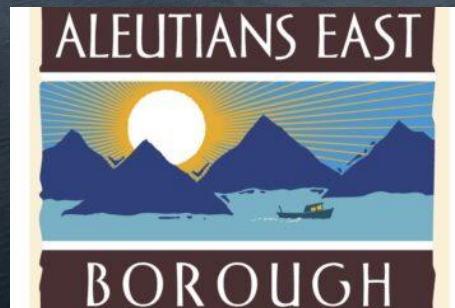


Pacific cod satellite tagging research in Alaska: FLC update

Susanne McDermott¹, Julie Nielsen², Charlotte Levy³, Kimberly Rand⁴, Bianca Prohaska¹, Sean Rohan¹, Alexandra Dowlin¹

¹Alaska Fisheries Science Center, ²Kingfisher Marine Research, ³Aleutians East Borough, ⁴Atka Blue



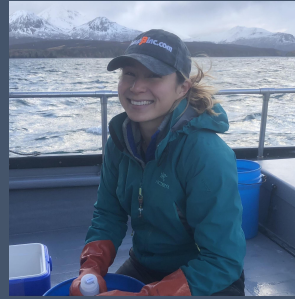
The Pacific Cod Tagging (PACT) Team



Susanne McDermott
NOAA AFSC



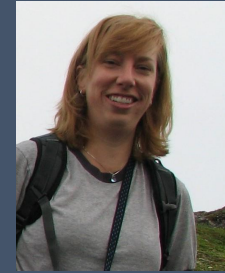
Bianca Prohaska
NOAA AFSC



Charlotte Levy
Aleutians East
Borough



Julie Nielsen
Kingfisher Marine
Research



Kim Rand
Atka Blue



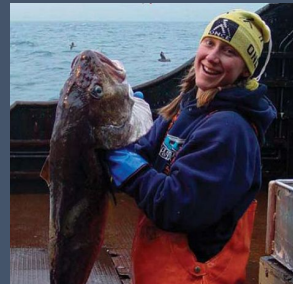
Sean Rohan
NOAA AFSC



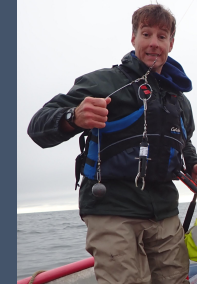
Alexandra Dowlin
NOAA AFSC



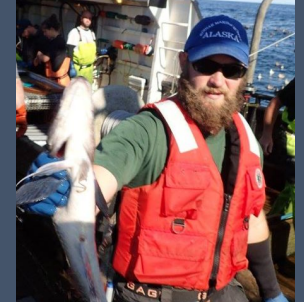
Steve Barbeaux
NOAA AFSC



Ingrid Spies
NOAA AFSC



David Bryan
NOAA AFSC



Pete Hulson
NOAA AFSC

Researchers: Biology, ecology, habitat, movement modeling,
physiology, genetics, otolith chemistry, stock assessment

PACT Collaborators and Funding Sources

Collaborators:

- Pacific Cod Harvesters
- Aleutians East Borough
- Freezer Longline Coalition
- Norton Sound Economic Development Corporation
- Native Village of Savoonga
- Adak Community Development Corporation

Other Funding Sources:

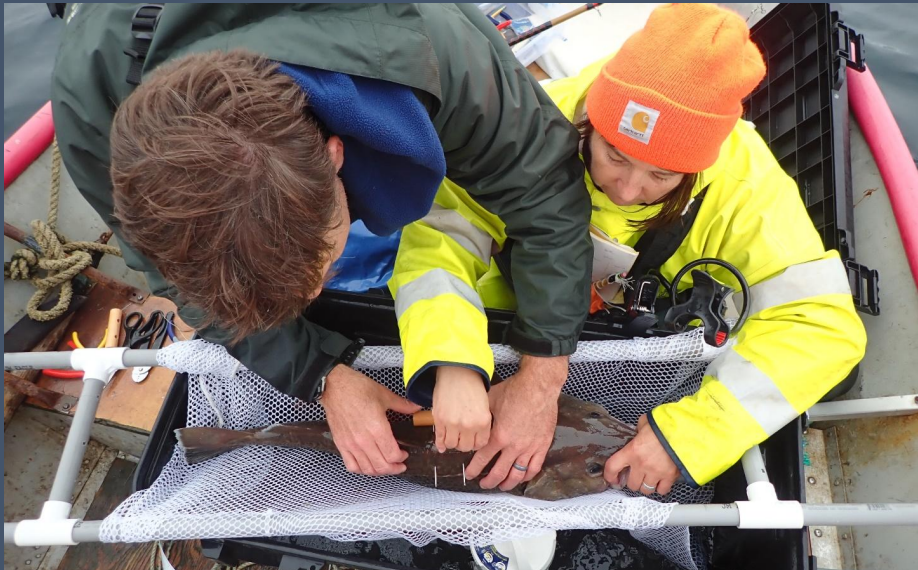
- Pacific Cod Harvesters
- North Pacific Research Board
- National Cooperative Research Program
- MSA funding
- Gulf of Alaska Pacific cod disaster relief funds



Pop-up Satellite Archival Tags (PSATs)

