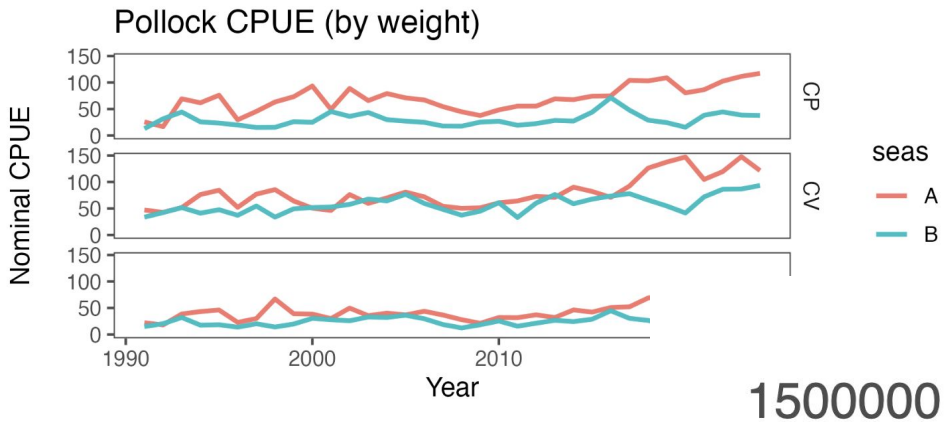
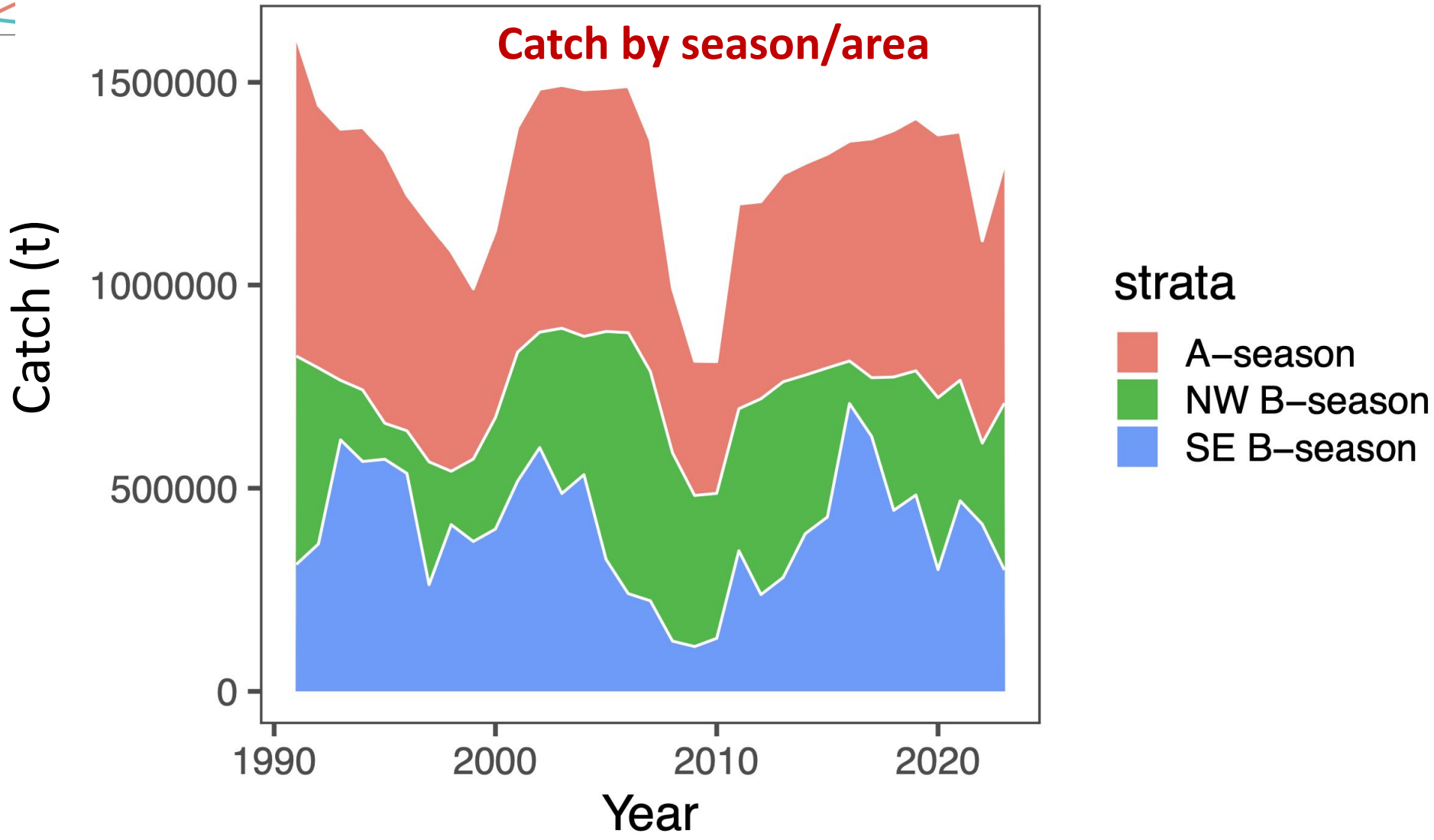
Eastern Bering Sea pollock stock assessment

Jim Ianelli, Taina Honkalehto, Sophia Wassermann, Abigail McCarthy, Sarah Stienessen, Carey McGilliard, Elizabeth Siddon

