



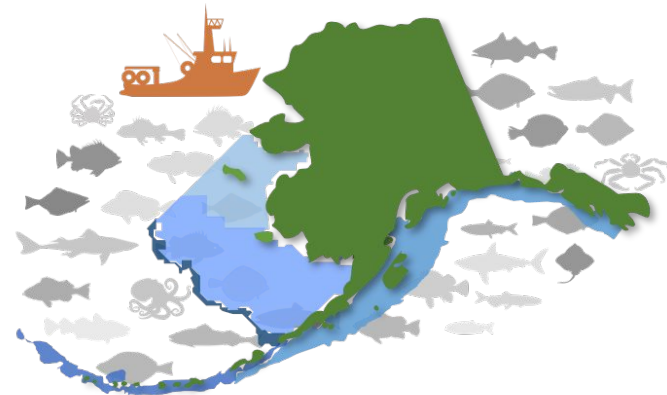
**NOAA
FISHERIES**

Results of the 2024 Eastern Bering Sea Bottom Trawl Survey

**Emily Markowitz, Sean Rohan,
Nicole Charriere, Chris Anderson,
Sophia Wassermann, and Duane Stevenson**

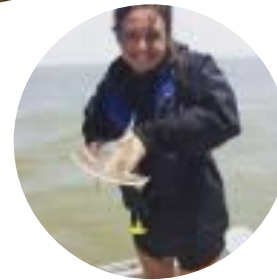
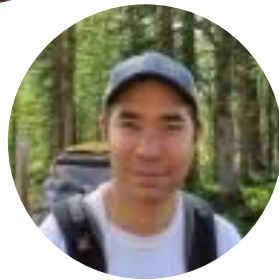
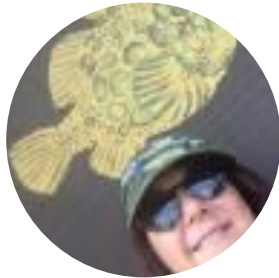
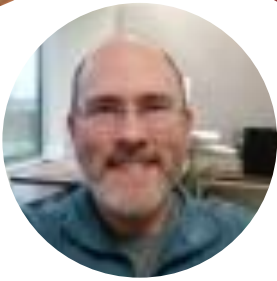
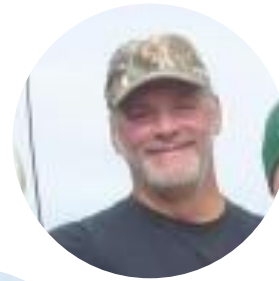
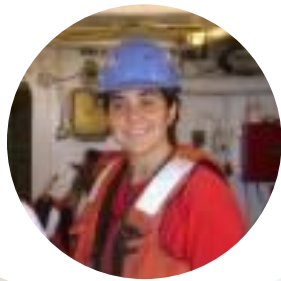
**Groundfish Assessment Program
RACE Division
Alaska Fisheries Science Center**

**Groundfish Plan Team Meeting
September 17, 2024**



NOAA FISHERIES

A Few of GAP's Team Members!



Outline

- Survey overview
- Environmental data
- Fish biomass data
- Additional research



Blepsias bilobus (crested sculpin)



Ptilichthys goodei (quillfish)

Survey Charter Vessels



FV Alaska Knight

2010-present

14th year



FV Northwest Explorer

2023-present

2nd year



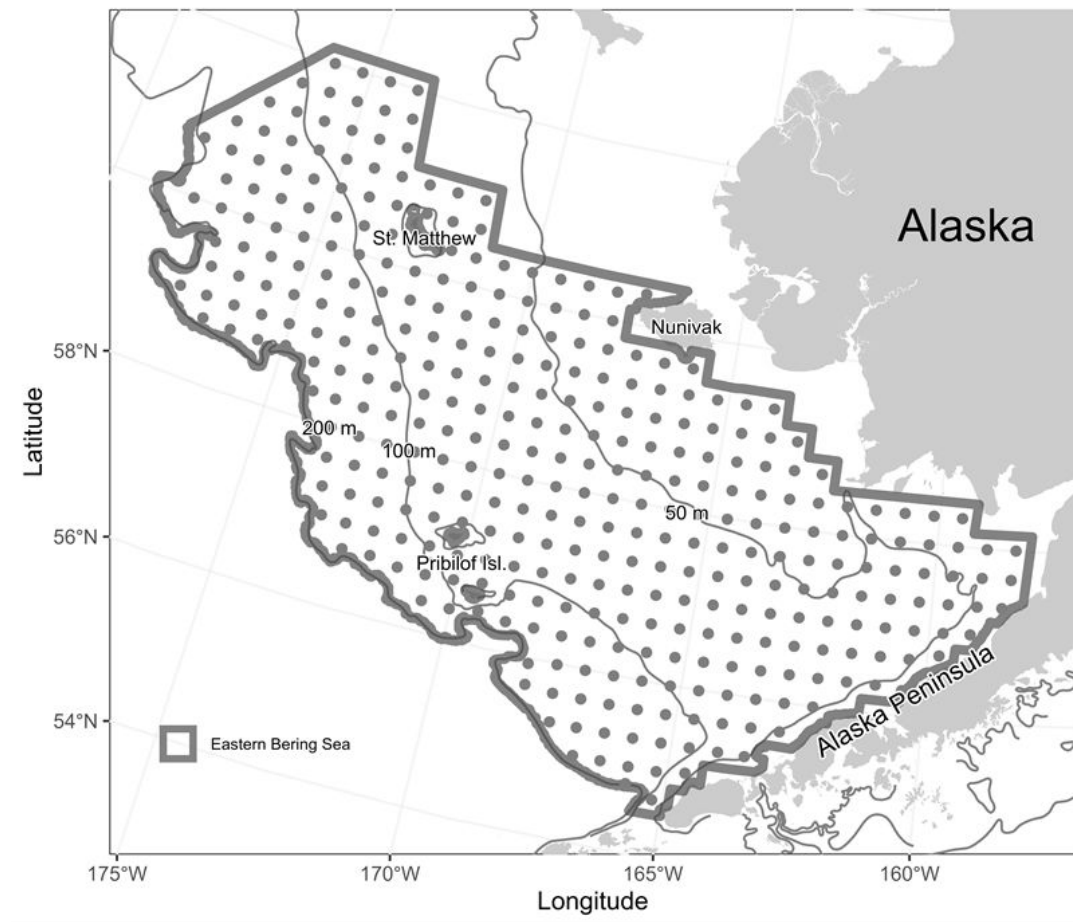
2024 Bering Sea Survey Season

Eastern Bering Sea (EBS):

- 42nd year of survey
1982-2024 sans 2020
- May 24 - August 20, 2024
- 350/350 stations sampled
- 26 corner stations removed
from sampling design