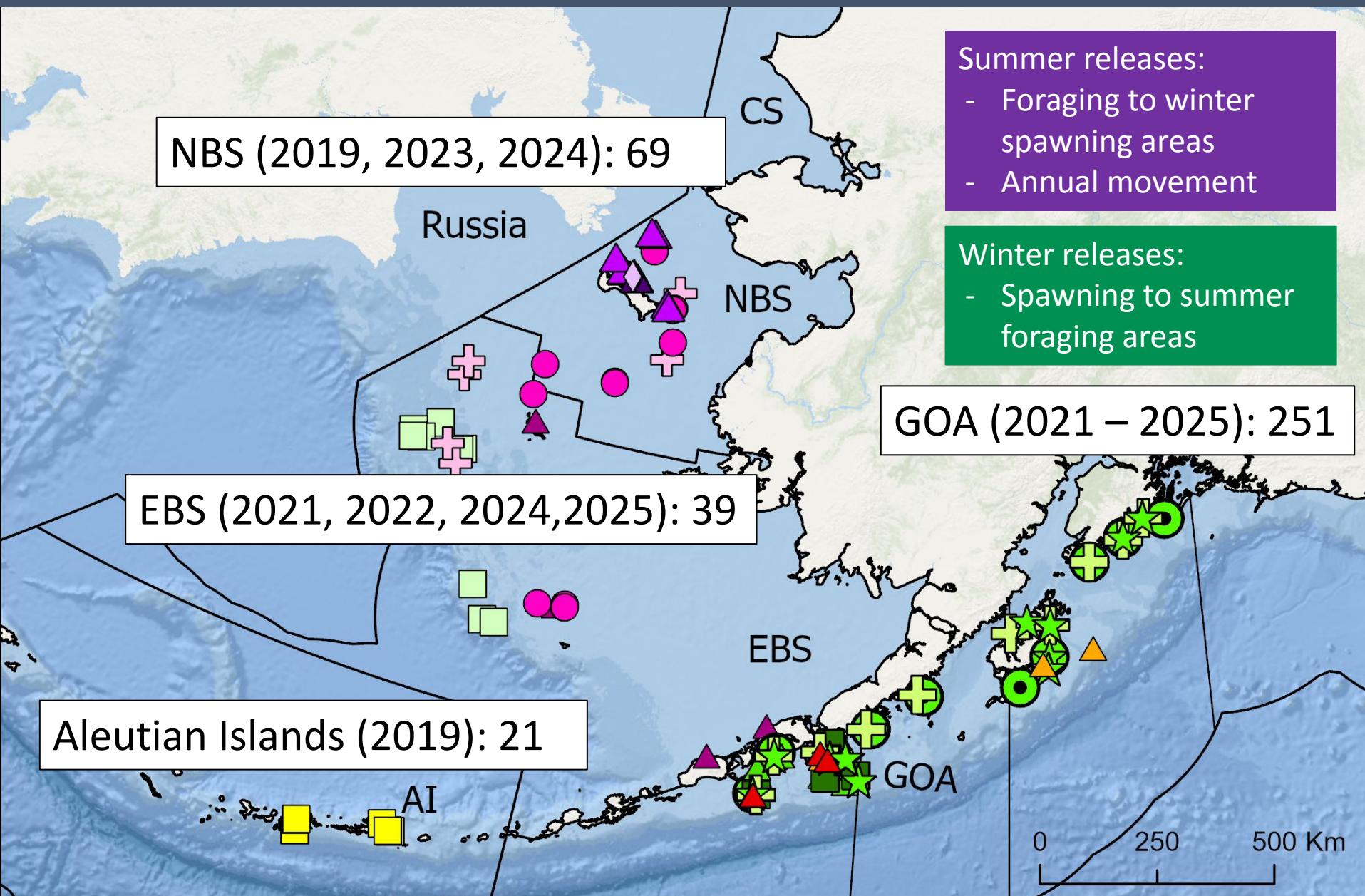
- Wildlife Computers MiniPAT
- Measure depth, temperature, light, acceleration
- Programmed to pop up at different times throughout the year
- Pop-up location and estimated travel paths (geolocation)
- Genetic samples from all tagged fish

Attach tag with “backpack” harness



Pacific cod PSAT releases to date:

n = 380



PSAT release platforms

Gulf of Alaska (2021 – 2025 winter, 2023 – 2024 summer)



Chartered vessels:
F/V Decision
F/V Alaskan Lady
F/V Just In Case

- Capture in pots and brought to surface in 4 stages
- Depths < 100 m (avg 70 m)
- Released with descender
- Biological samples collected
- Conventional tags released

PSAT release platforms

Bering Sea (summer)



NOAA summer survey:

- Capture by rod and reel

F/V Vesteraalen

F/V Alaska Knight

F/V NW Explorer



Native village of Savoonga:

- Capture by hand line

F/V Adeline

F/V Scarlet

F/V Aavlan II

PSAT release platforms

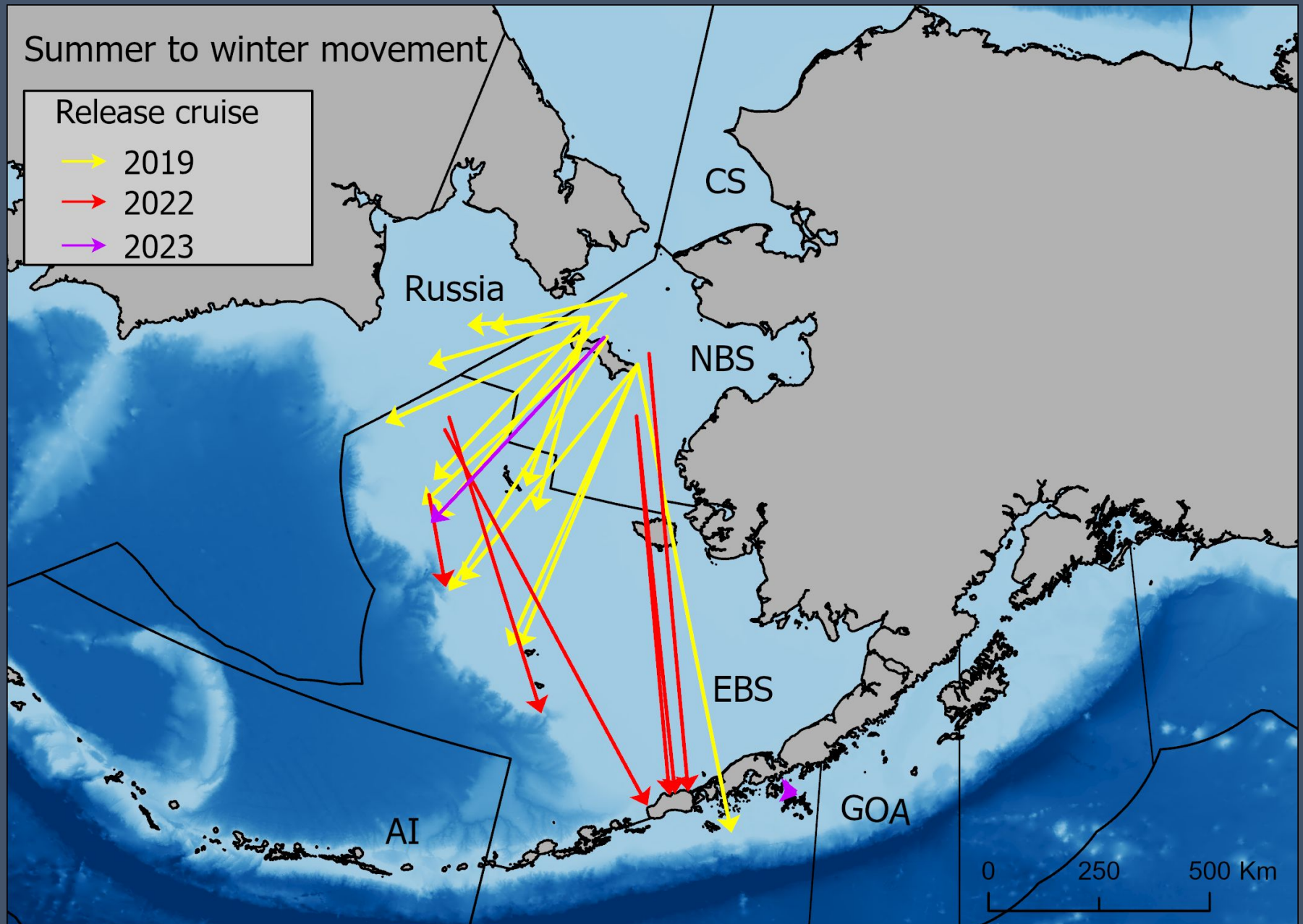
Bering Sea: F/V Beauty Bay



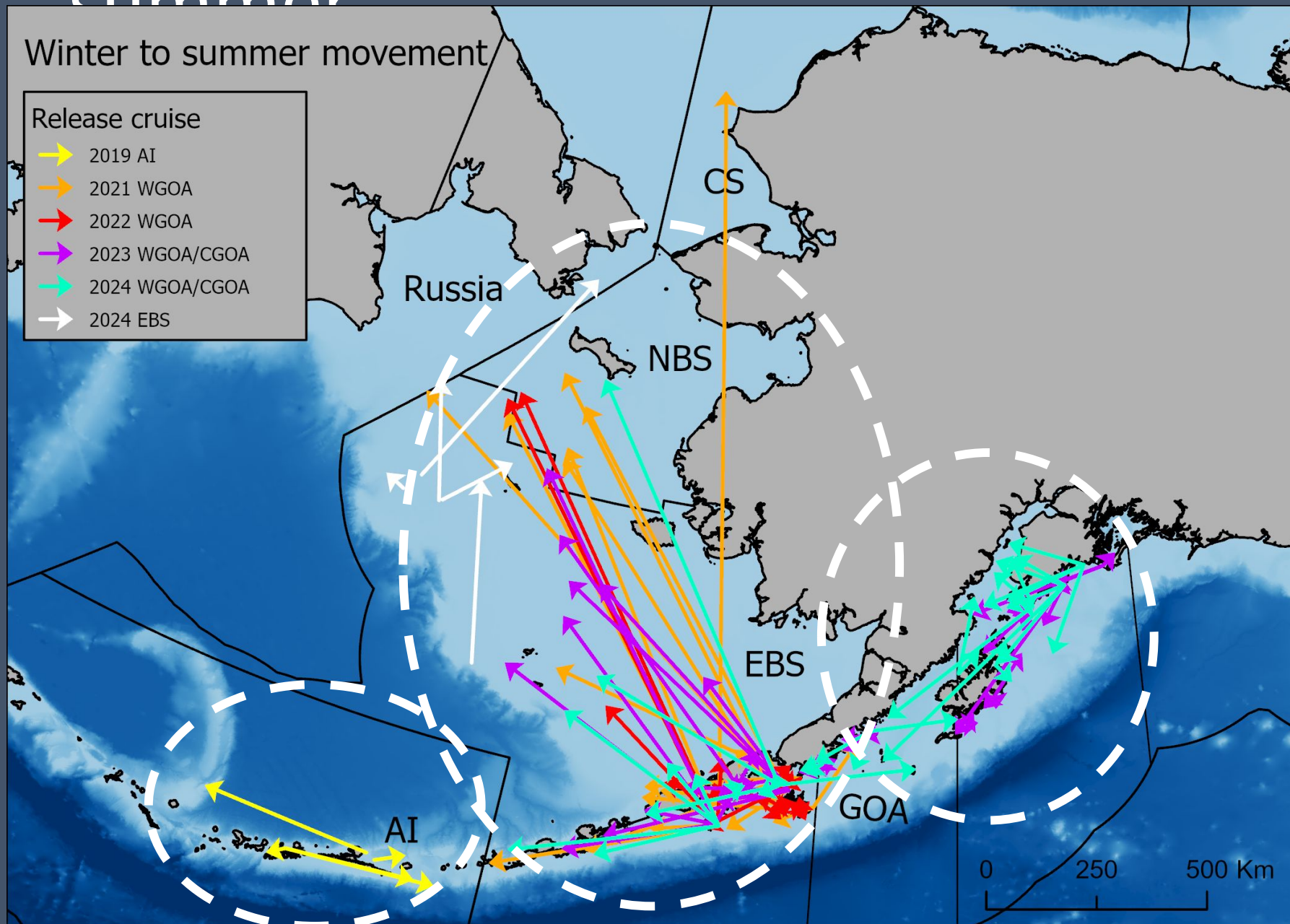
Jim Armstrong

Winter (April) 2024: $n = 10$
Summer (October) 2025: $n = 7$

Broad summary: Summer to winter



Broad summary: Winter to summer

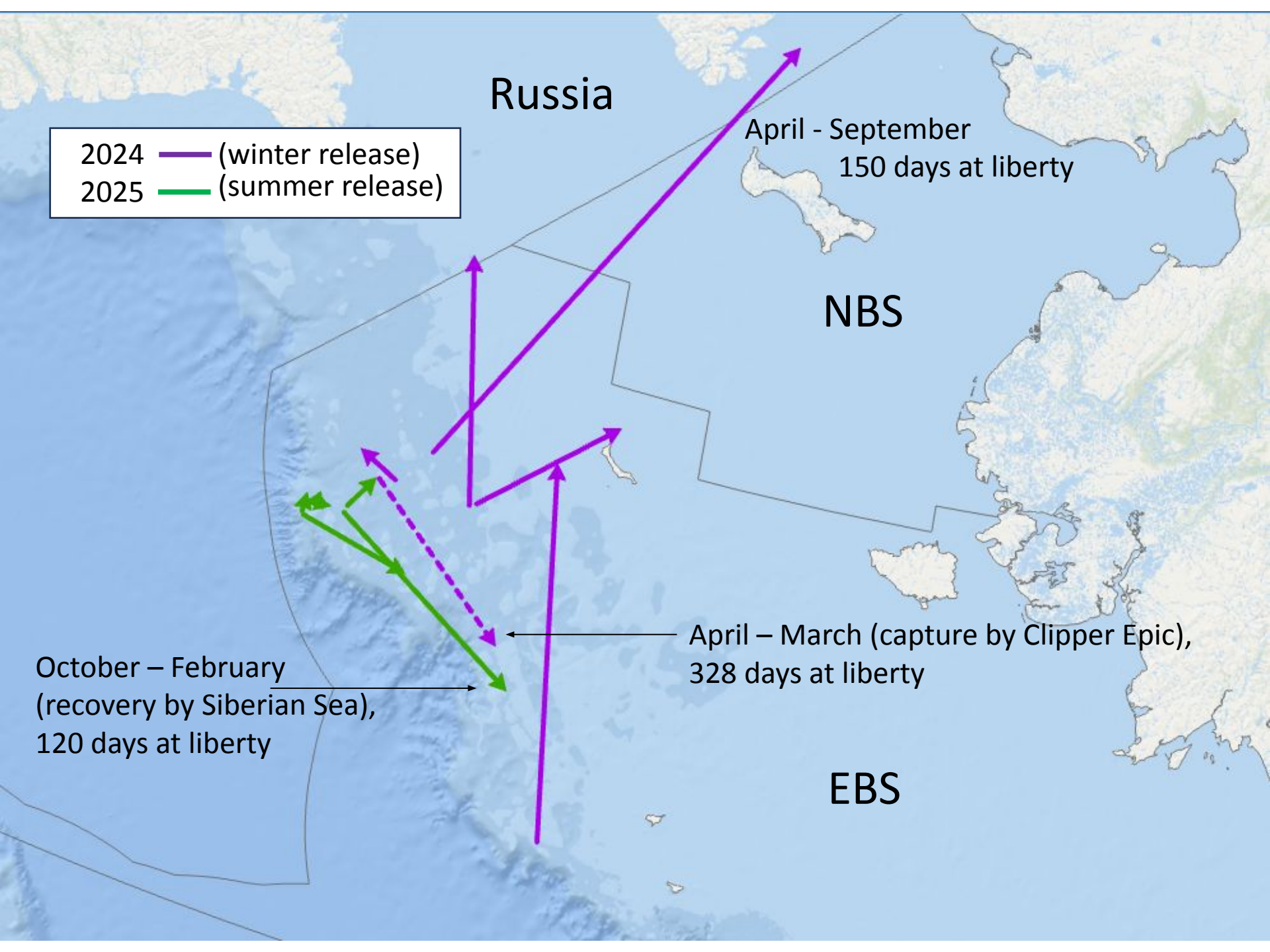




FLC tag
releases