Alaska Fisheries Science Center

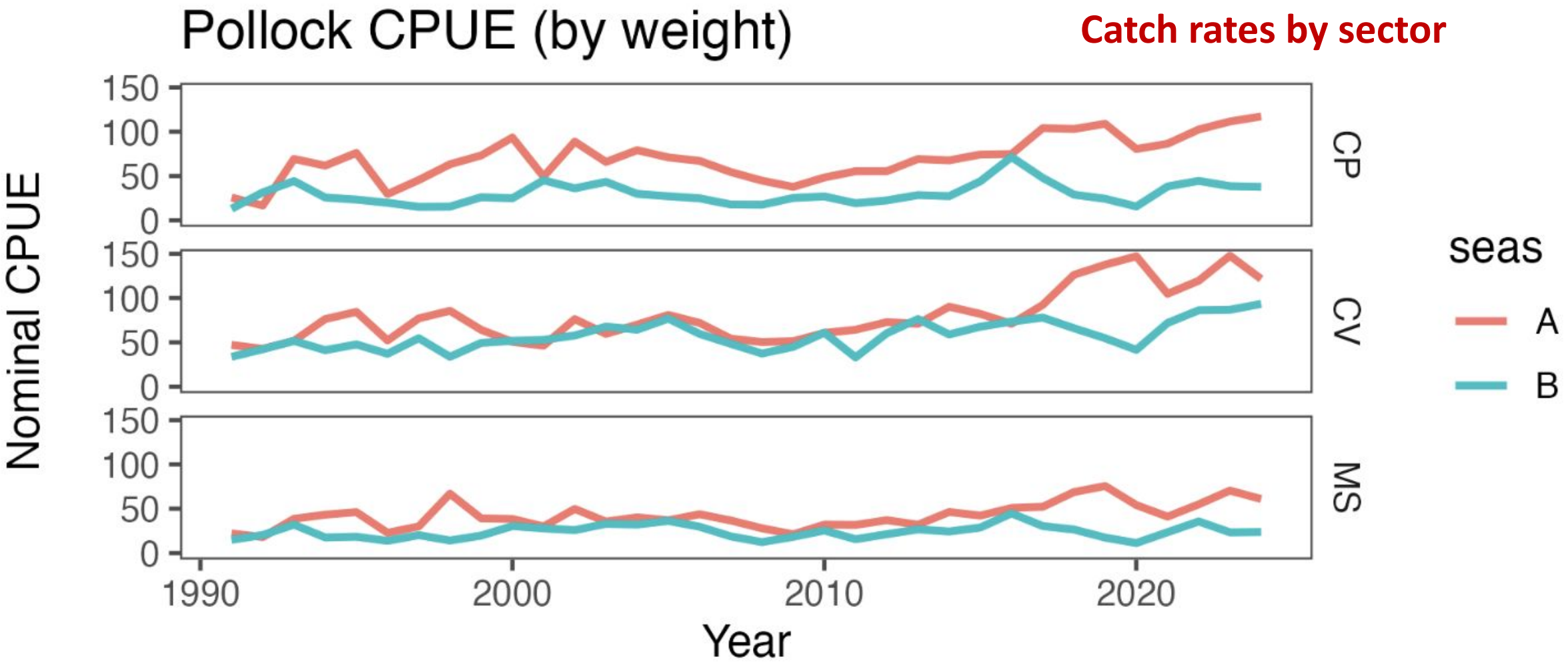
Fishing conditions

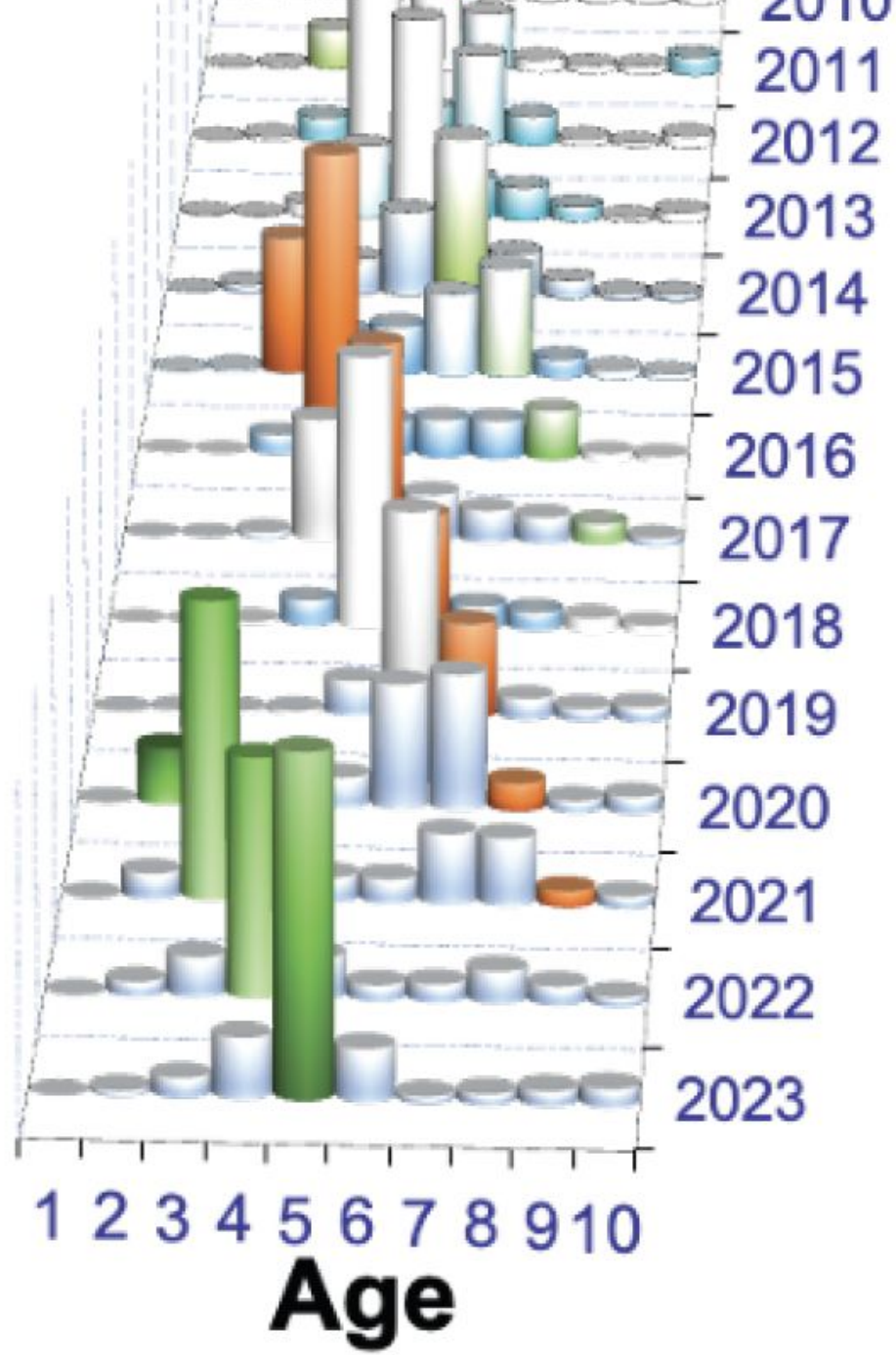




Fishing conditions

Catch rates by sector

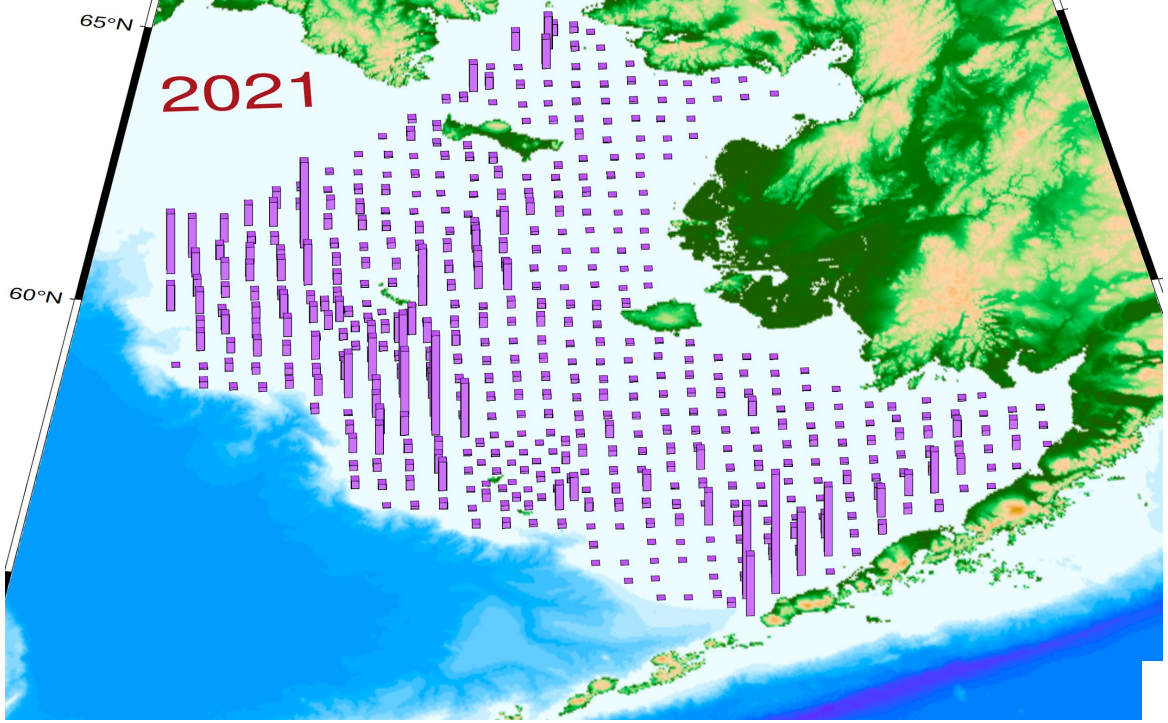


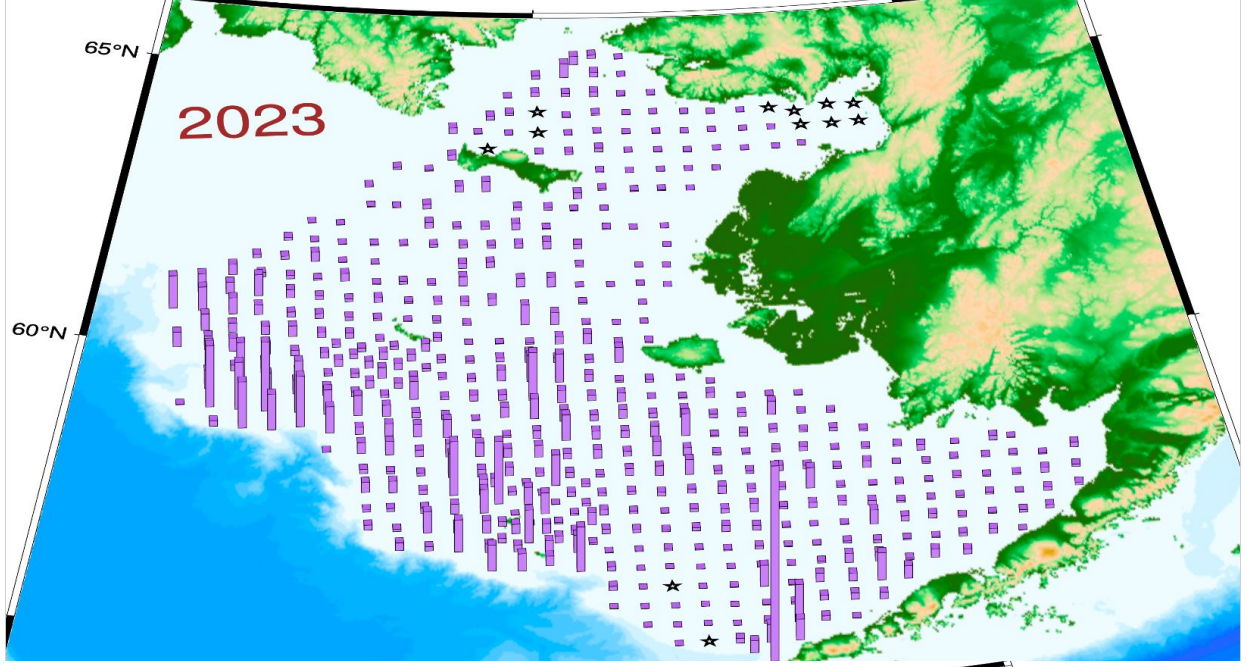

2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
2023
1 2 3 4 5 6 7 8 9 10
Age

