

Science and Research

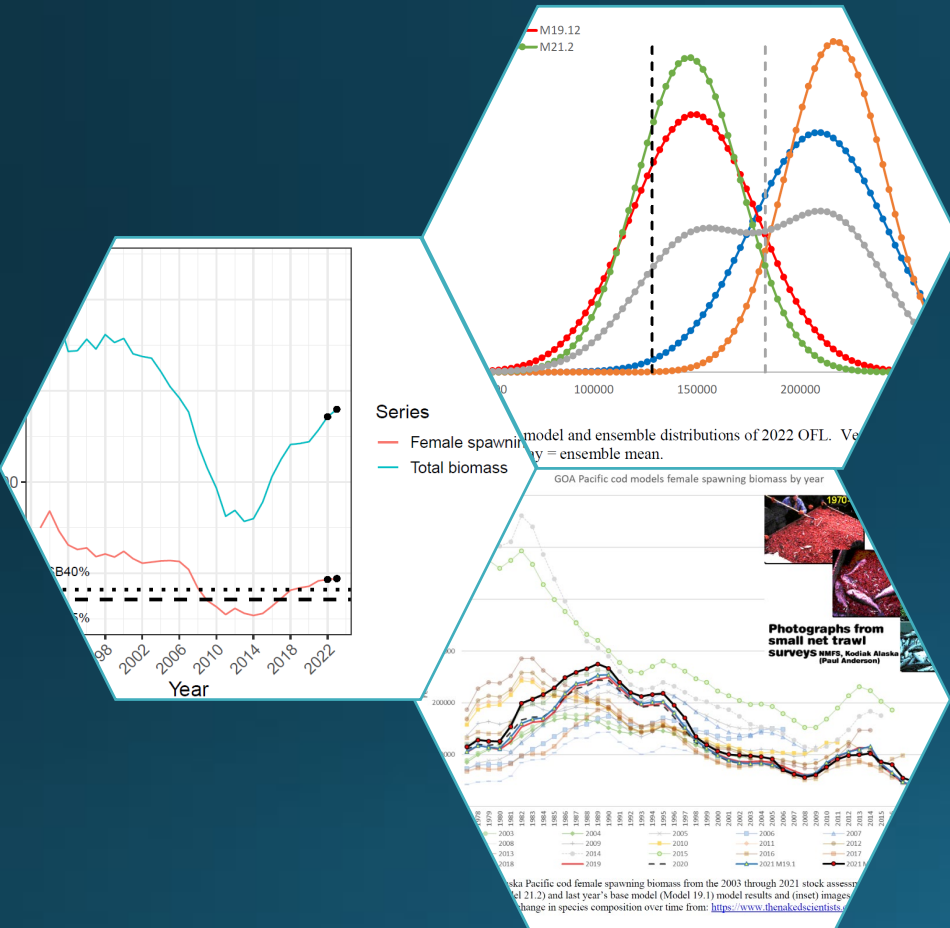


Project category	Team	Contacts	Next steps
ESR assessment	Interdisciplinary approach - interdisciplinary stakeholders, interdisciplinary resources Models (2D, 3D, time varying) to enhance decision making, uncertainty Formalizing the model - what? What are the goals, objectives of the model? What are the data sources? What are the data needs? What are the data gaps? What are the data limitations? What are the data requirements? What are the data constraints? What are the data challenges? What are the data opportunities?	Steve Barabacus PT: Allan Hicks, Jim Lovell, Lisa Hillier SSC Curry Cunningham, Jan Stewart, Frank Mueller, Dana Hornsman, Karl Meyer	Finalize the model - what? Models (2D, 3D, time varying) to enhance decision making, uncertainty Formalizing the model - what? What are the goals, objectives of the model? What are the data sources? What are the data needs? What are the data gaps? What are the data limitations? What are the data requirements? What are the data constraints? What are the data challenges? What are the data opportunities?
AI assessment	Move from Tier 1 to Tier 2 Positive retrospective, bias in fish to survey Big drop in AI survey catch 70% drop in biomass from 2014 - 2017 Movement vulnerability Stock boundaries?	Ingrid Spies	late Feb - Meeting with "Team"
GOA assessment	Fishery CPUE time series	Pete Hulson	late Feb - Meeting with "Team"
Data for assessments	AFSC Surveys	Cunningham	Initial 2023 meeting Post-dec? Connect with the Fisheries Rahard Thummet Scott Hansen Connect, ask about plan for 2023 Coordination on set lines, genetics Survey tracking Data from PLC vessels Evaluate need Consult with Kenny Advocate for survey funding (indefinite)
Genetics	Stock identification	Ingrid Spies	Connect, ask about plan for 2023 Samples from PLC boats?
Sat Tagging	Comprehensive plan needed Objectives Funding Benefits to PLC	Susanne McDermott, Kim Rand, Julie Nielsen	Connect with Susanne, ask about plan for 2023 Ongoing engagement with tagging group Disaster relief funds? NPRB, NSP? Acoustic, other tags? Acoustic array
University, Agency partnerships	NSEDC Issues affecting Arctic, Chukchi Sea research AFSC General concerns about funding and priorities STRAIT Science Range of topical presentations	Wes Jones Foy Gay Sheffield	Continue to include this? Discuss with Chad Connect, discuss opportunities for 2023 Useful conversations at Feb workshop Ongoing participation
Council	AFU Wide range of ecological, habitat interests UW Assessment methods, bycatch, lots of potential Conflicts in Federal/State Pcod management IPHC Fixed gear issues - bycatch, whale depredation Potential U.S. survey additions	Brad Harris, Nathan Wolf Roy Hilborn Chris Anderson Claude Dykstra, Ian Stewart	Connect, discuss opportunities for 2023 UW/industry meetings Discuss with Chad Check if IPHC lecture series is ongoing in 2023
NPRB	Research Priorities SSC Workshops NBS/Arctic workshop Feb 2023 Ecosystem Committee Research priorities, EPH, marine mammals, seabirds Council members Bering Sea FEP: Climate Change Taskforce Research Funding EPB: other resources for and research funding	Diana Evans, SSC members Bill Twelt, Diana Evans Kenny Down, Bill Twelt, Angel Drobnica, Others Stram Matt Baker	Research priorities SSC Subcommittee formed at June 2022 mtg Formal review of research priorities in 2024 Check about schedule for 2023 Make plan for engagement Public comments due by 2/3/23 Monitor agendas, discussions Periodic check-ins on projects Monitor agendas, discussions Follow up Matt after meeting with Bob Foy, discussion with Chad



