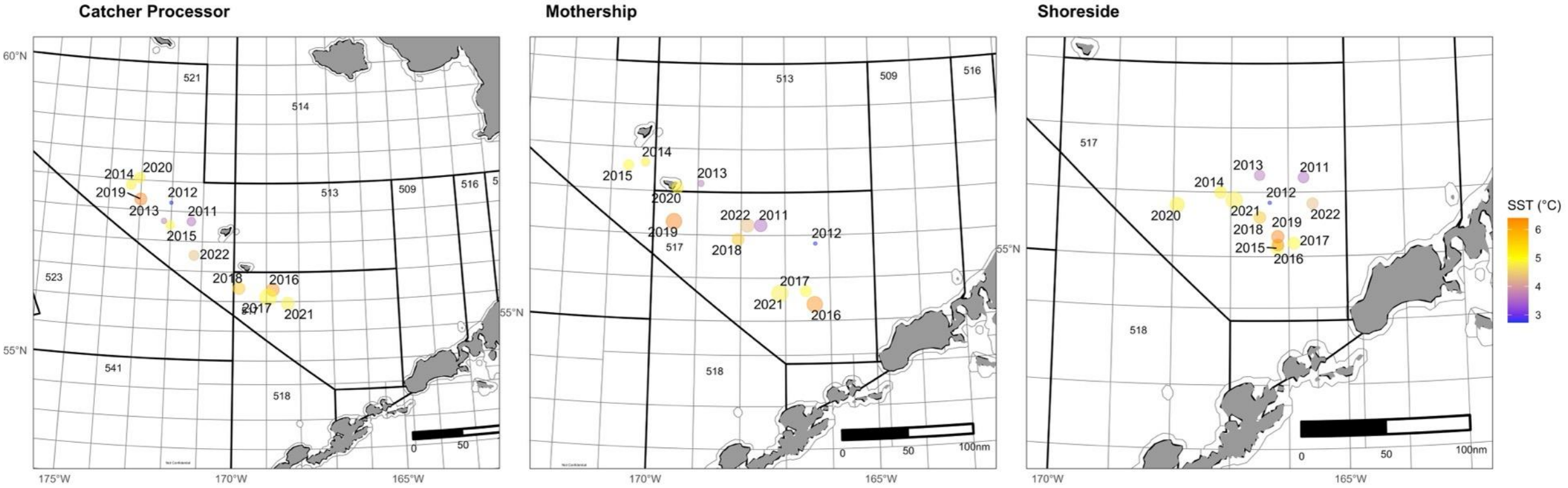
Prior Years Tech Memos:

https://www.fisheries.noaa.gov/alaska/science-data/genetics-research-alaska-fisheries-science-center