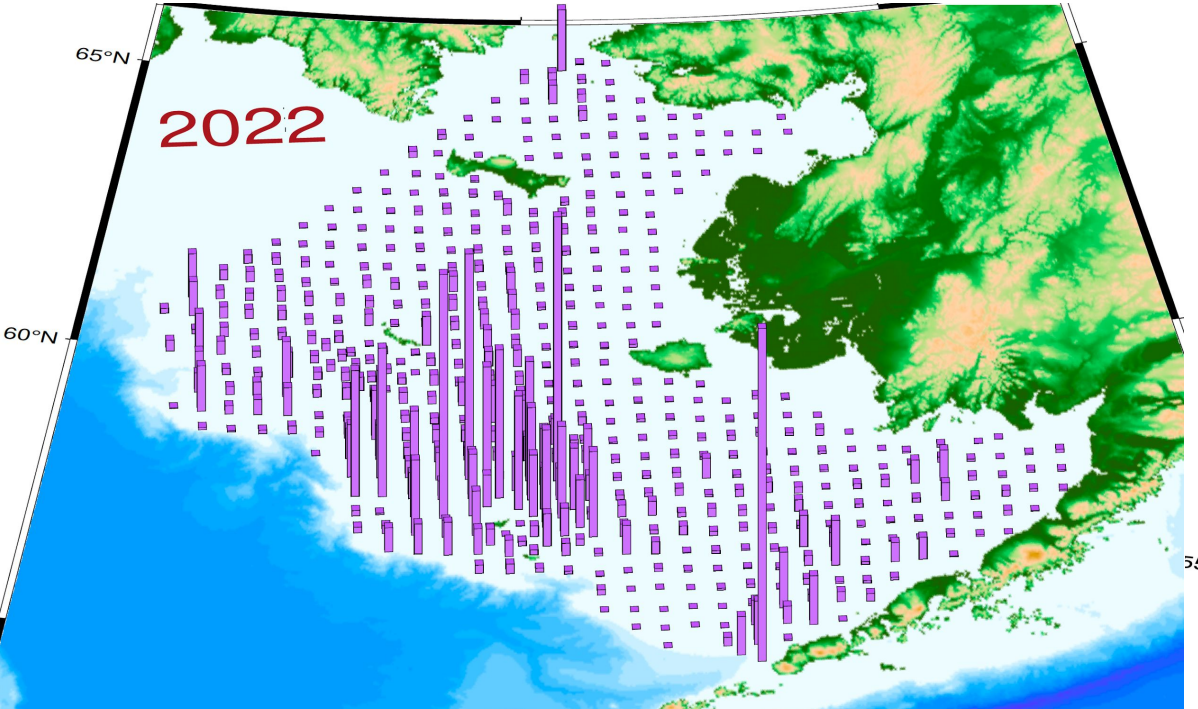
Survey work

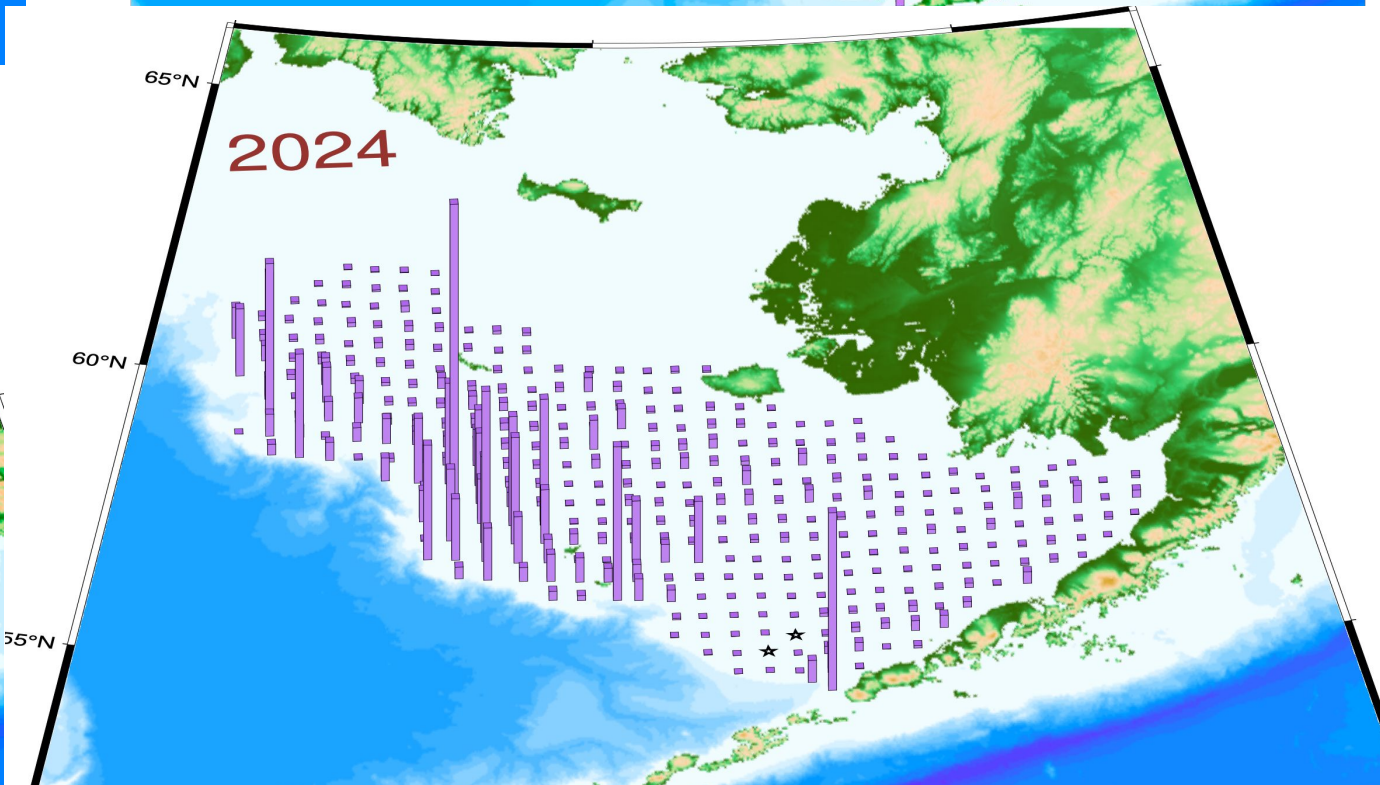
FV *Alaska Knight*
2010-present
12th year