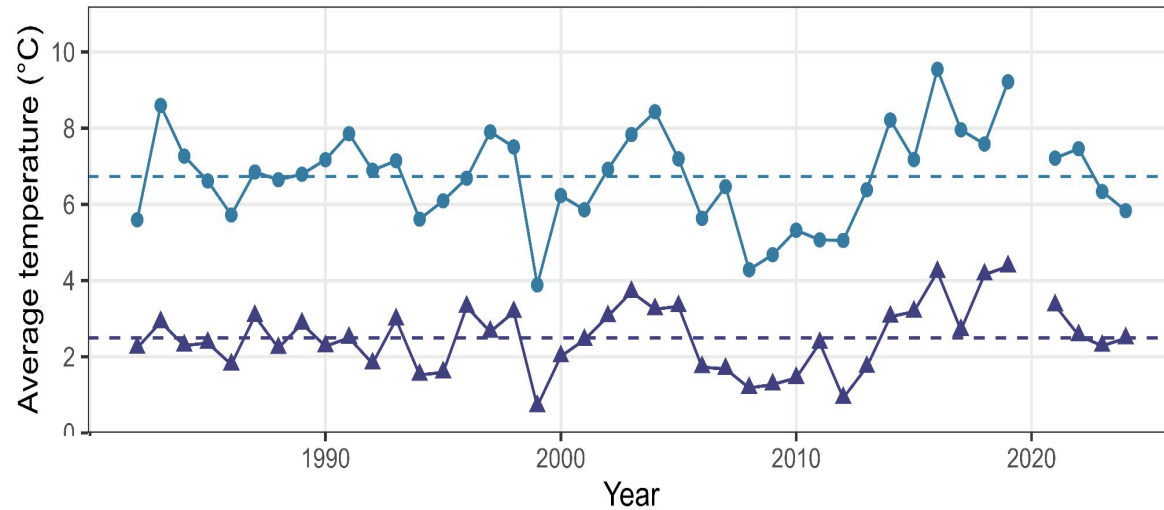
Northern Bering Sea (NBS):

- 6 years
2010, 2017, 2019, 2021, 2022, 2023
- No NBS survey in 2024



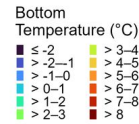
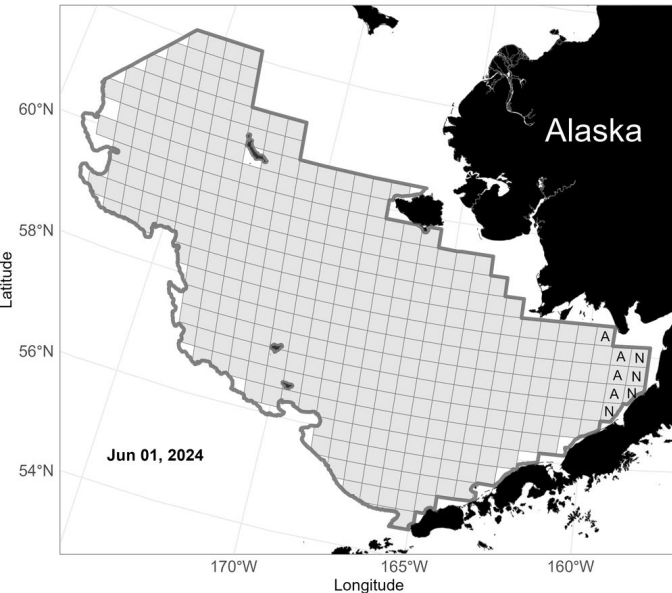
Annual Mean Temperature

Eastern Bering Sea



2024 Bottom Temperature (°C)

NOAA Fisheries Eastern Bering Sea Bottom Trawl Survey



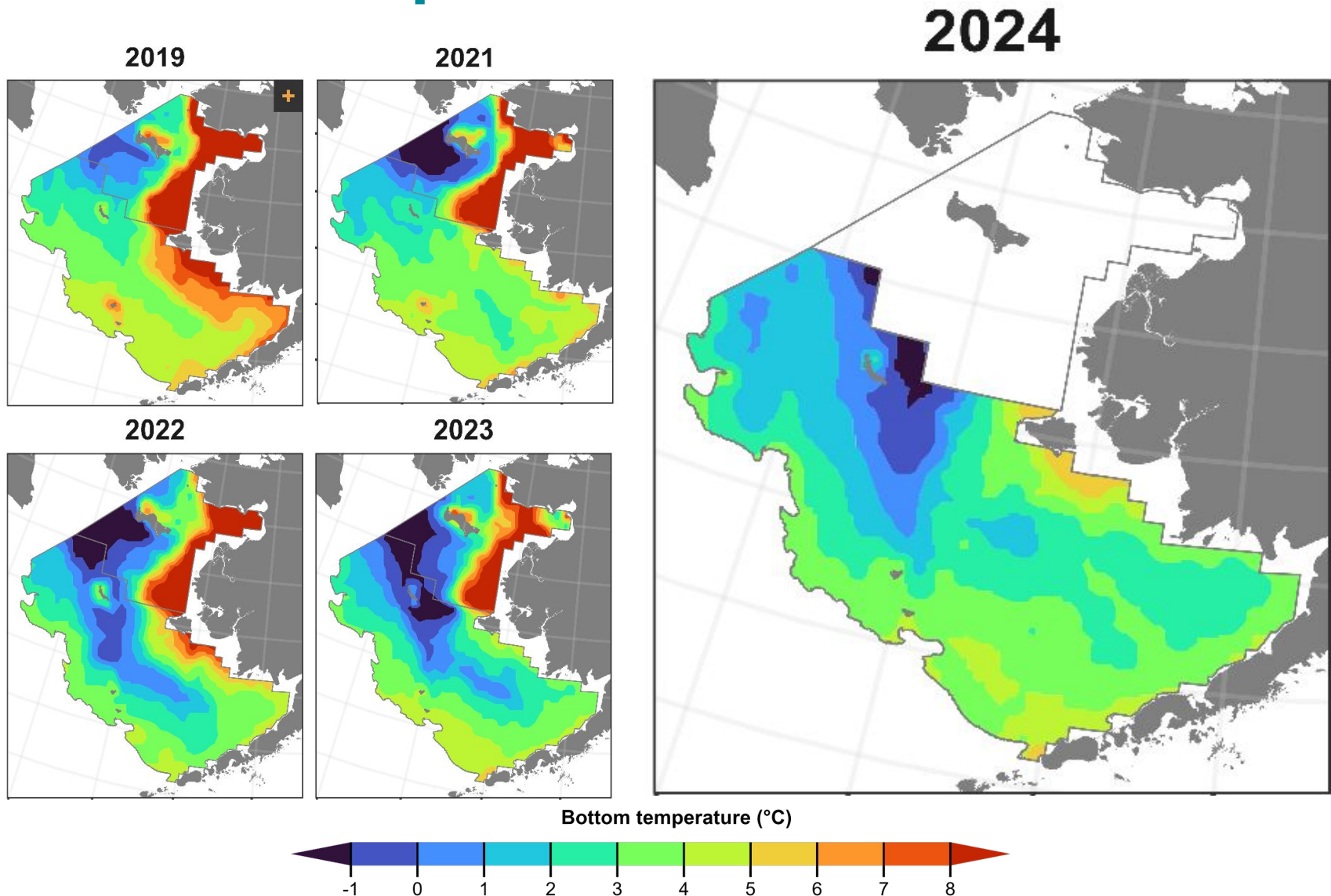
Survey Region
 Eastern Bering Sea
 (May 24 - Aug 20)