from the
Beauty Bay

Tagging on Beauty Bay





Challenges

Logistics

Time commitment for tagging

Vessel actively fishing

Tagging mortality

2024: 3/9 (one tag never transmitted)

2025: 3/6 (one still at liberty: pop-up date 6/1)

Average depth

2024: 139 m (123 - 170)

2025: 164 m (143 – 181)

Average fish length

2024: 74 cm (65 – 92)

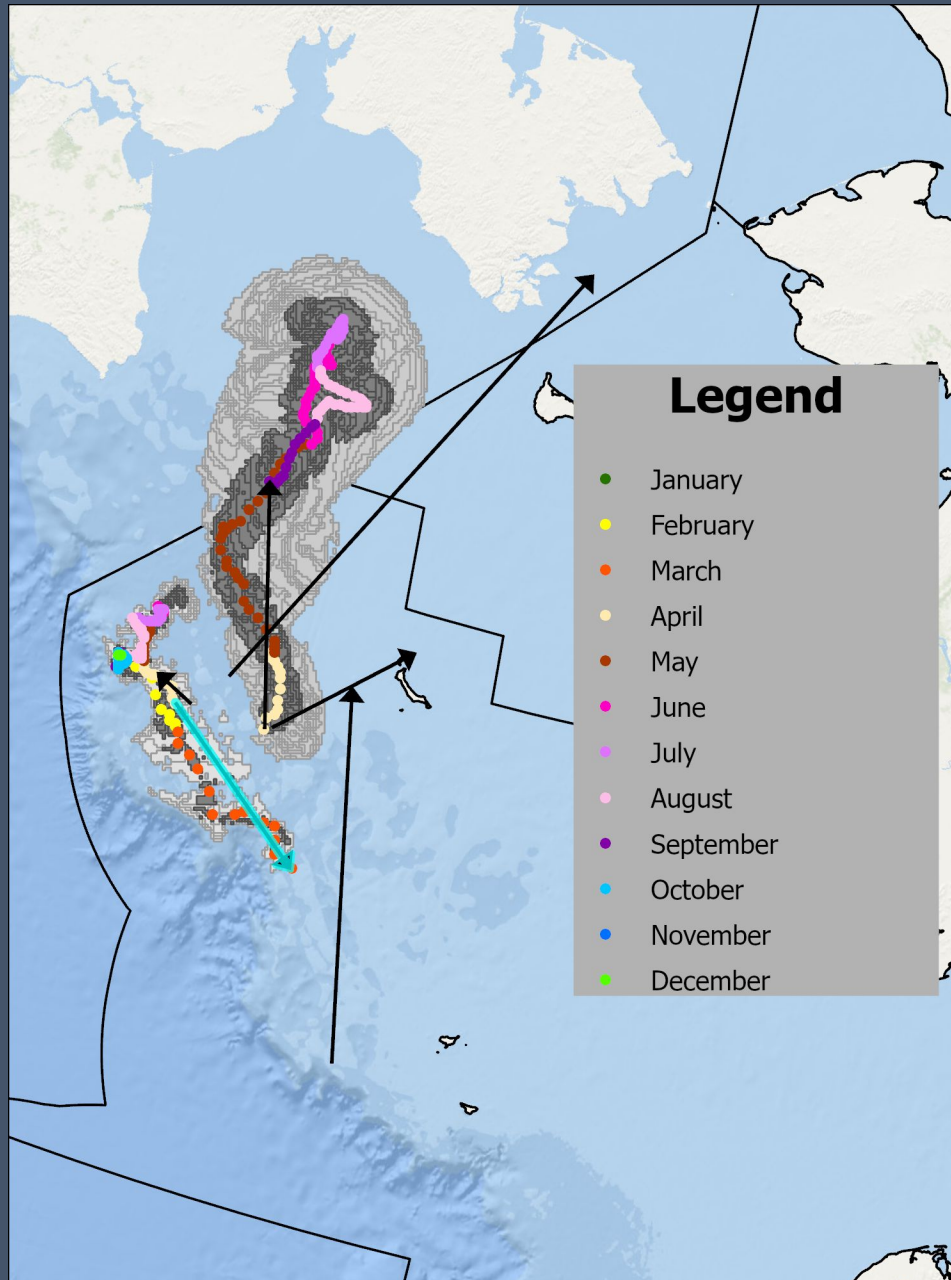
2025: 73 cm (70 – 83)