FV *Northwest Explorer*
2023
1st year

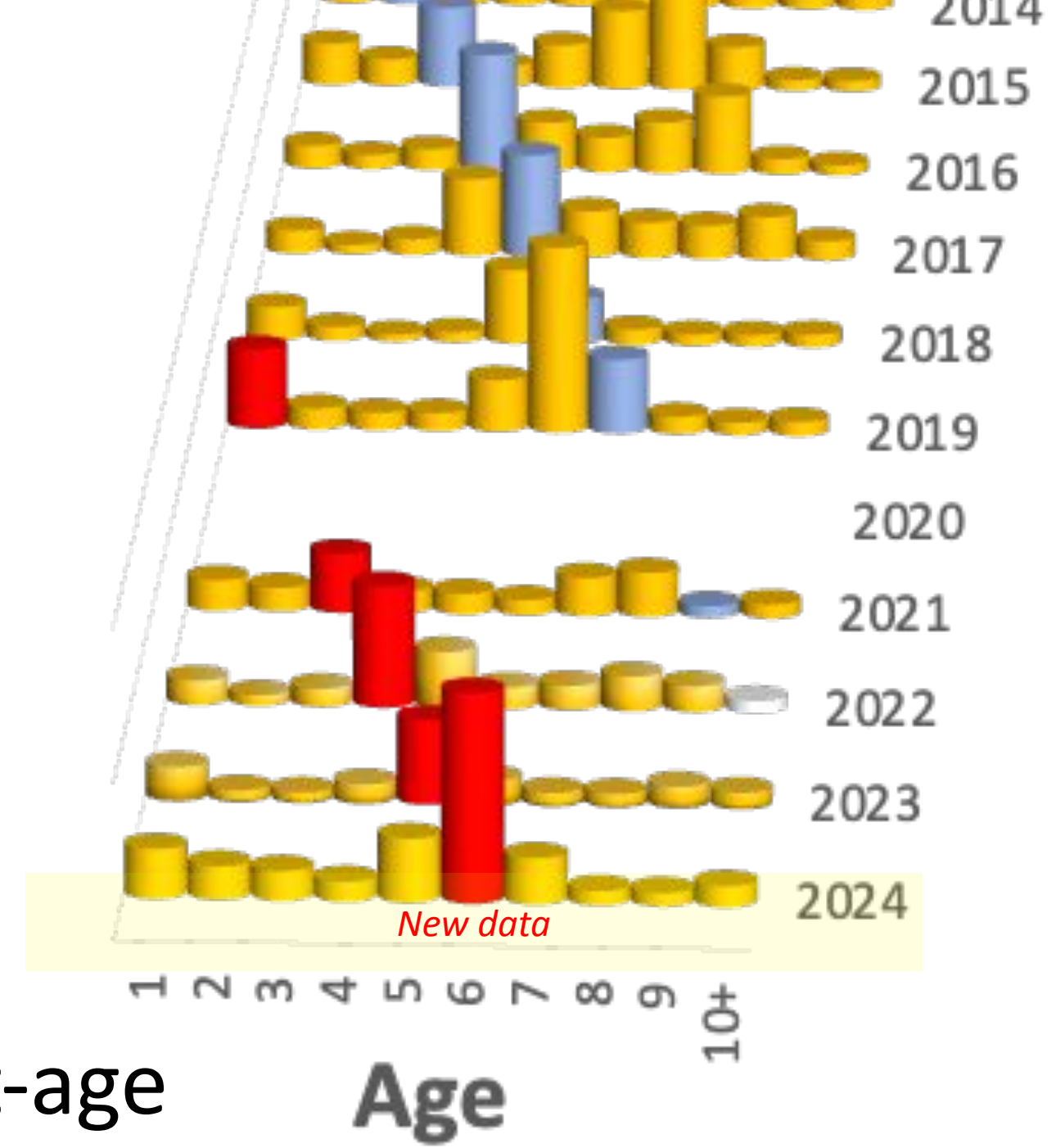

65°N
60°N
2021


65°N
60°N
2023

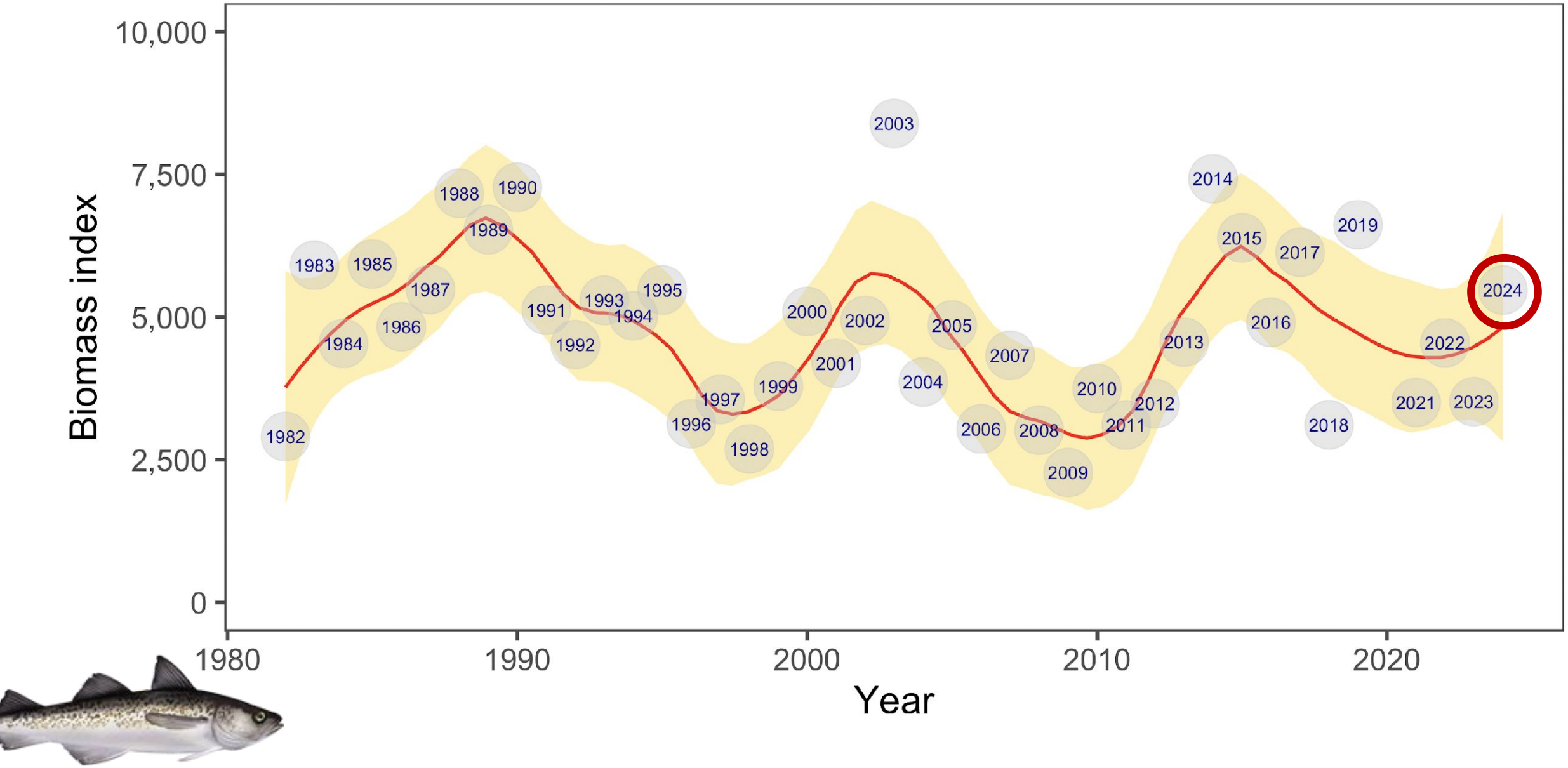

65°N
60°N
2022


65°N