Planned Stations
 A F/V Alaska Knight
 (Jun 02)
 N F/V Northwest Explorer
 (Jun 02)

● Surface ▲ Bottom

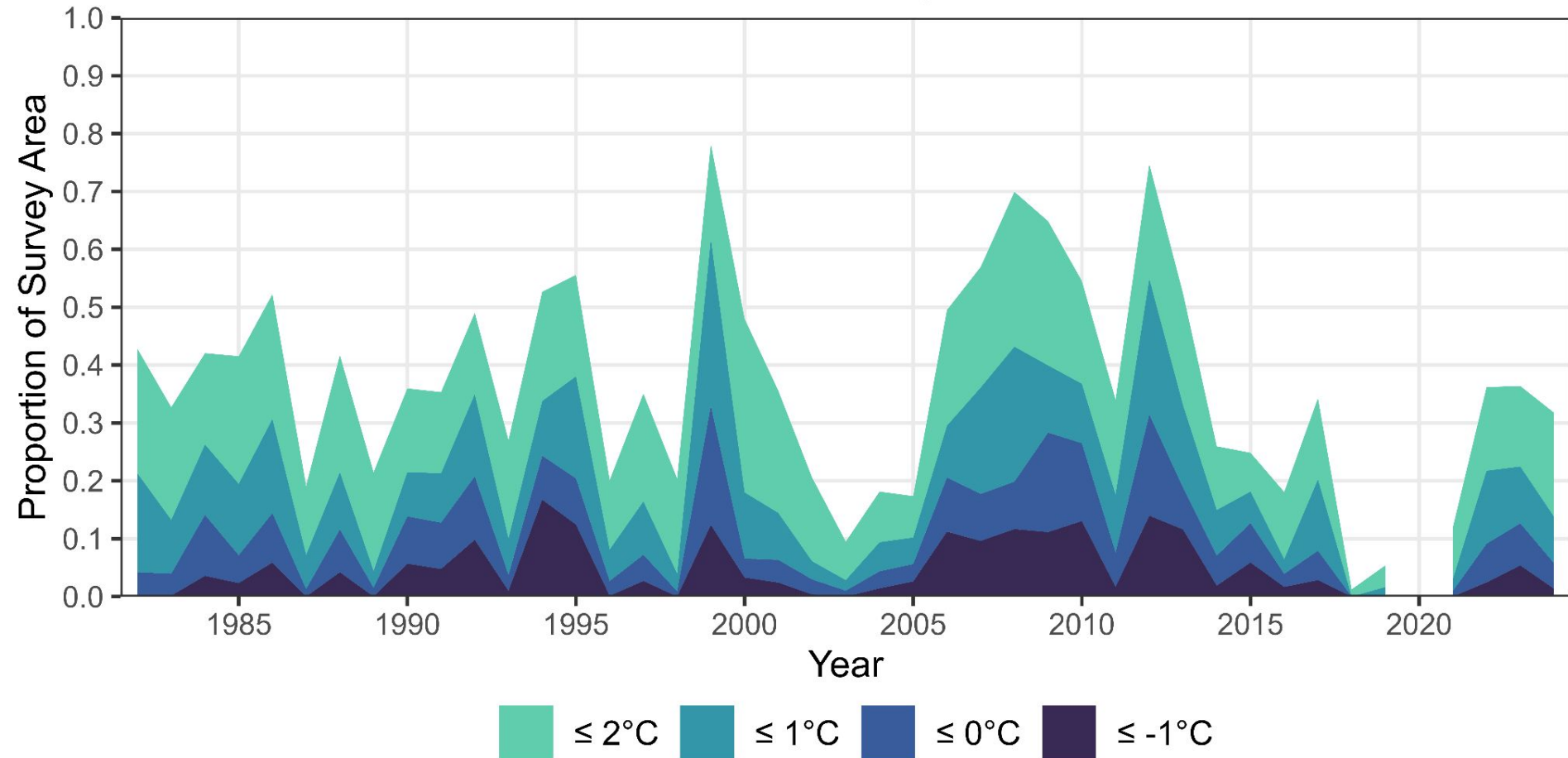


Bottom Temperatures



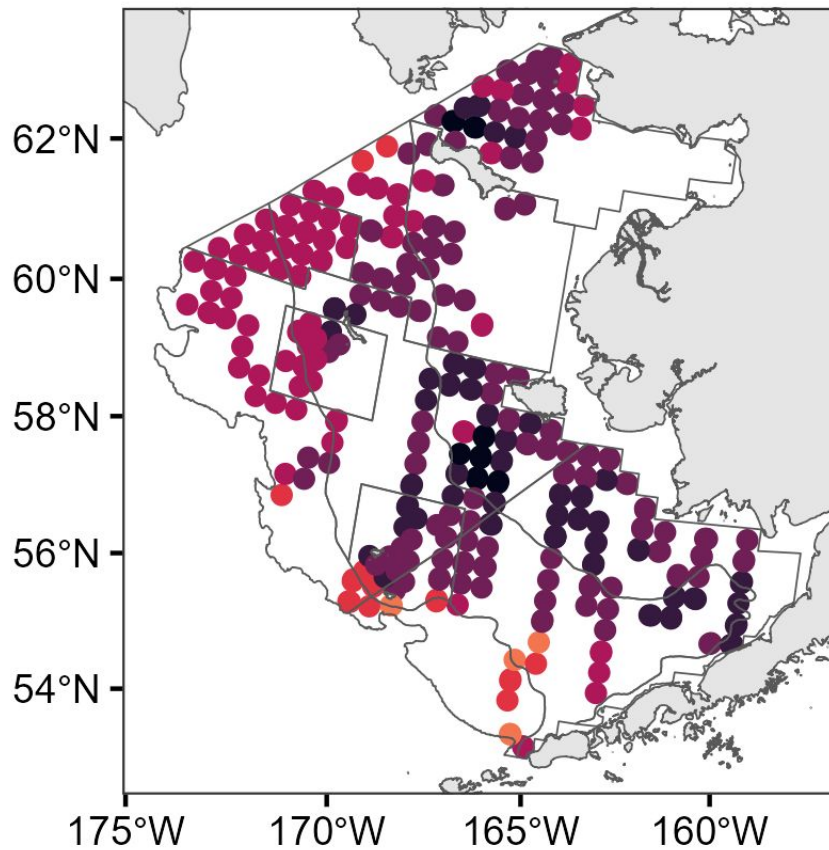
Cold Pool Area

Eastern Bering Sea