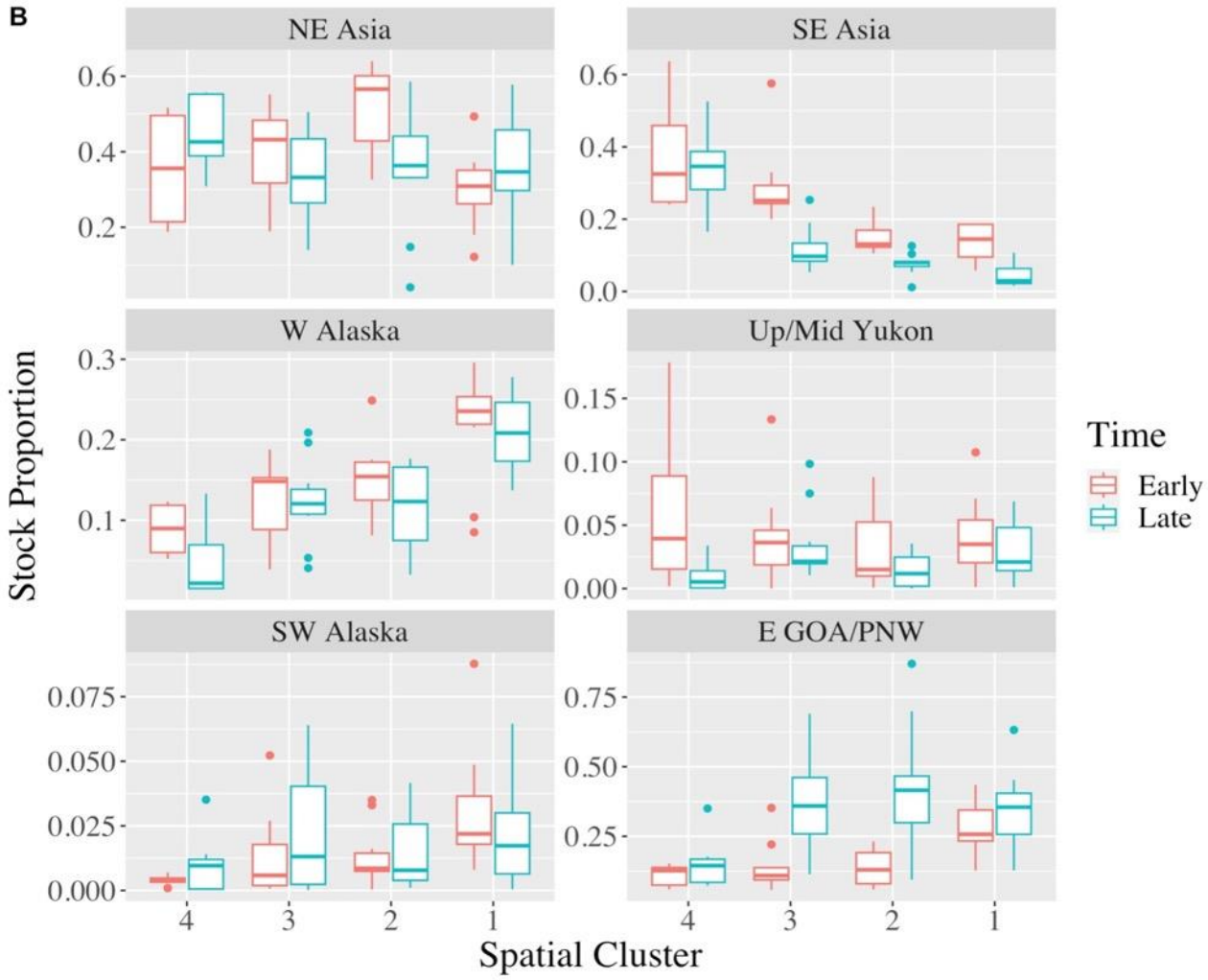
# Years Colored