60°N
2024

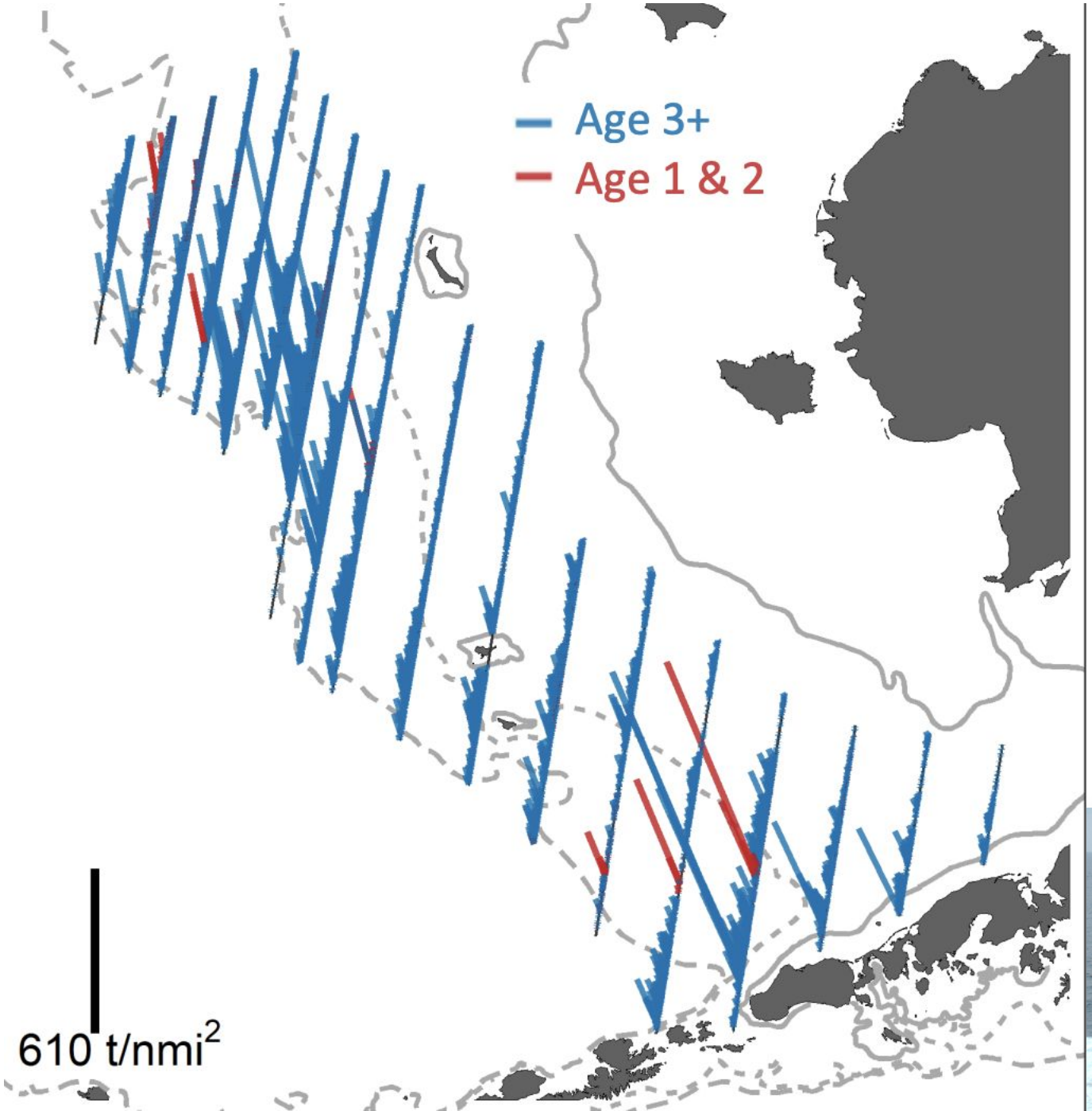
Survey abundance-at-age



E. Bering Sea bottom trawl survey

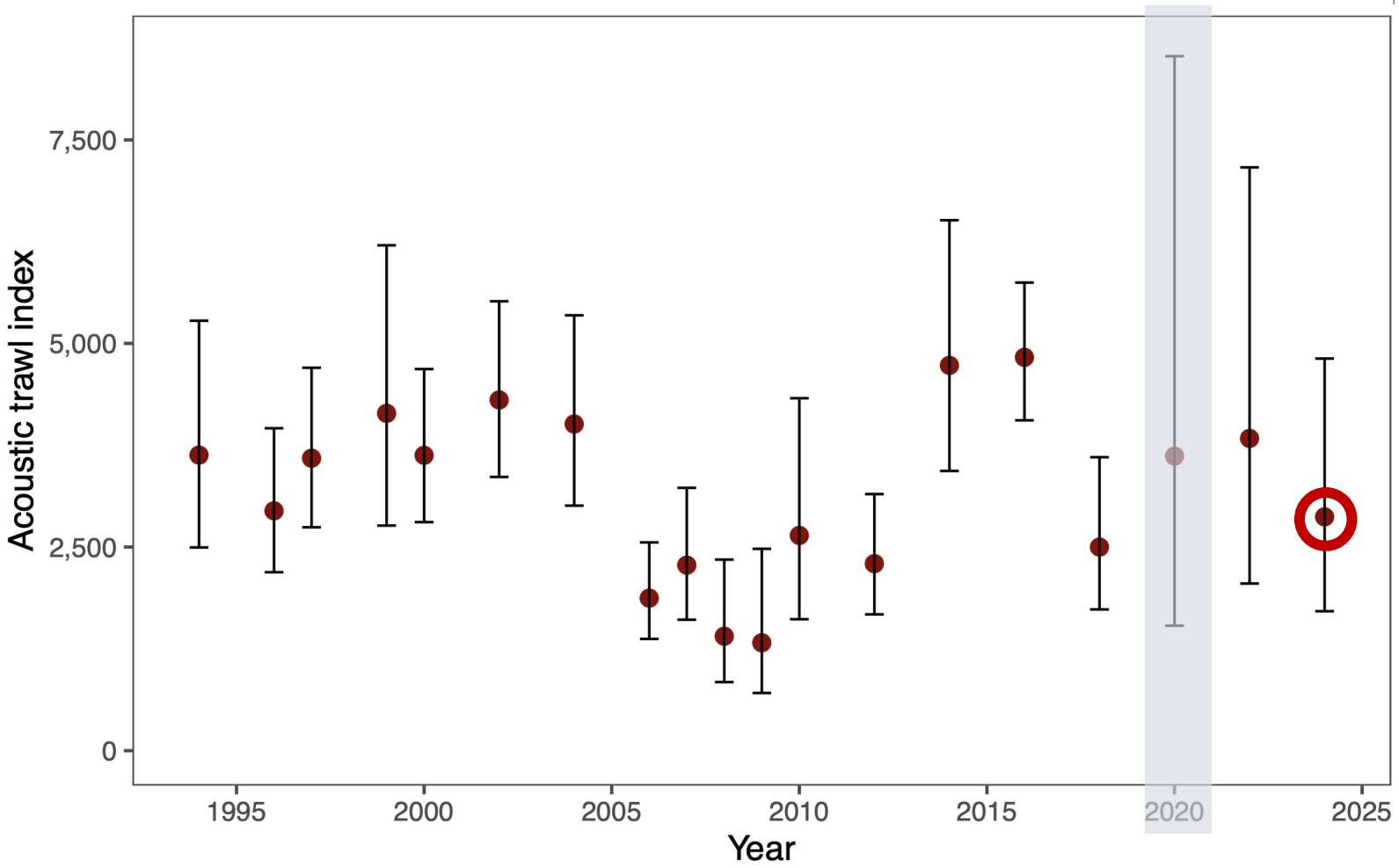


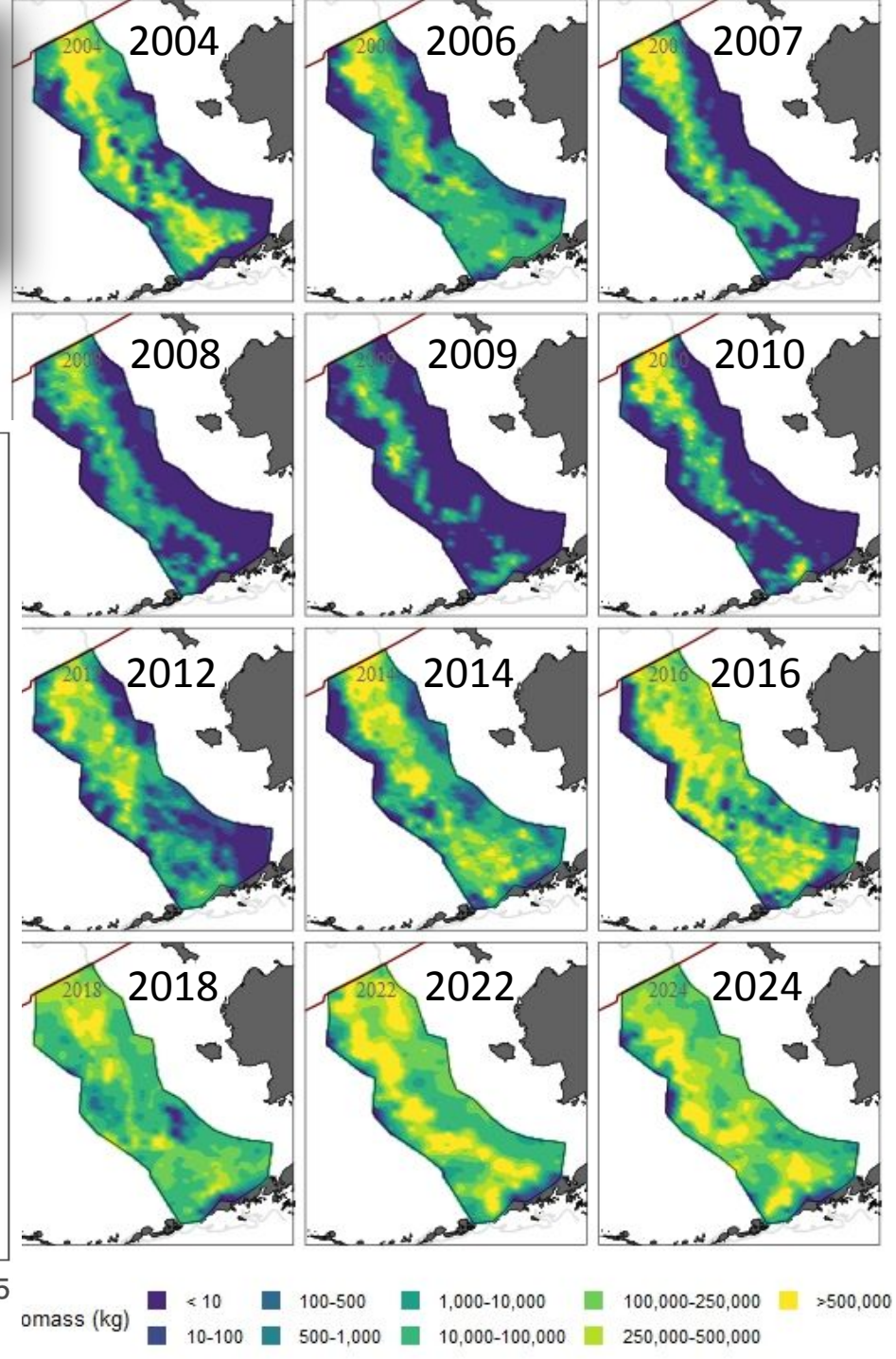