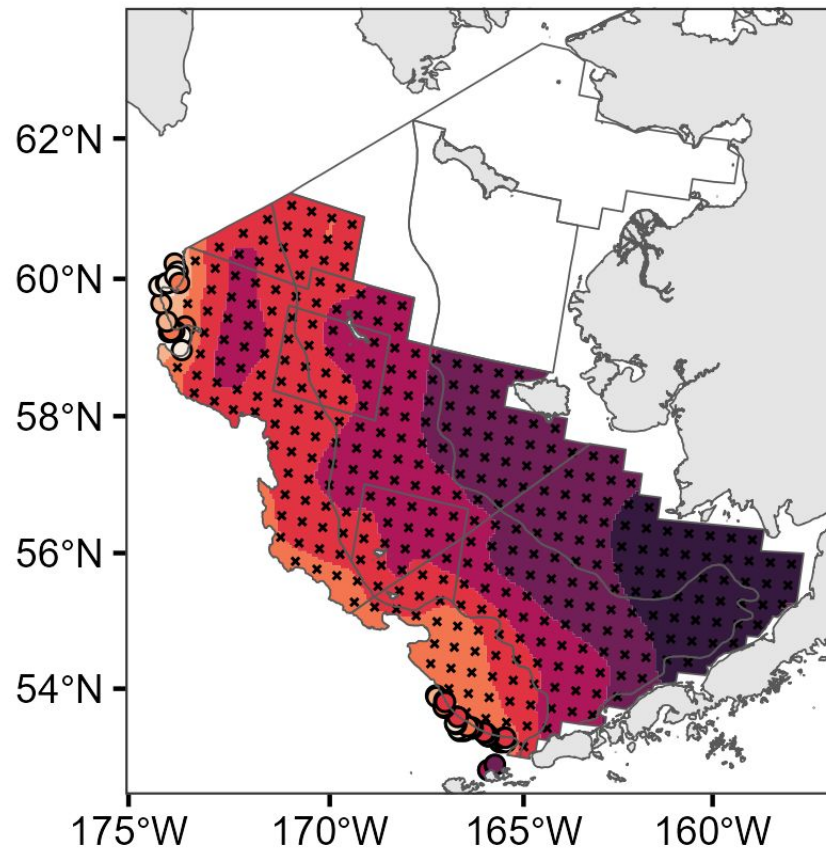


Dissolved Oxygen

2023



2024



Bottom Dissolved Oxygen ($\text{ml} \cdot \text{l}^{-1}$)

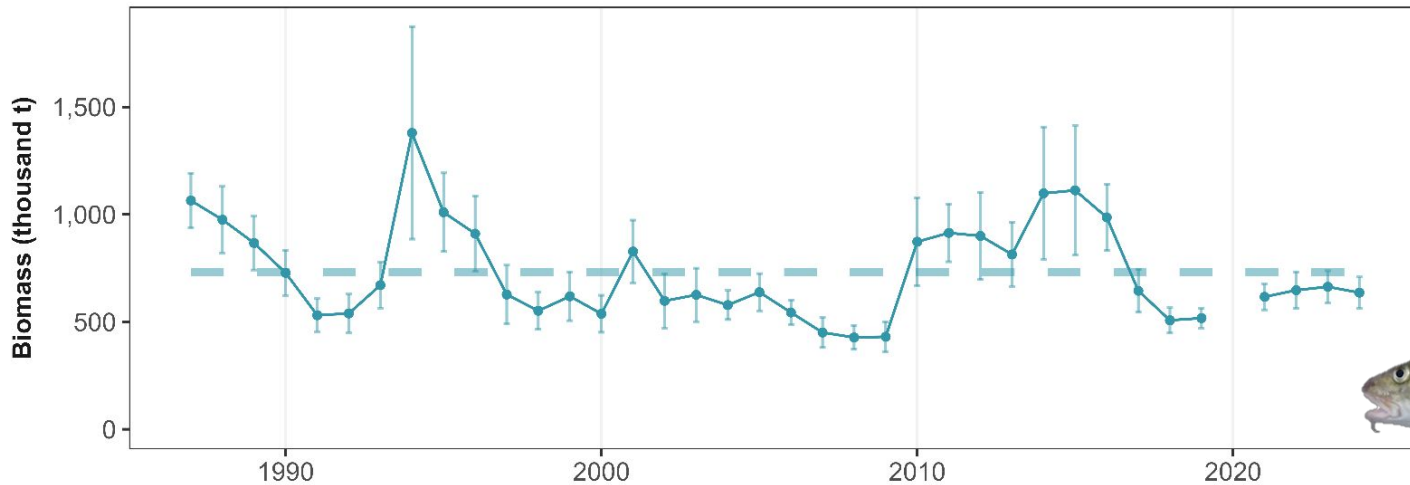
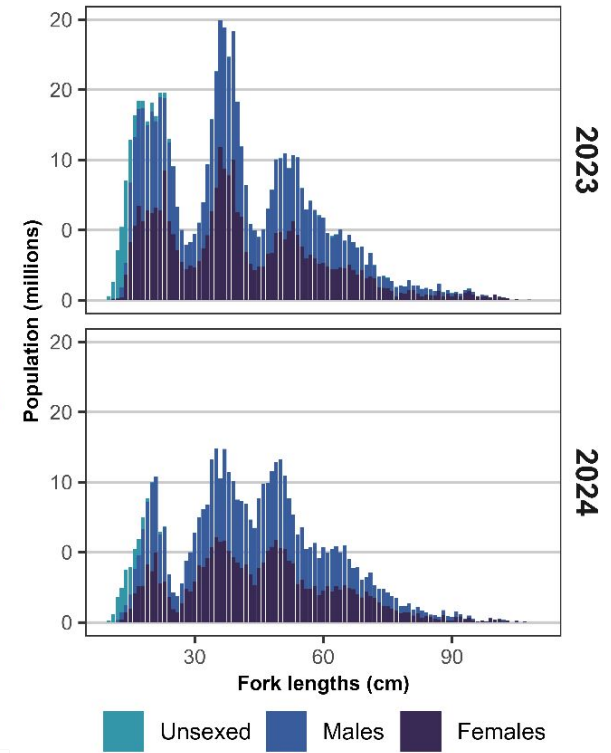
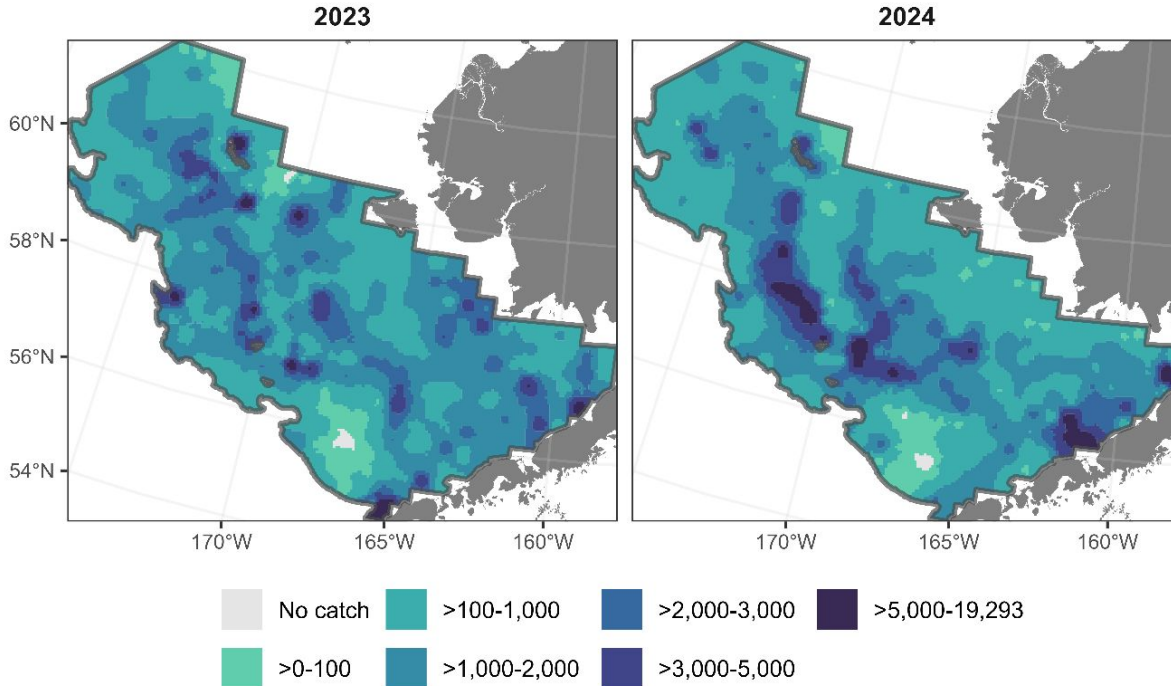