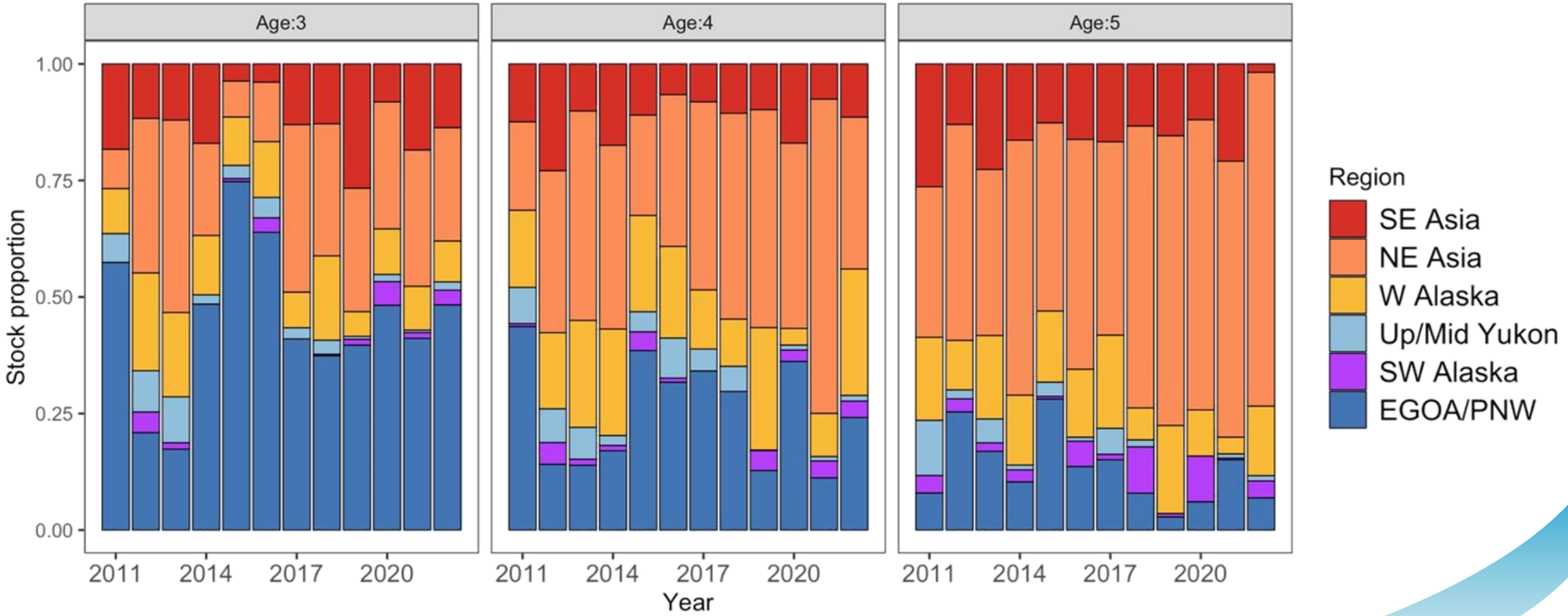
# Spatial Distribution with Sea Surface Temperature