Acoustic survey-NOAA Ship



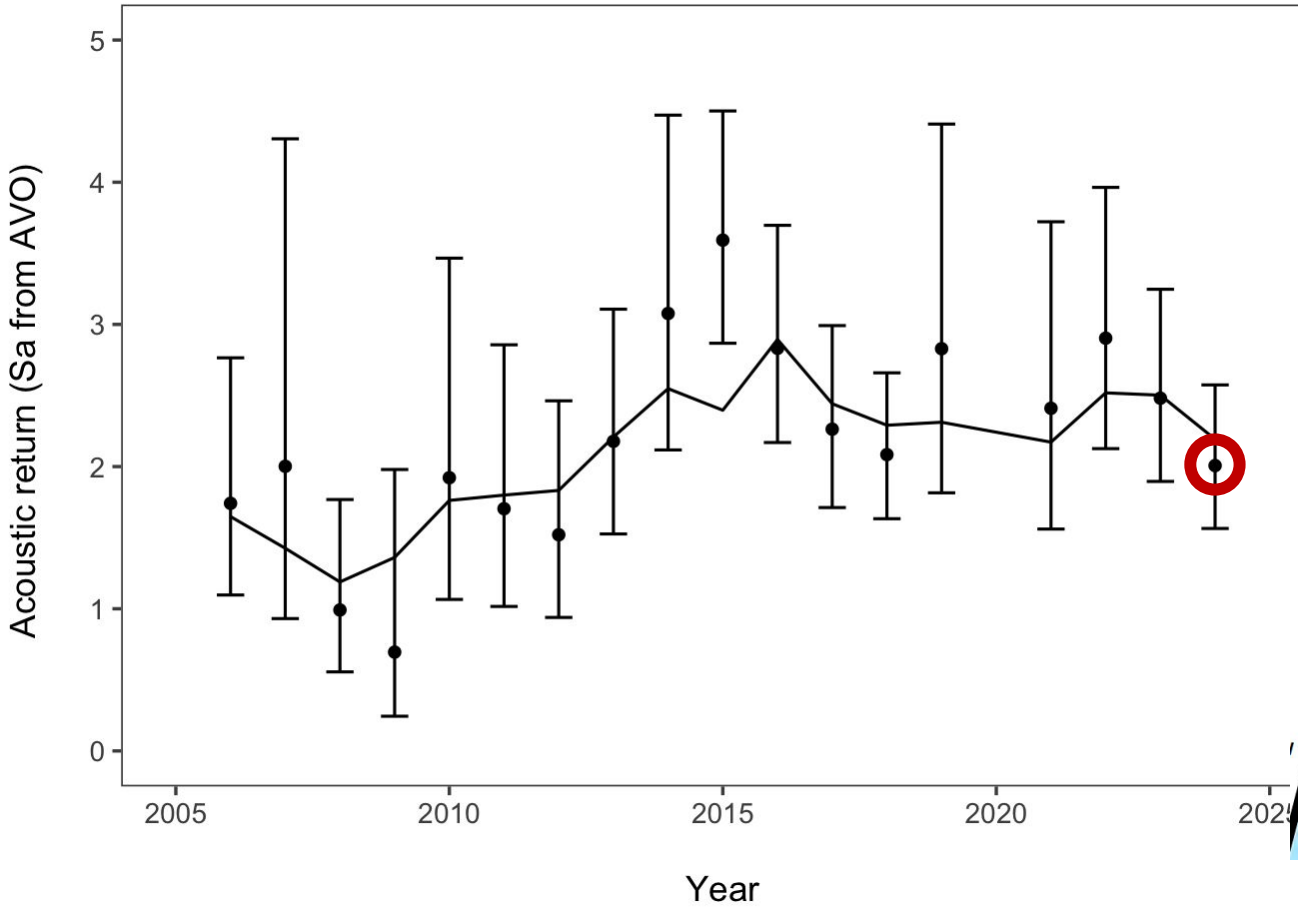
New survey this summer

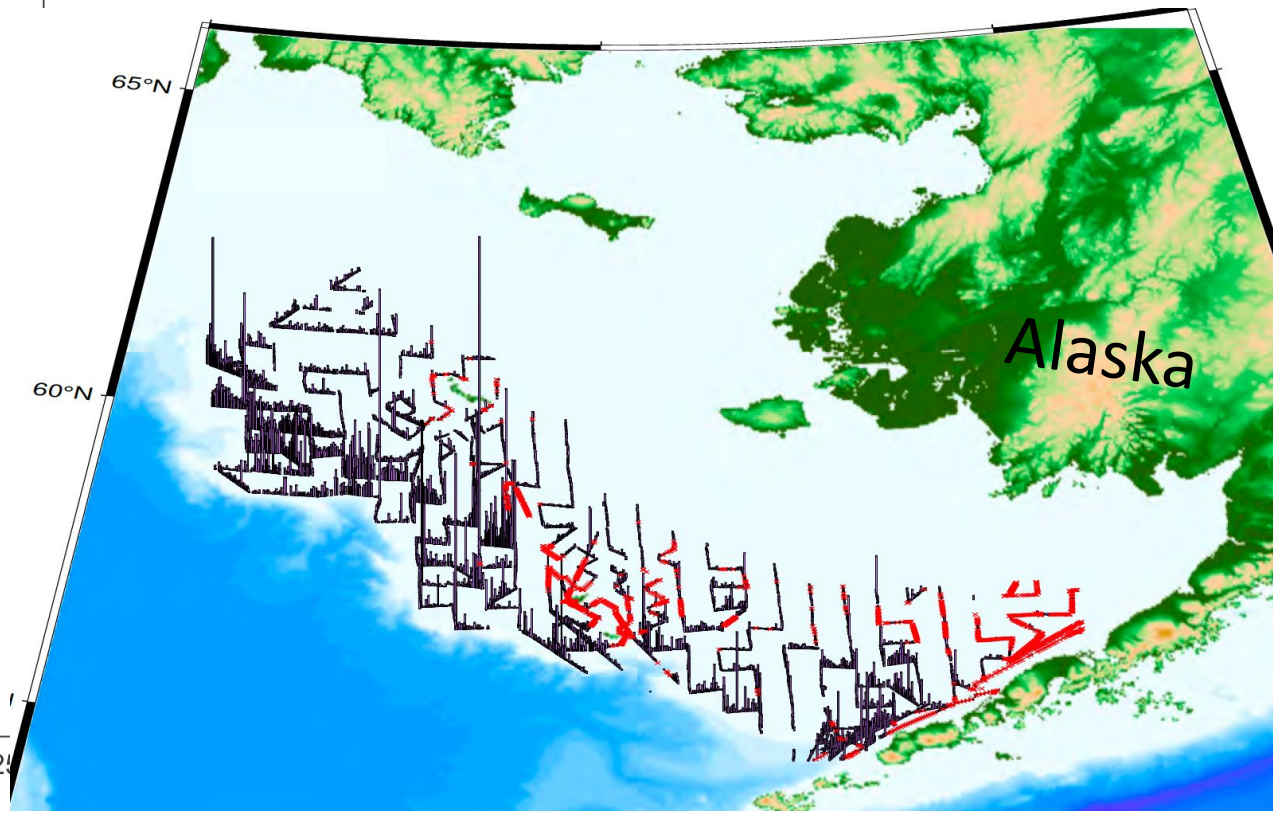
Acoustic-trawl survey (ATS)