2024 EBS Biological Data by the Numbers

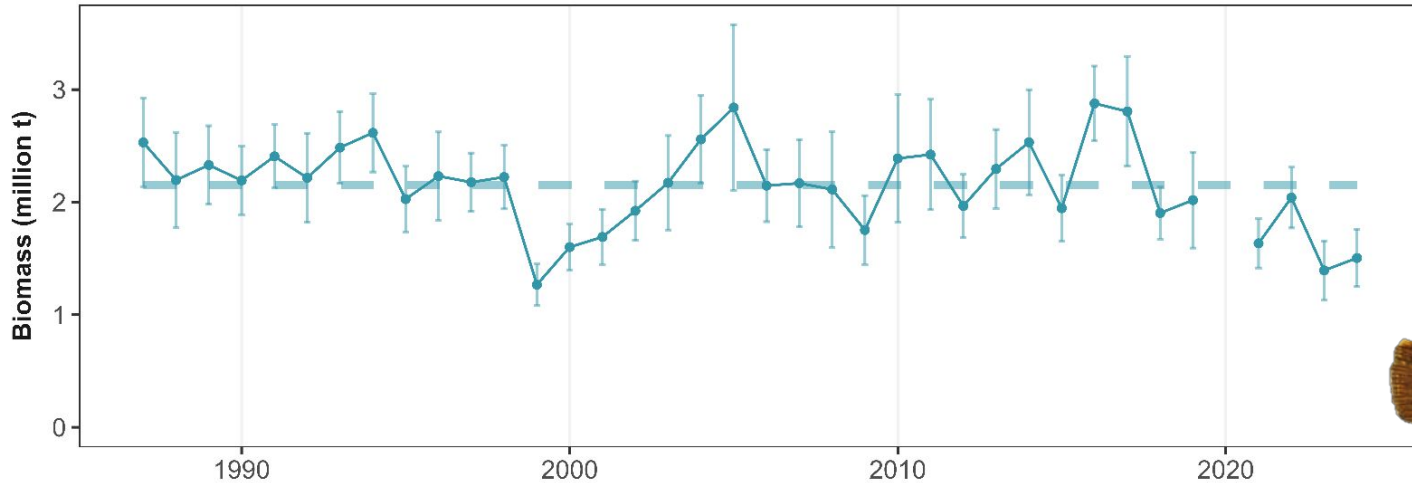
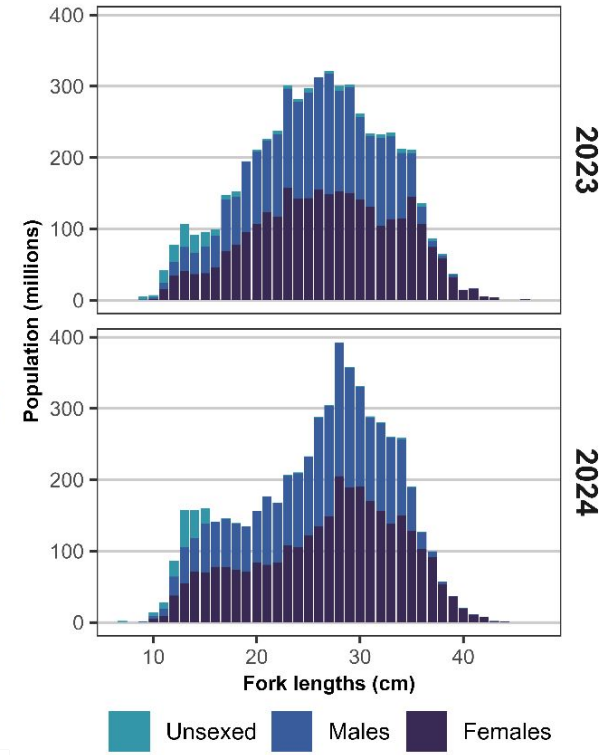
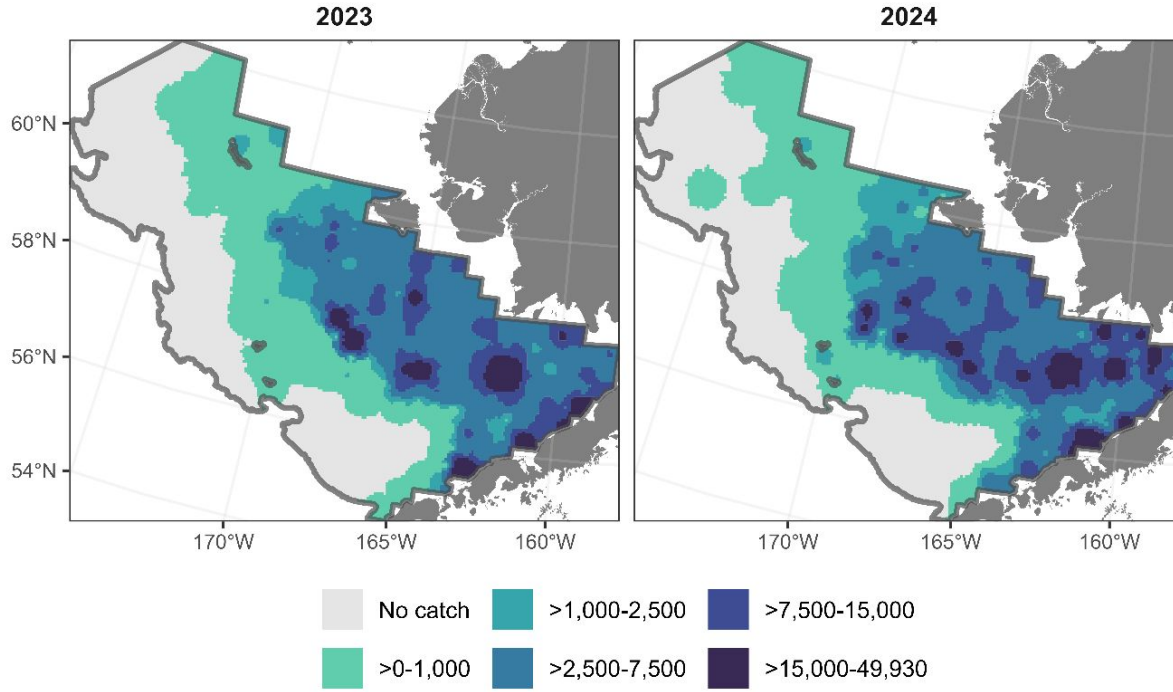
- 125,265 lengths collected
- 6,070 otoliths collected
- 4,917 stomach samples
- 300+ taxa identified