# Spatiotemporal variation (2011-2022)



# Chum Ages

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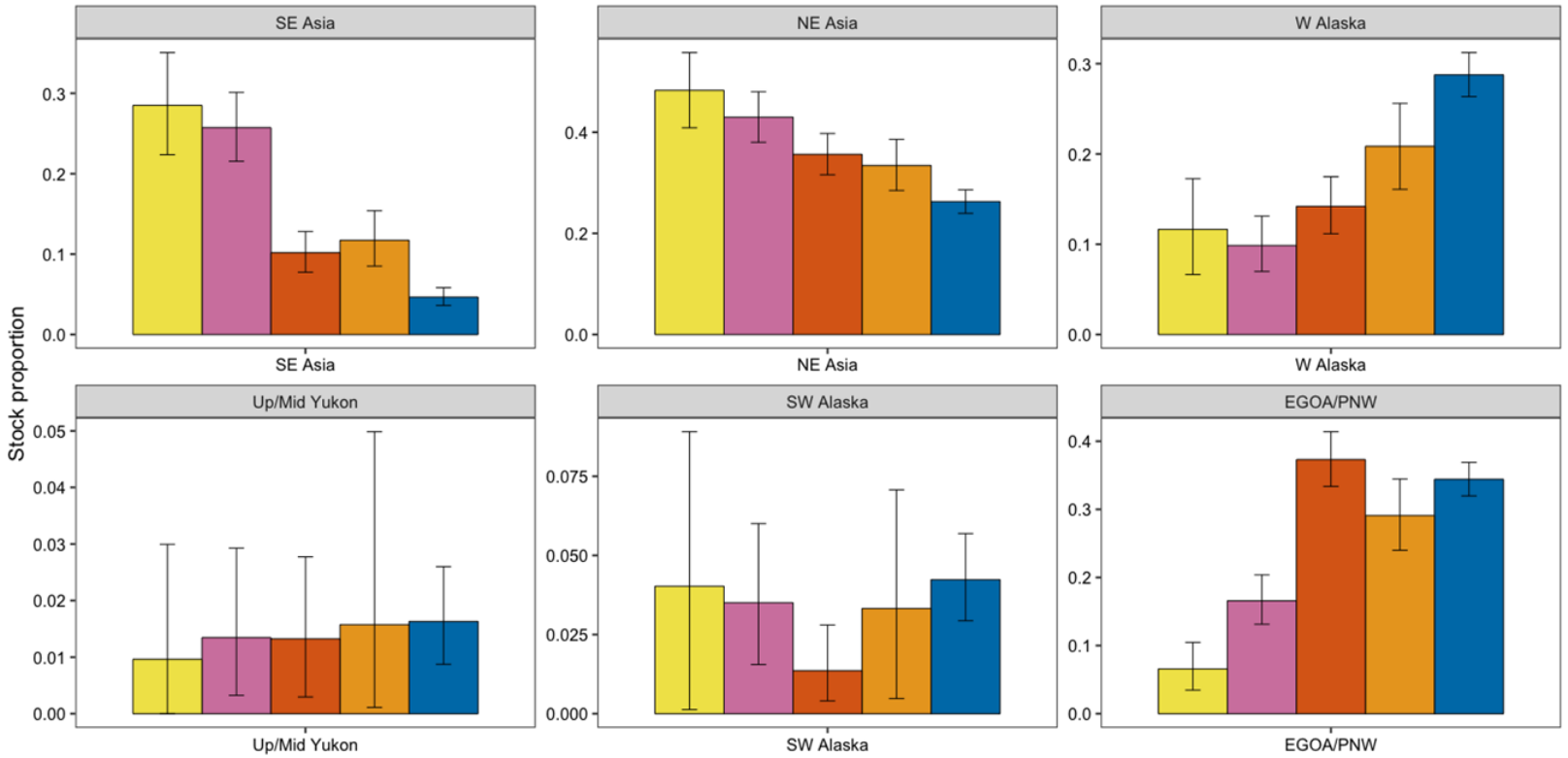
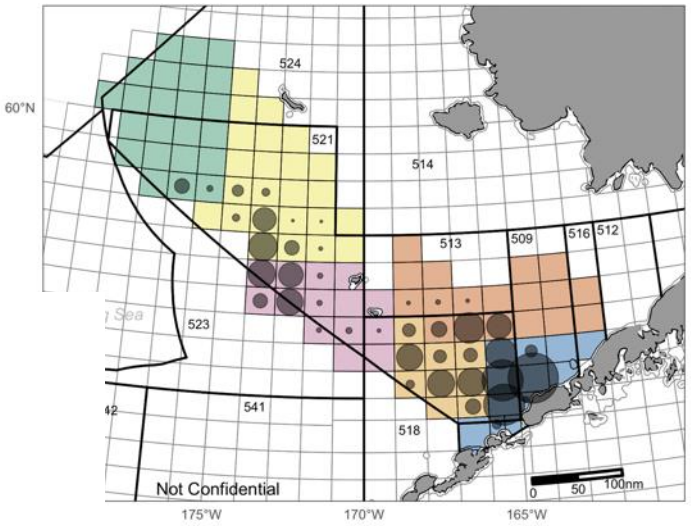
# Fishing Grounds 2022