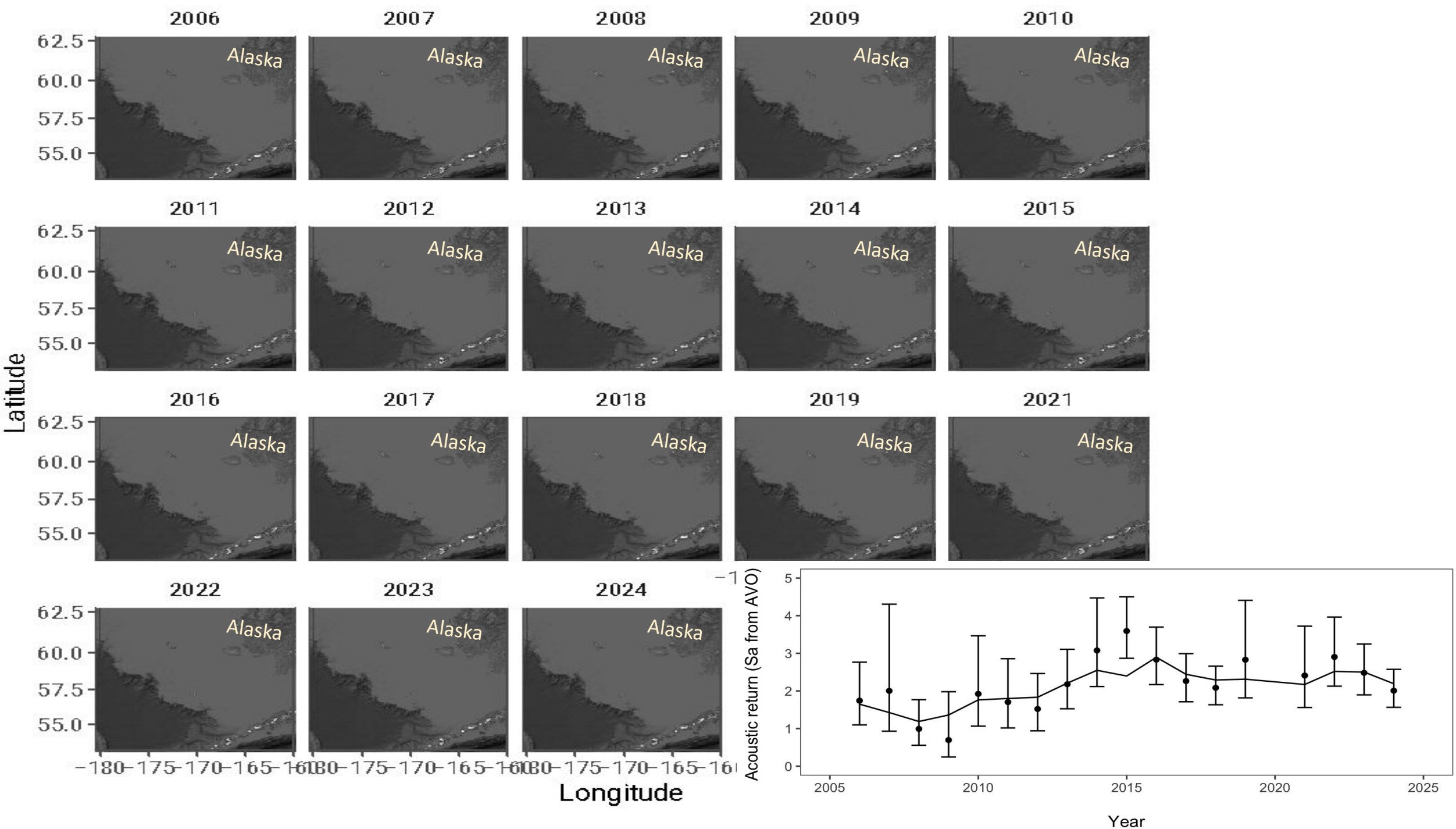




Opportunistic acoustic survey results

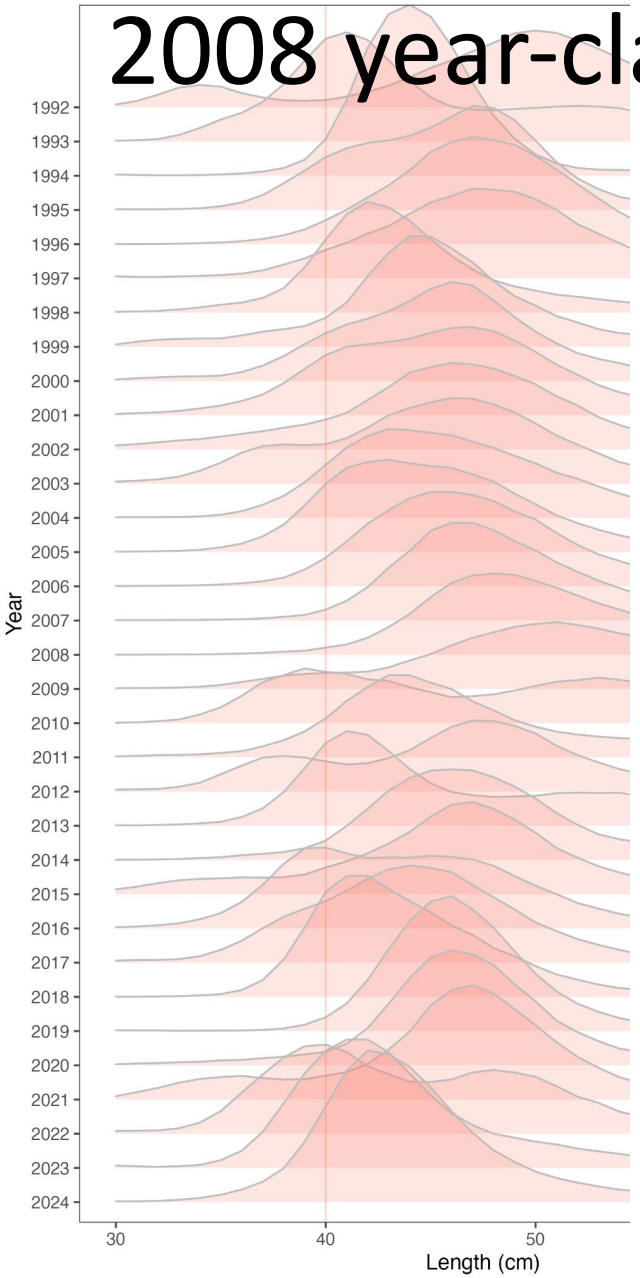


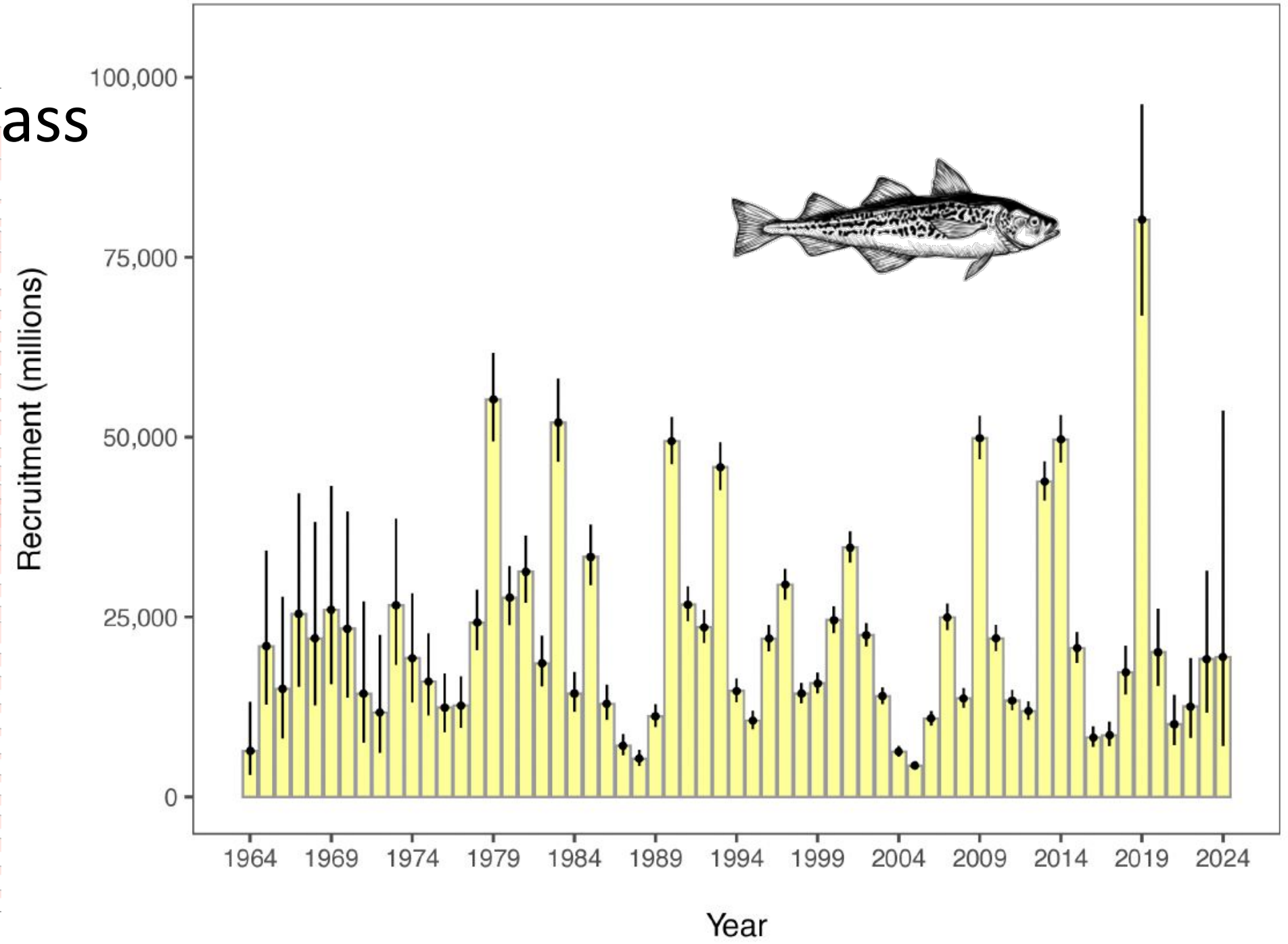



2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2021
2022
2023
2024
Alaska
62.5
60.0
57.5
55.0
Latitude
−180
−175
−170
−165
Longitude
Acoustic return (Sa from AVO)
0
1
2
3
4
5
2005
2010
2015
2020
2025
Year