Pacific Cod



Yellowfin Sole



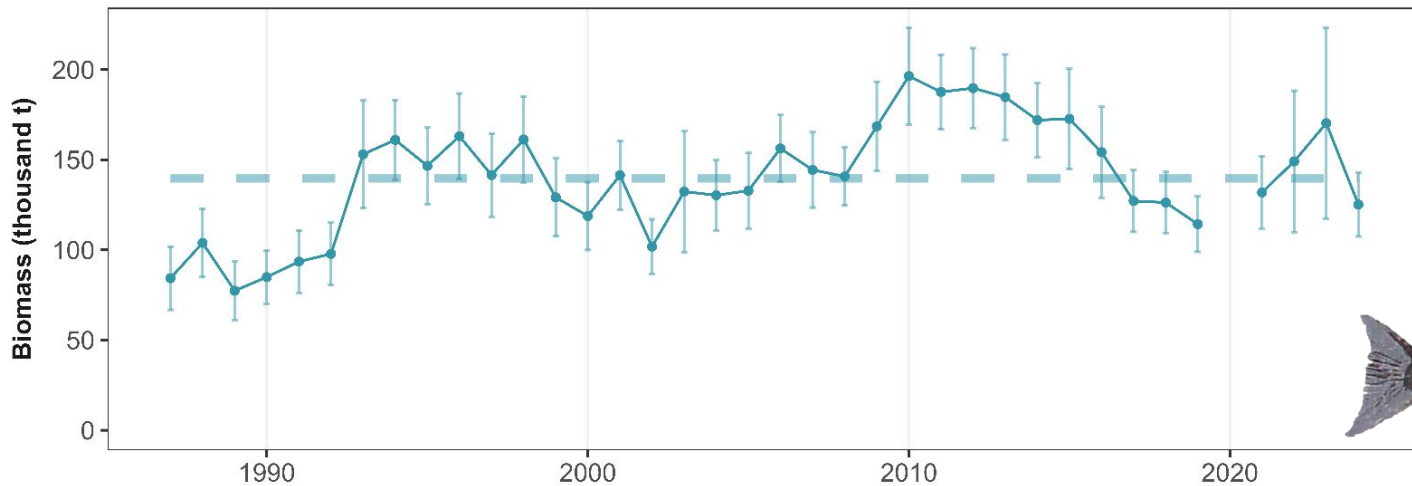
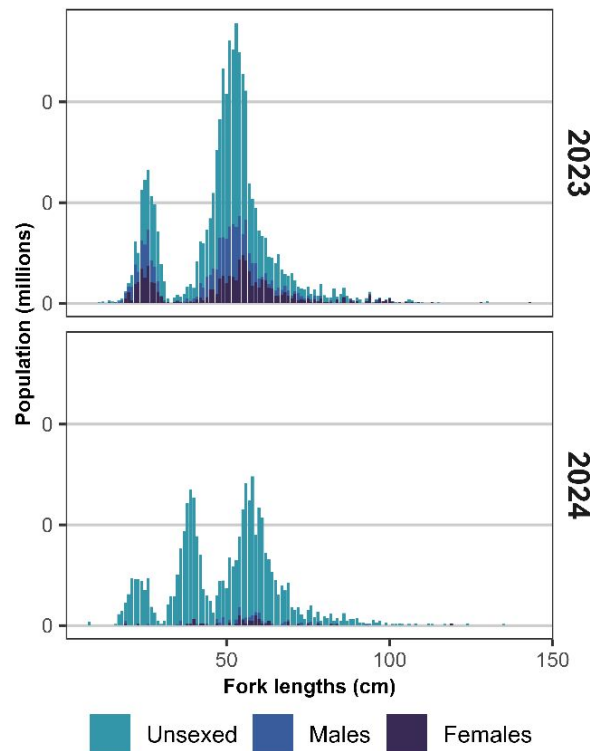
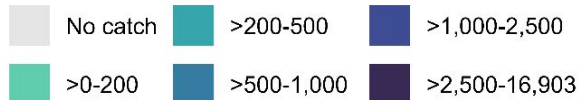
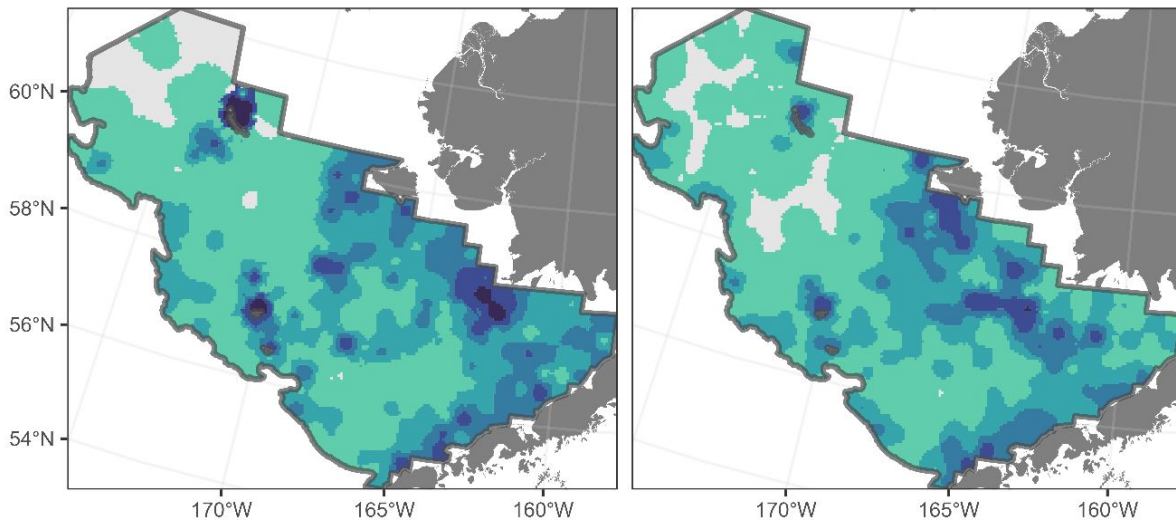
EBS Biomass
 Mean: 2.2 M
 2024: 1.5 M (+8%)