Deeper water and larger fish can be risk factors for mortality

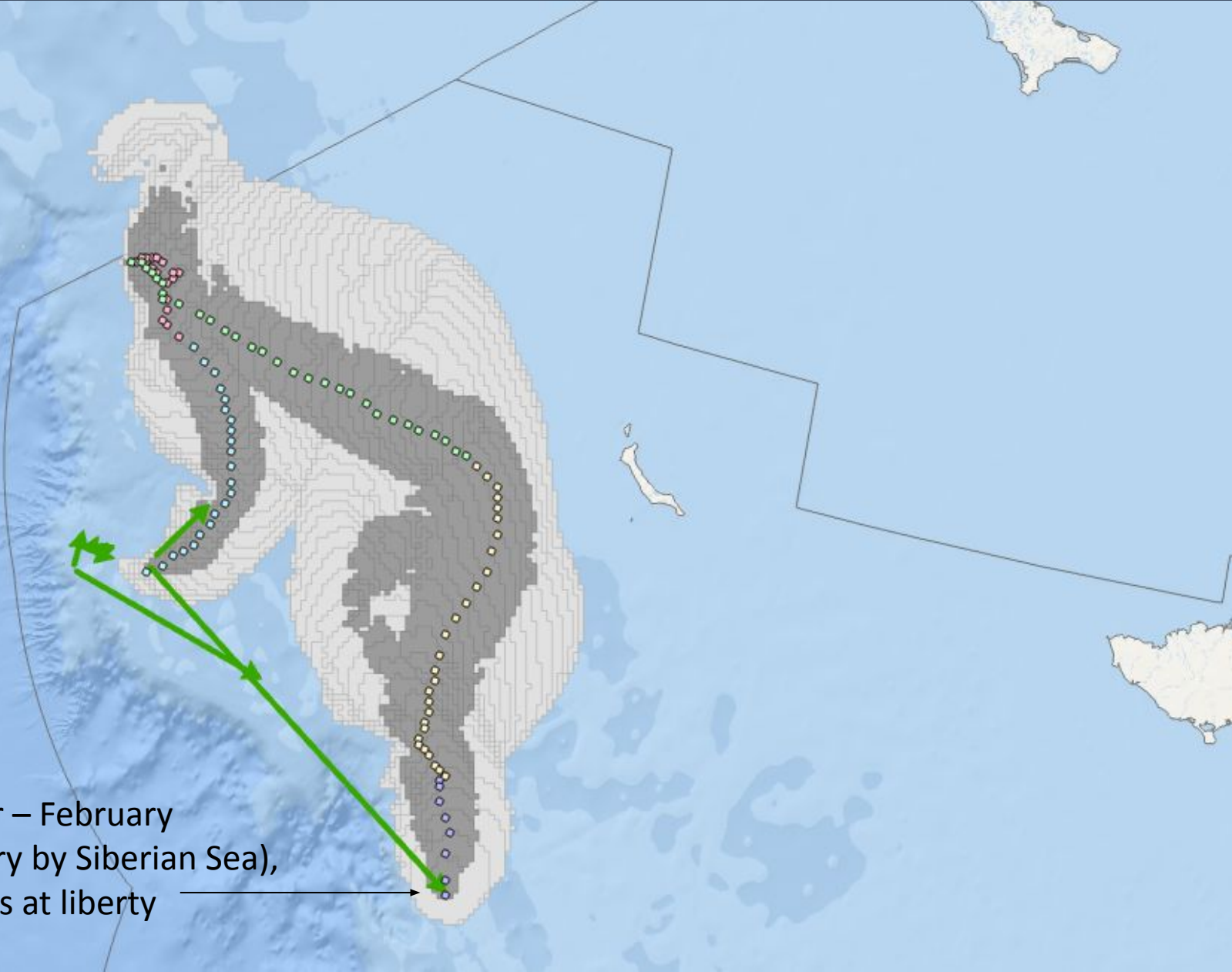
Benefits

- **Winter releases in EBS**
 - Movement to summer foraging areas
 - EBS? Russia? NBS? Farther north?
 - Effect of different temperatures?
 - New satellites: better information on year-round movement
 - E.g. spawning site fidelity
- **Summer releases in EBS**
 - Timing of spawning migrations
 - Spawning area locations
- **Behavioral data:**
 - Daily depth changes by region and time period
 - Detailed tags: acceleration = activity

Winter releases



Summer releases



October – February
(recovery by Siberian Sea),
120 days at liberty

The map displays the North Pacific Ocean with a shaded region representing a whale's range. A series of colored dots (red, green, blue, yellow) trace a path from the coast of North America, through the Bering Sea, and down towards the Aleutian Islands. Green arrows indicate a specific movement from the coast towards the southern part of the range. A line connects the text box to the southernmost point of the path.