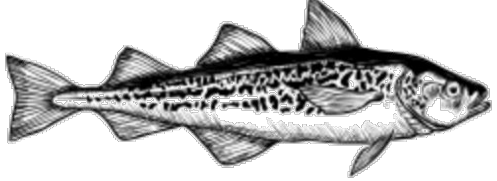
EBS Pollock

2008 year-class

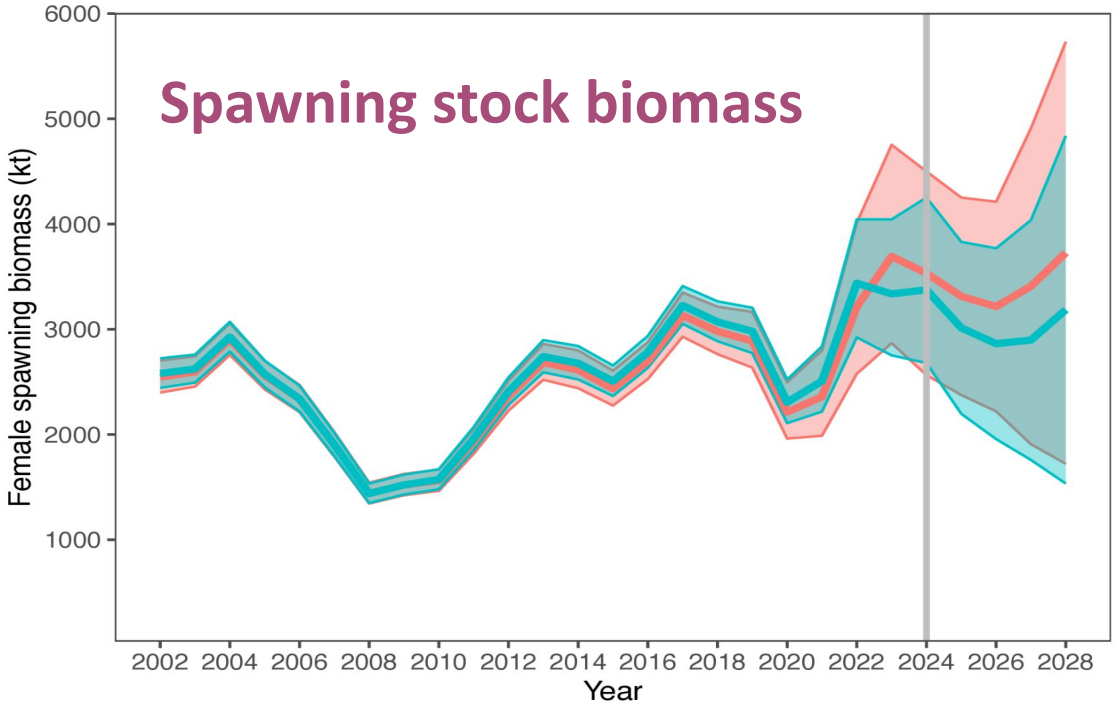


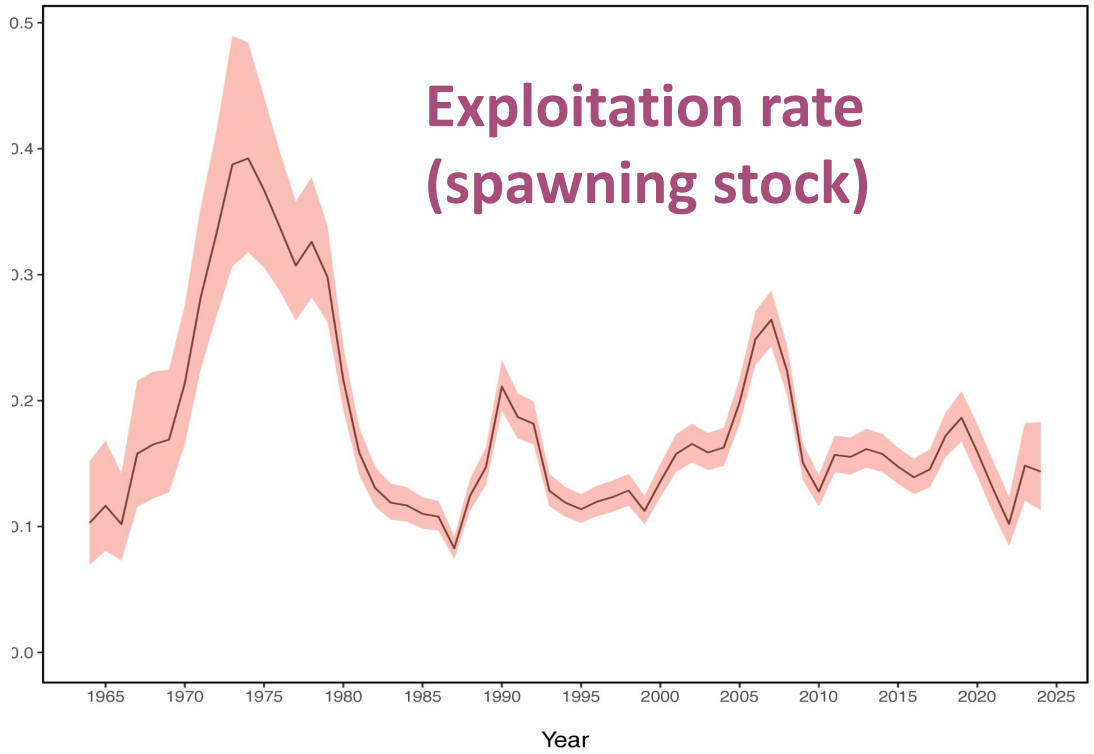


EBS Pollock



Stock status



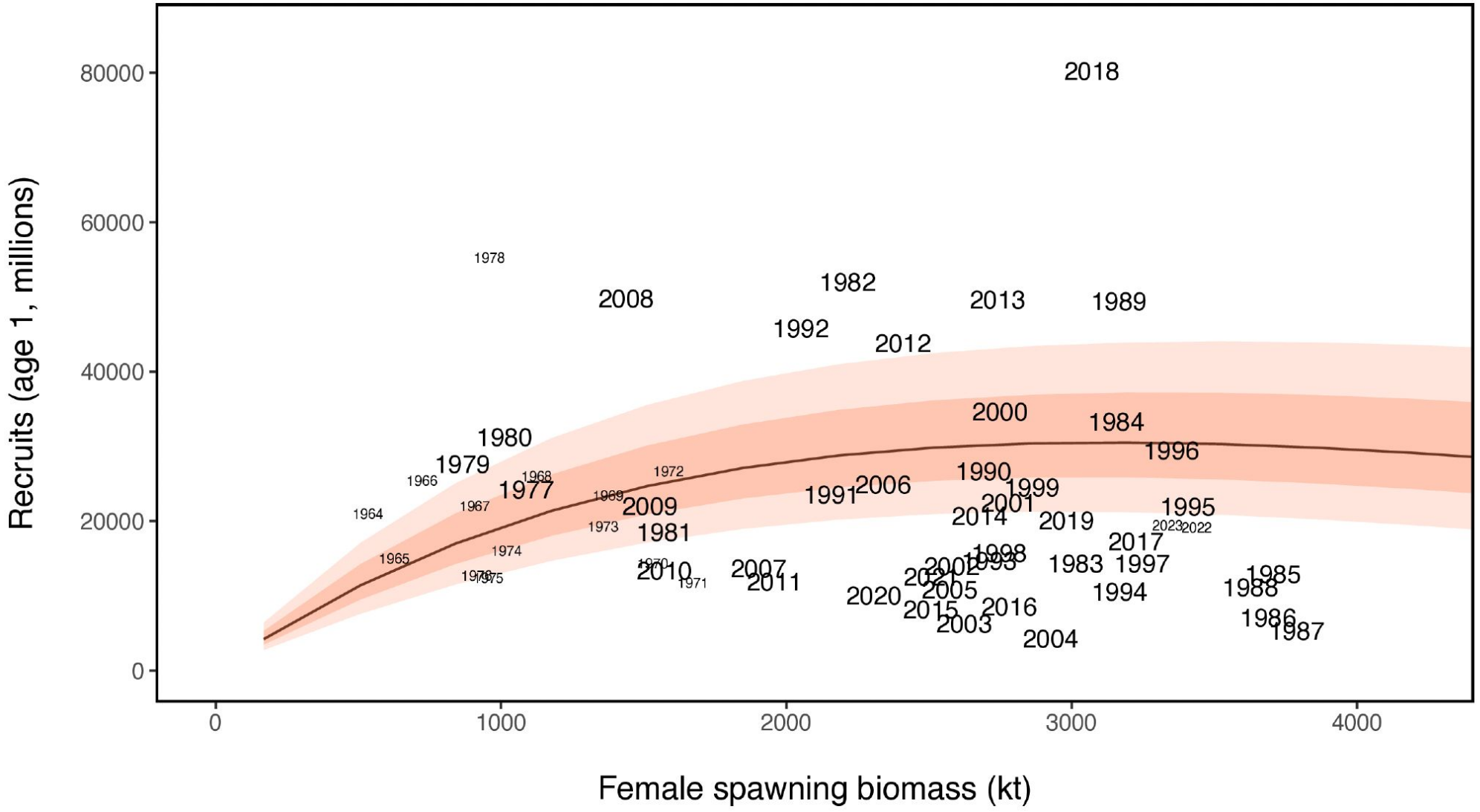


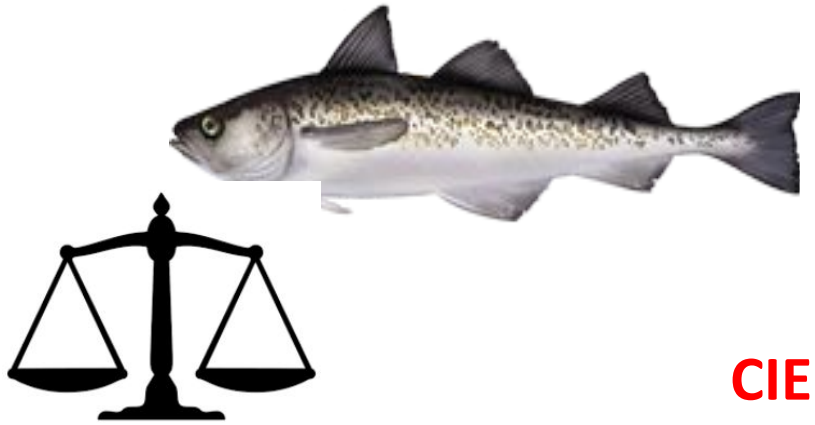
Summary

Aspects of SRR suggest Tier 3 more appropriate

- No fault of data extent, rather historical stock and recruitment estimates uninformative
- Tier 1
  - Relies on priors (F_{MSY}~$F_{35\%}$)
  - Production aspect near origin on limited observations
  - Risk aversion basis depends on uncertainty (pdf)
  - Tier 2 has same issues related to SRR

Stock recruitment relationship needed for Tier 1





CIE review coming 1st half of 2025

Tier 3 more appropriate?

- No fault of data extent, rather historical stock and recruitment estimates uninformative
- Tier 1
  - Relies on priors (F_{MSY}~$F_{35\%}$)
  - Production aspect near origin on limited observations
  - Risk aversion basis depends on uncertainty (pdf)
- Tier 2
  - Still relies on SRR / steepness at origin

Tier 1 version

	As estimated or *specified last* year for:		As estimated or *recommended this* year for:	
Quantity	2024	2025	2025	2026
M (natural mortality rate, ages 3+)	0.3	0.3	0.3	0.3
Tier	1a	1a	1a	1a
Projected total (age 3+) biomass (t)	10,184,000 t	9,437,000 t	8,526,000 t	8,075,000 t
Projected female spawning biomass (t)	3,518,000 t	3,255,000 t	3,118,000 t	3,342,000 t
B_0	6,728,000 t	6,728,000 t	5,975,000 t	5,975,000 t
B_{msy}	2,689,000 t	2,689,000 t	2,310,000 t	2,310,000 t
F_{OFL}	0.422	0.422	0.523	0.523
$maxF_{ABC}$	0.379	0.379	0.443	0.443
F_{ABC}	0.33	0.33	0.402	0.402
OFL	3,162,000 t	3,449,000 t	4,383,000 t	3,785,000 t
$maxABC$	2,837,000 t	3,095,000 t	3,715,000 t	3,209,000 t
ABC	2,313,000 t	2,401,000 t	2,417,000 t	2,036,000 t
Status	2022	2023	2023	2024
Overfishing	No	n/a	No	n/a
Overfished	n/a	No	n/a	No
Approaching overfished	n/a	No	n/a	No

Tier 3 version

	As estimated or *specified last* year for:		As estimated or *recommended this* year for:	
Quantity	2024	2025	2025	2026
M (natural mortality rate, ages 3+)	0.3	0.3	0.3	0.3
Tier	1a	1a	3a	3a
Projected total (age 3+) biomass (t)	10,184,000 t	9,437,000 t	8,526,000 t	8,075,000 t
Projected female spawning biomass (t)	3,518,000 t	3,255,000 t	3,118,000 t	3,342,000 t
B_0	6,728,000 t	6,728,000 t	5,902,000 t	5,902,000 t
B_{msy}	2,689,000 t	2,689,000 t	2,066,000 t	2,066,000 t
F_{OFL}	0.422	0.422	0.513	0.513
$maxF_{ABC}$	0.379	0.379	0.394	0.394
F_{ABC}	0.33	0.33	0.394	0.394
OFL	3,162,000 t	3,449,000 t	2,957,000 t	2,496,000 t
$maxABC$	2,837,000 t	3,095,000 t	2,417,000 t	2,036,000 t
ABC	2,313,000 t	2,401,000 t	2,417,000 t	2,036,000 t
Status	2022	2023	2023	2024
Overfishing	No	n/a	No	n/a
Overfished	n/a	No	n/a	No
Approaching overfished	n/a	No	n/a	No