Pacific Halibut

2023

2024



EBS Biomass
 Mean: 139.6 K
 2024: 125.1 K
 (-26%)



Population Trends (2023 vs 2024)

EBS

Common name	Year	Biomass (mt)	Population (x1,000)
walleye pollock	2023	3,154,668	5,685,500
	2024	5,476,067 (74%)	10,307,932 (81%)
Pacific cod	2023	663,075	555,739
	2024	635,840 (-4%)	436,530 (-21%)
yellowfin sole	2023	1,393,379	5,567,596
	2024	1,503,618 (8%)	5,643,105 (1%)
northern rock sole	2023	1,380,684	6,657,558
	2024	1,439,739 (4%)	7,417,950 (11%)
flathead sole	2023	594,851	2,039,623
	2024	723,996 (22%)	2,311,092 (13%)
Bering flounder	2023	6,813	33,736
	2024	10,370 (52%)	48,918 (45%)
Alaska plaice	2023	358,845	617,849
	2024	349,579 (-3%)	634,036 (3%)
arrowtooth flounder	2023	462,575	861,345
	2024	582,469 (26%)	926,415 (8%)
Kamchatka flounder	2023	24,875	40,128
	2024	28,362 (14%)	69,129 (72%)
Pacific halibut	2023	170,238	95,321
	2024	125,145 (-26%)	65,136 (-32%)
Alaska skate	2023	418,483	98,290
	2024	407,133 (-3%)	102,931 (5%)
Greenland turbot	2023	5,857	3,743
	2024	4,959 (-15%)	1,595 (-57%)

2024 EBS Scientific Projects

Survey Modernization

- 15/30 minute tow comparisons
- Trawl gear cameras
- EBS slope test tows

Environmental Monitoring

- ECOHAB 2024
- NWS meteorological data collection

Tagging Study

- BBRKC tagging
- Pcod tagging

Population Genetics

- Shark genetic and age structure sampling
- North Pacific sand lance population genetics
- Bottom trawl eDNA
- Gadid population genetics

Observer

- Observer program WP collection
- Observer program yellowfin sole collection
- Observer collection

Miscellaneous

- Crab specimen collection
- IPHC collection
- NWFSC / UW voucher collection
- Pacific lamprey collection
- Pcod and WP JPA isotopes
- Prowfish collection
- Outreach collections
- Crab bycatch study

Organism Condition

- Stress physiology
- WP and Pcod fish condition index
- OA crab collections
- Yellowfin sole EFH
- Juvenile snow crab live collections
- Snow crab condition
- Arctic cod and saffron cod age and growth
- RWP shrimp lipids
- Juvenile Pcod condition collection
- Visual maturity