Physically recovered tags provide rich data sets

Depth, temperature, light, acceleration: 3 seconds

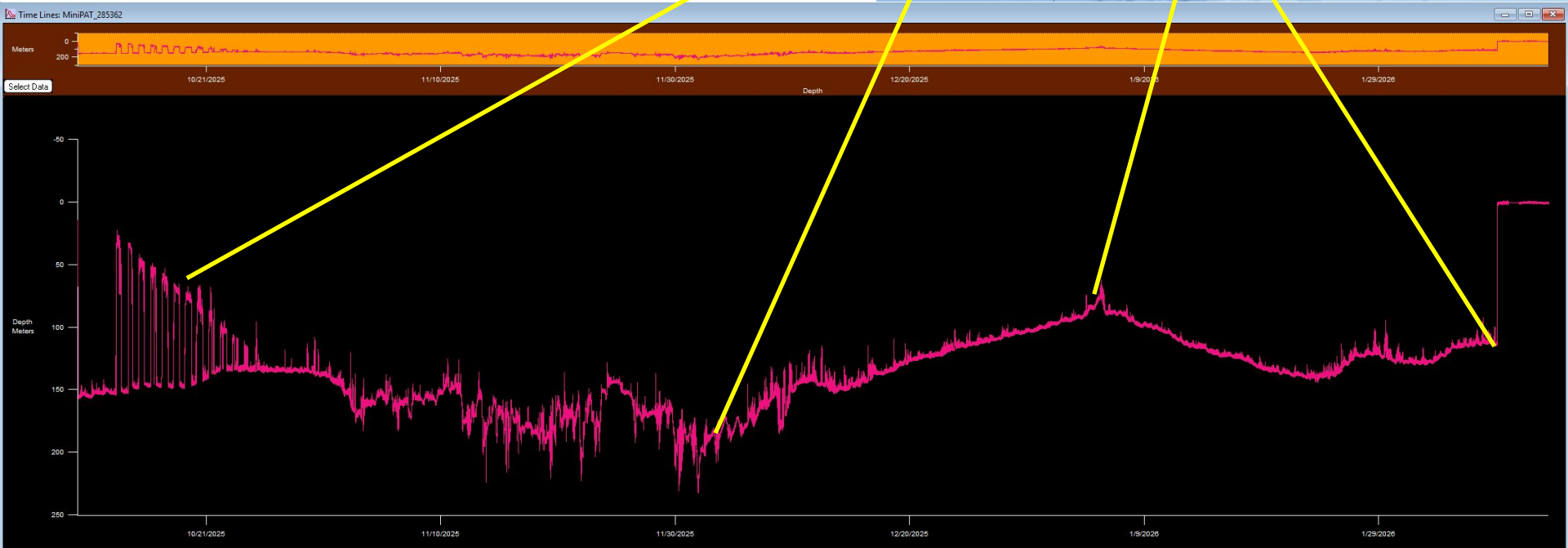
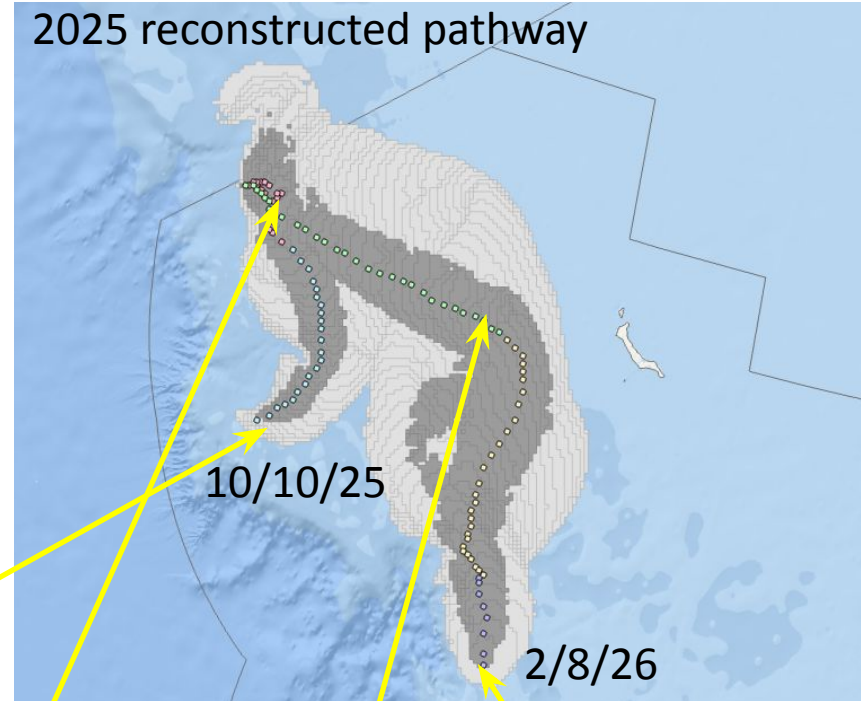
Barotrauma recovery: 2 weeks