Fishing Grounds
- Zhemchug_Canyon
- Pribilofs
- Shelf_edge
- Shelf
- Unimak_Area

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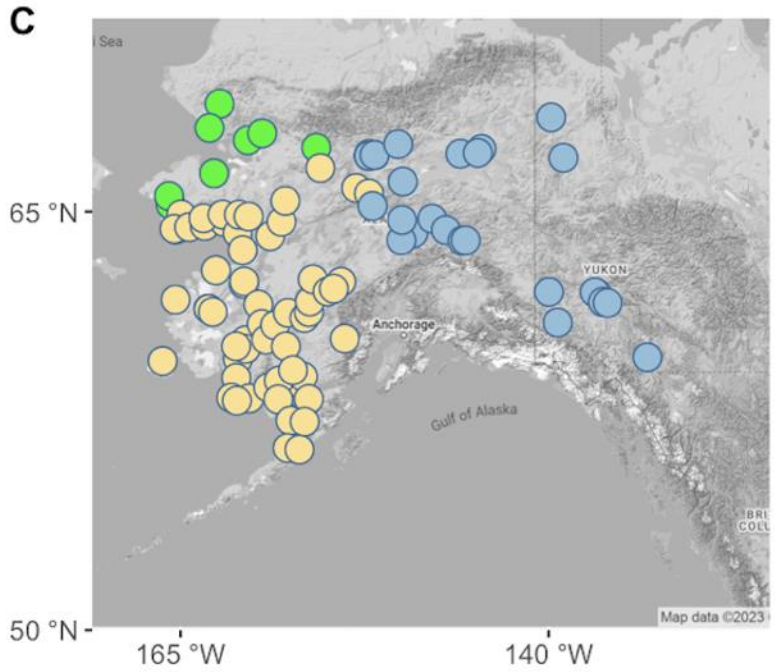
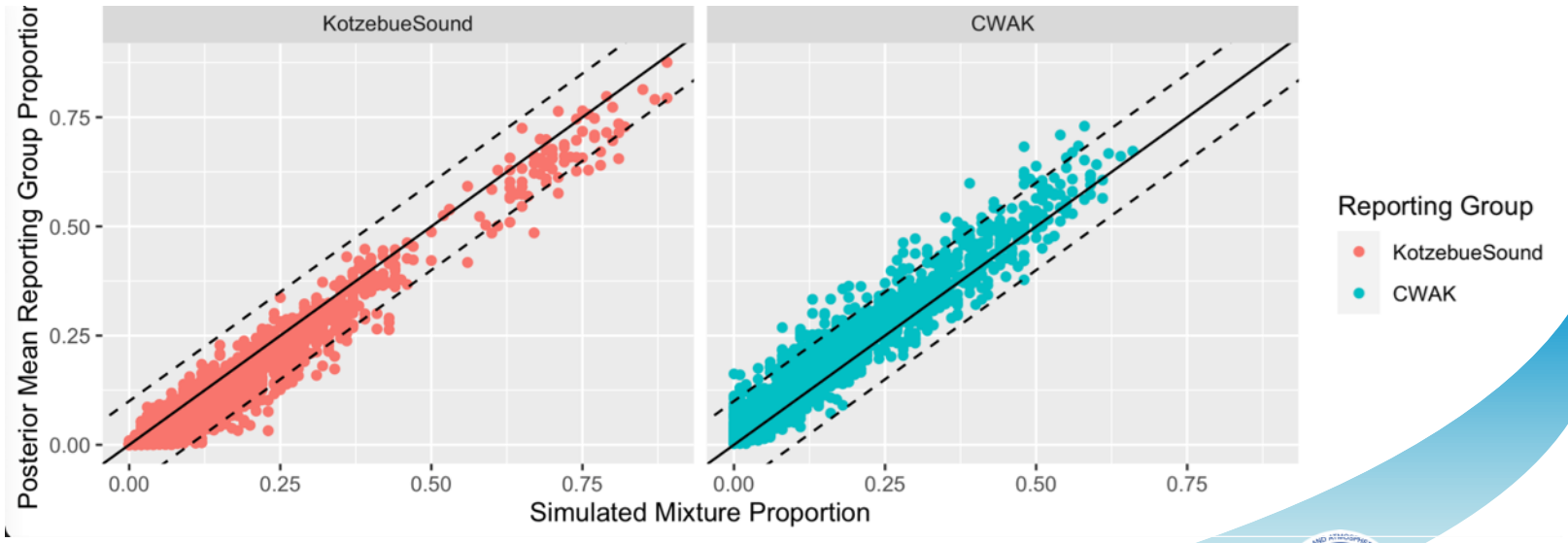
# Kotzebue Sound Analysis

Kotzebue Sound is slightly biased low

CWAK absorbs the misassigned KS fish

Breaking it out, we will unlikely overestimate contribution of KS



# Kotzebue Sound 2020-2022 B-season