Scientific Projects

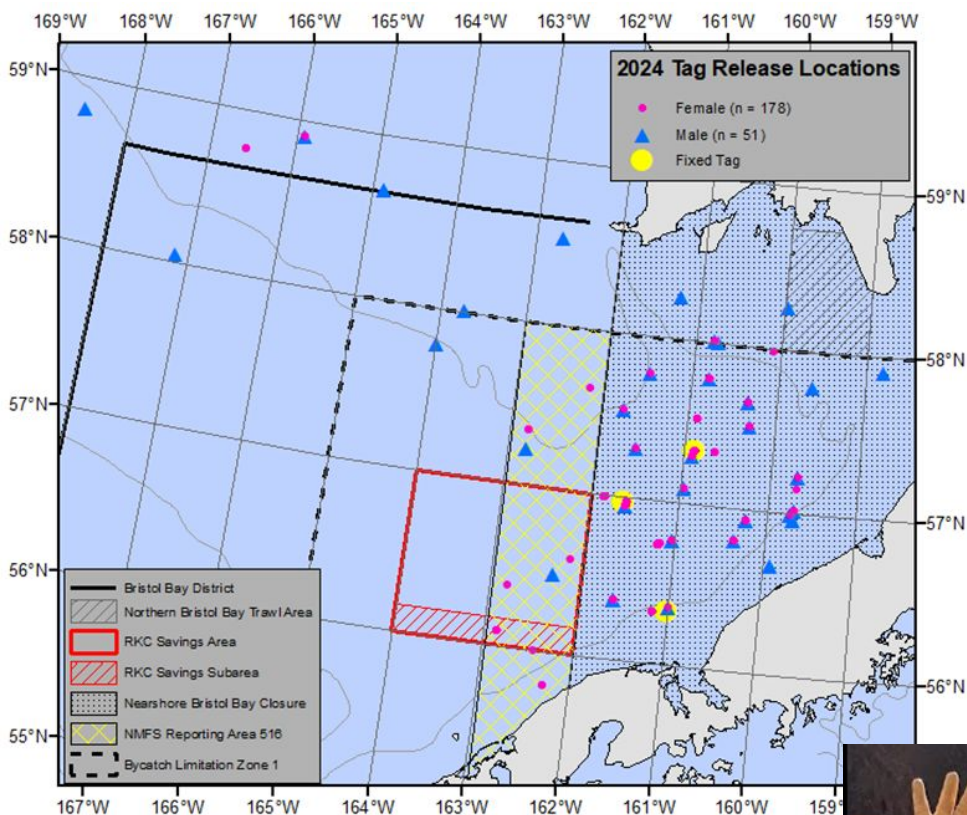


Bottom trawl eDNA



Pacific cod tagging

Red King Crab Satellite Tagging

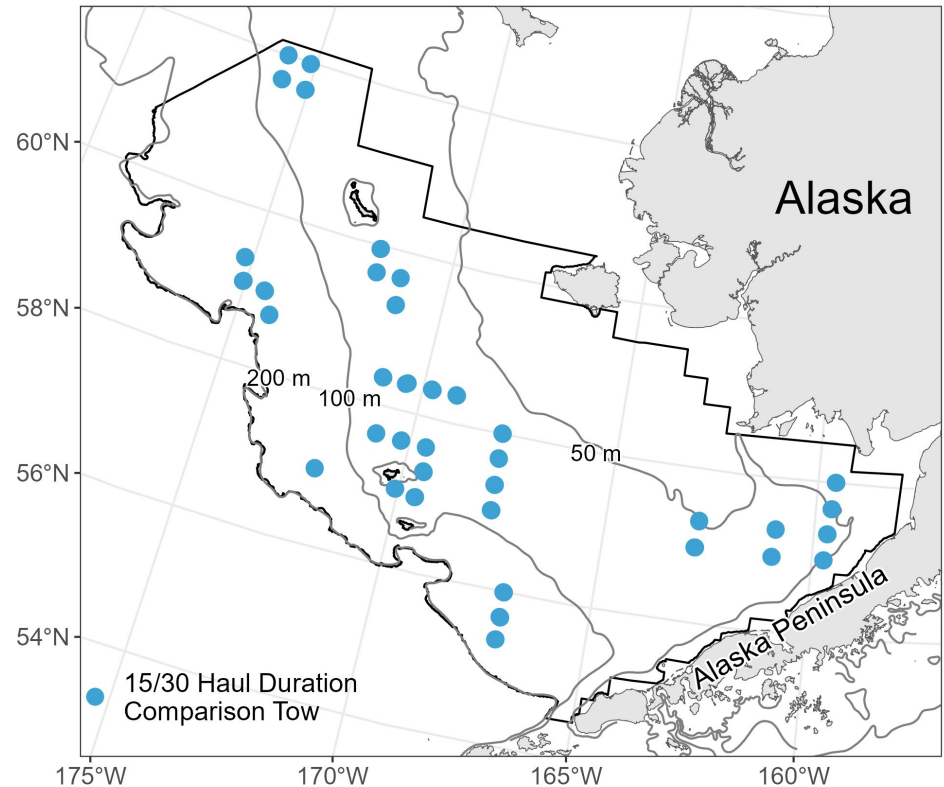


- **Females Tagged (NPRB Project)**
 - 136 on EBS Survey
 - Tags will surface in October 2024, January 2025 & April 2025
- **Males Tagged (EFH Project)**
 - 51 on EBS Survey
 - Tags will surface in October 2024



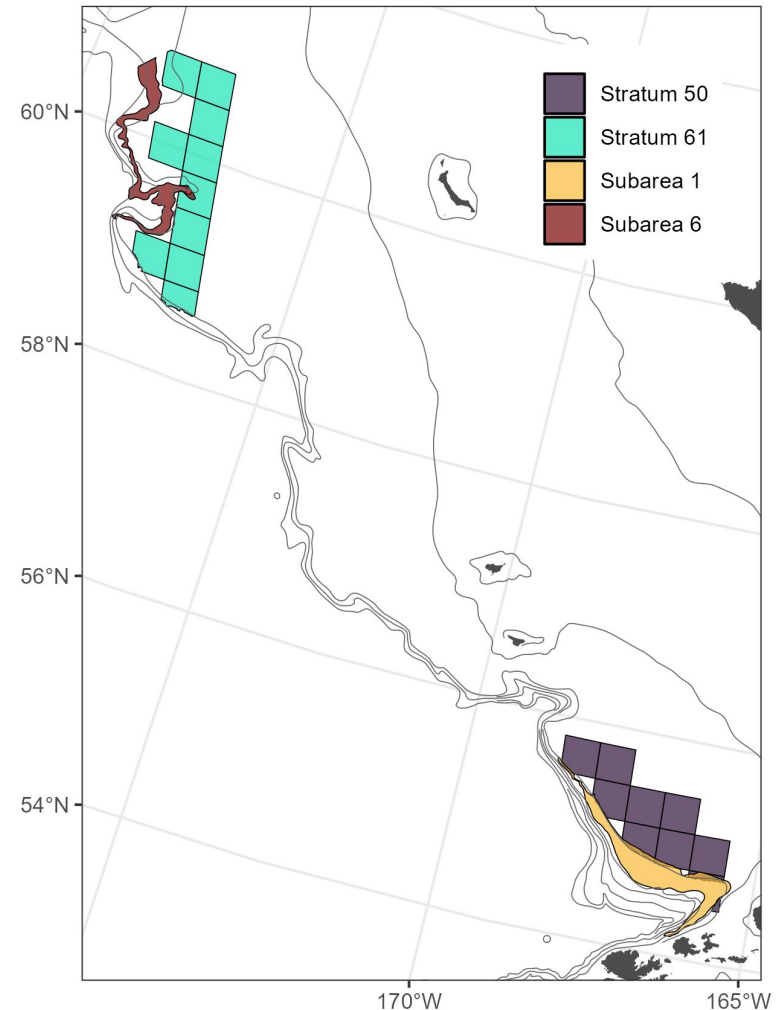
Survey Modernization Work: Tow duration

- 15/30 minute paired tows (Rohan/Haehn/Ryznar/Long)
 - Estimate efficiency ratios between tow durations
 - 38 successful pairs of tows in 2024
 - 123 pairs from 1995–2023
- Begin phased transition to 15 minute tows in 2026?



Survey Modernization Work: Shelf/slope

- Paired tows with shelf and slope gear (NPRB - DeFilippo; Rohan/Haehn/Ryznar/Long)
 - Slope 200-400 m
 - Estimate efficiency ratios between gears/methods
 - 35 successful pairs of tows in 2024
 - 5 pairs in 2023
- Shelf gear viable to 400 m
- EBS survey redesign operating model



Summary

- Bottom temperatures were near average this year and slightly warmer than 2023
- Cold pool extent is near the time series average and 11% smaller than 2023
- Fish biomass in EBS has increased for most species, especially that of walleye pollock, Bering flounder, flathead sole, arrowtooth flounder, and Kamchatka flounder
- EBS results available now (not on FOSS yet)
- Survey modernization progressing well



Liparis gibbus (variegated snailfish)

Thank you!



 Data Products



 GAP Website

Questions?

duane.stevenson@noaa.gov

afsc.gap.metadata@noaa.gov

- All survey participants and support staff
- Bering Sea document prep team