Variable depth changes near edge of canyon

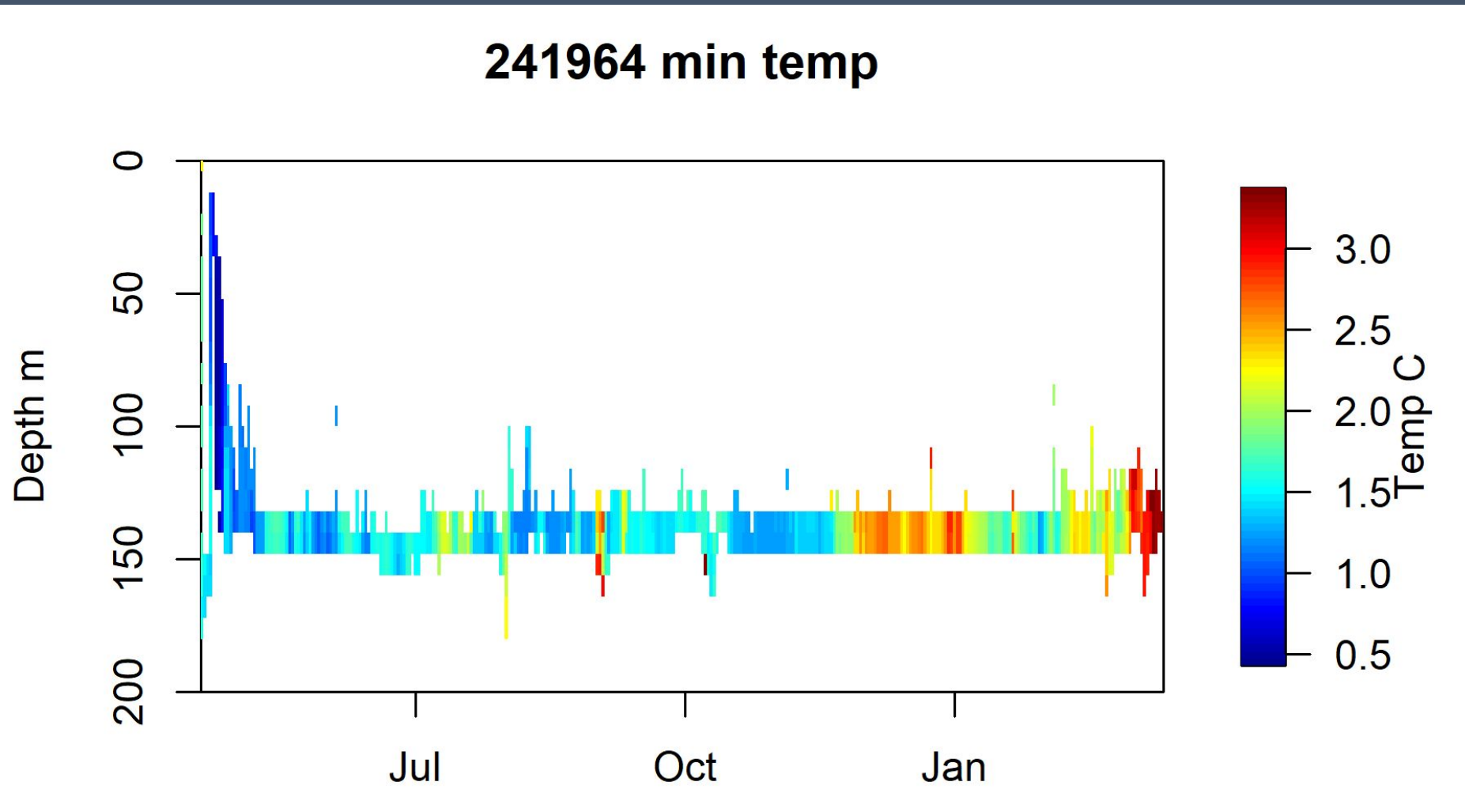
Very little depth changes on shelf

Can determine fate: predation, longline, trawl, etc.

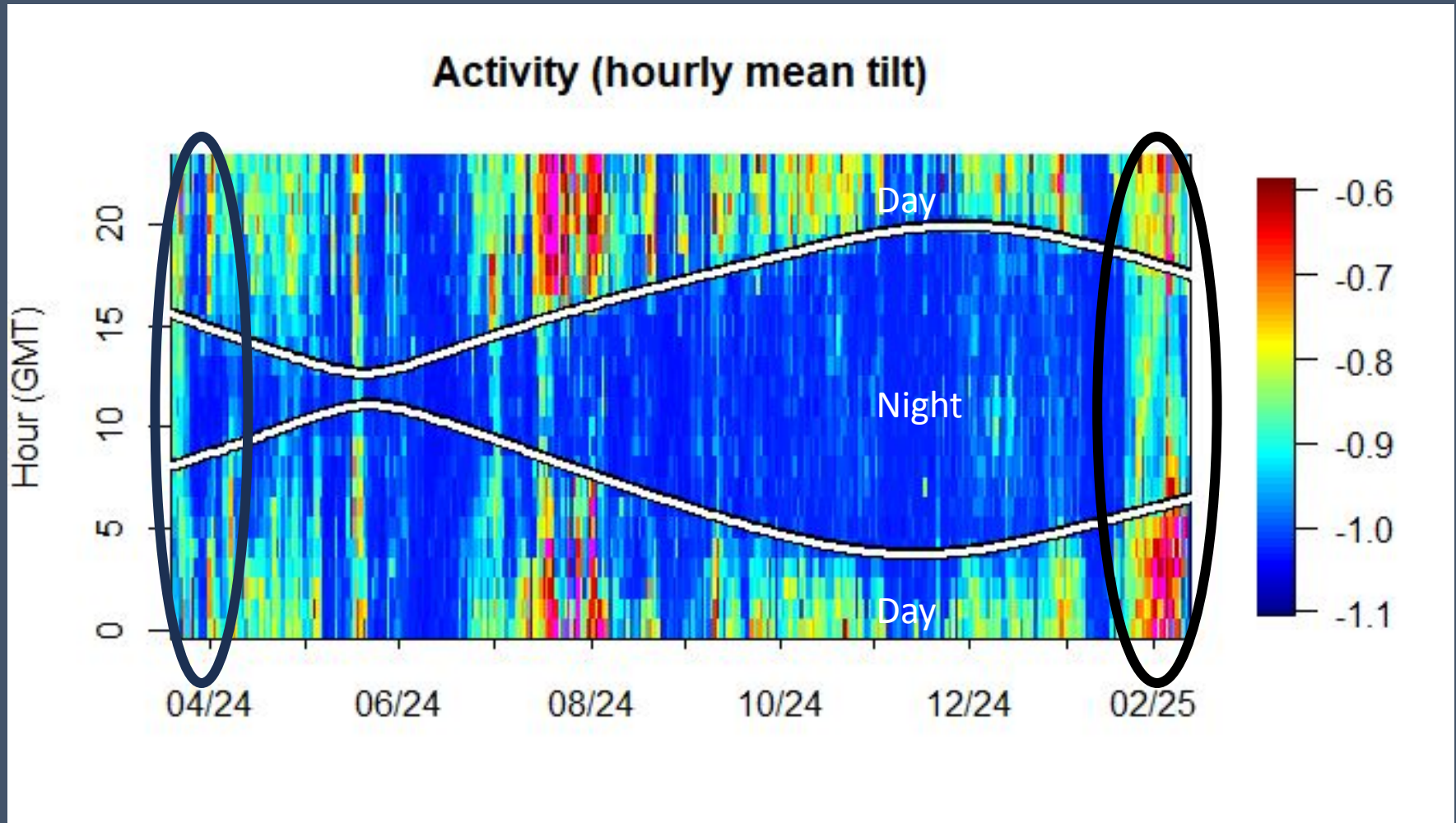
2025 reconstructed pathway



Detailed data set: depth and temperature records



Detailed data set: activity patterns



Current manuscripts:

- 1) Seasonal connectivity relative to fisheries management boundaries
- 2) Fish behavior and activity by season and region: Susanne
- 3) Genetics: Ingrid

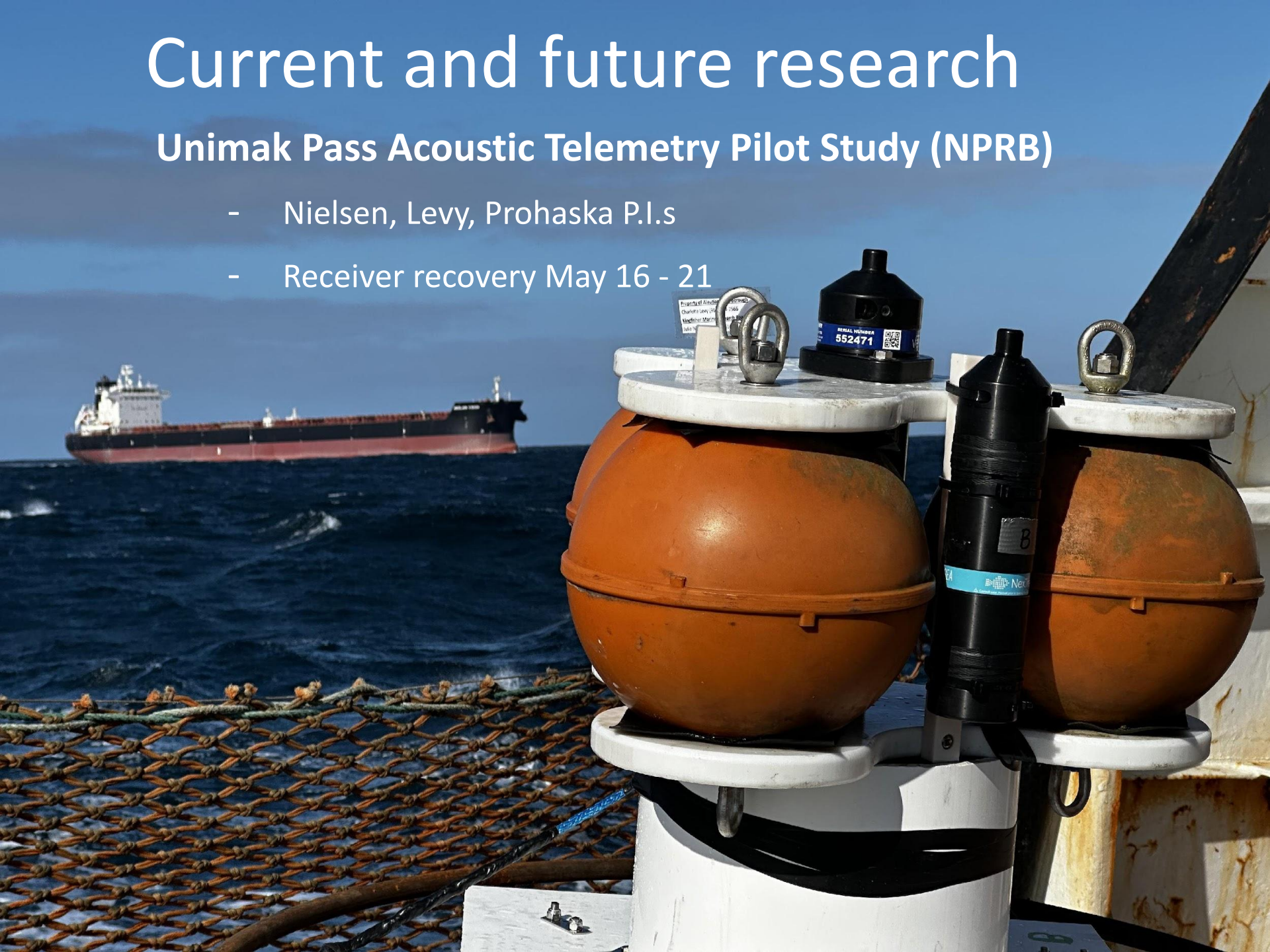
NOAA Technical Reports:

- 1) Gulf: each research year 2021 - 2025
- 2) Bering: all years 2021 - 2025
- 3) Description of survey and methods
- 4) Reconstructed movement paths for each tagged fish

Current and future research

Unimak Pass Acoustic Telemetry Pilot Study (NPRB)

- Nielsen, Levy, Prohaska P.I.s
- Receiver recovery May 16 - 21



Thank you!

F/V Beauty Bay (Capt. Scott Hansen and crew)

Jim Armstrong, FLC

AFSC survey charter vessels and crew (F/V Vesteraalen,
F/V Alaska Knight, F/V NW Explorer)

Savoonga vessels and crew (F/V Scarlet, F/V Adeline, F/V
Aavlan II)

Norton Sound Economic Development Corporation
F/V *Decision* (Capt. Kiley Thompson and crew)



Comments? Questions?
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