Research Topics

- Tagging
- Genetics
- Diet
- EM
- Assessments



Research Topics

- Tagging

- 373 pSATs

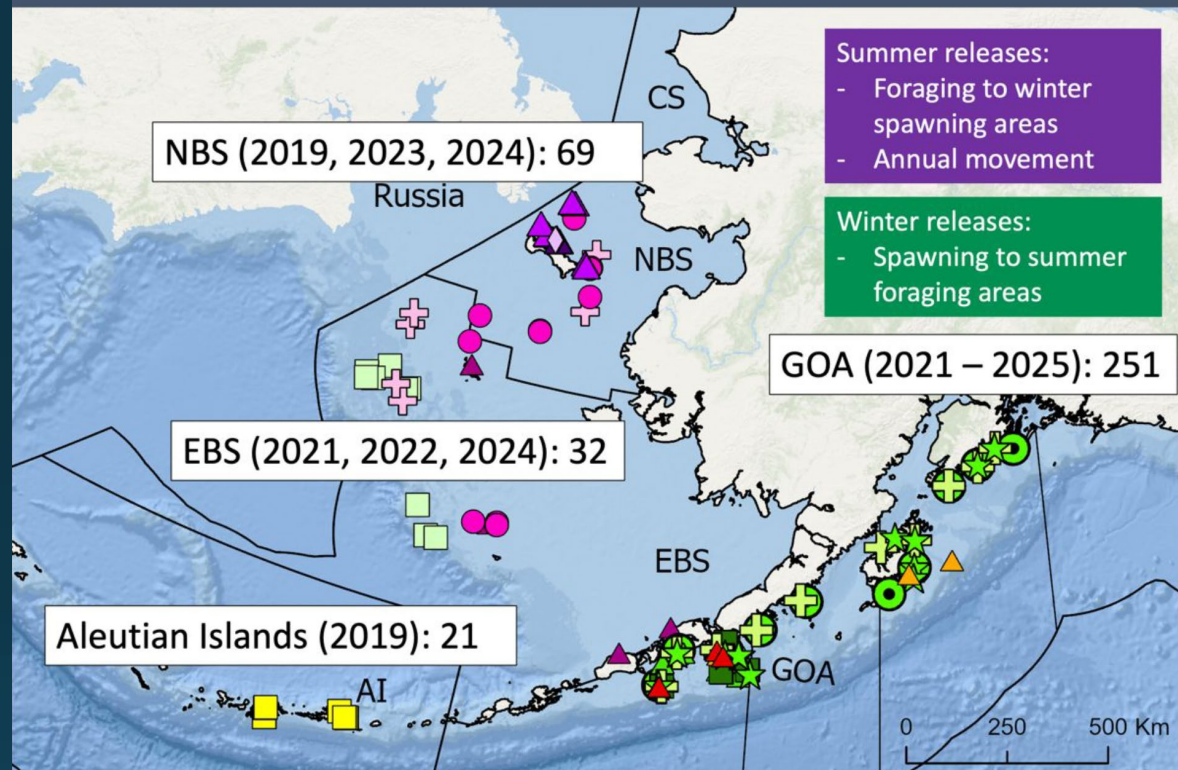
- + 7 from Beauty Bay in Oct

- Funding for remaining

- Acoustic receiver trials Unimak Pass

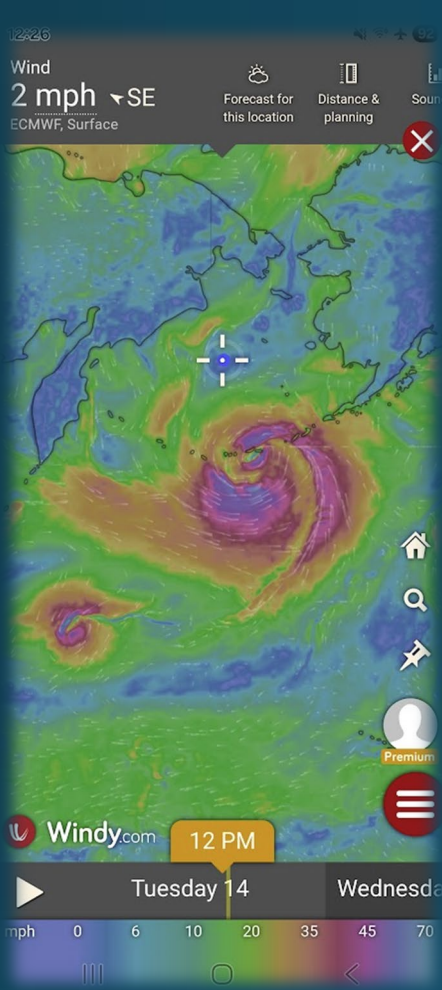
Pacific cod PSAT releases to date:

n = 373

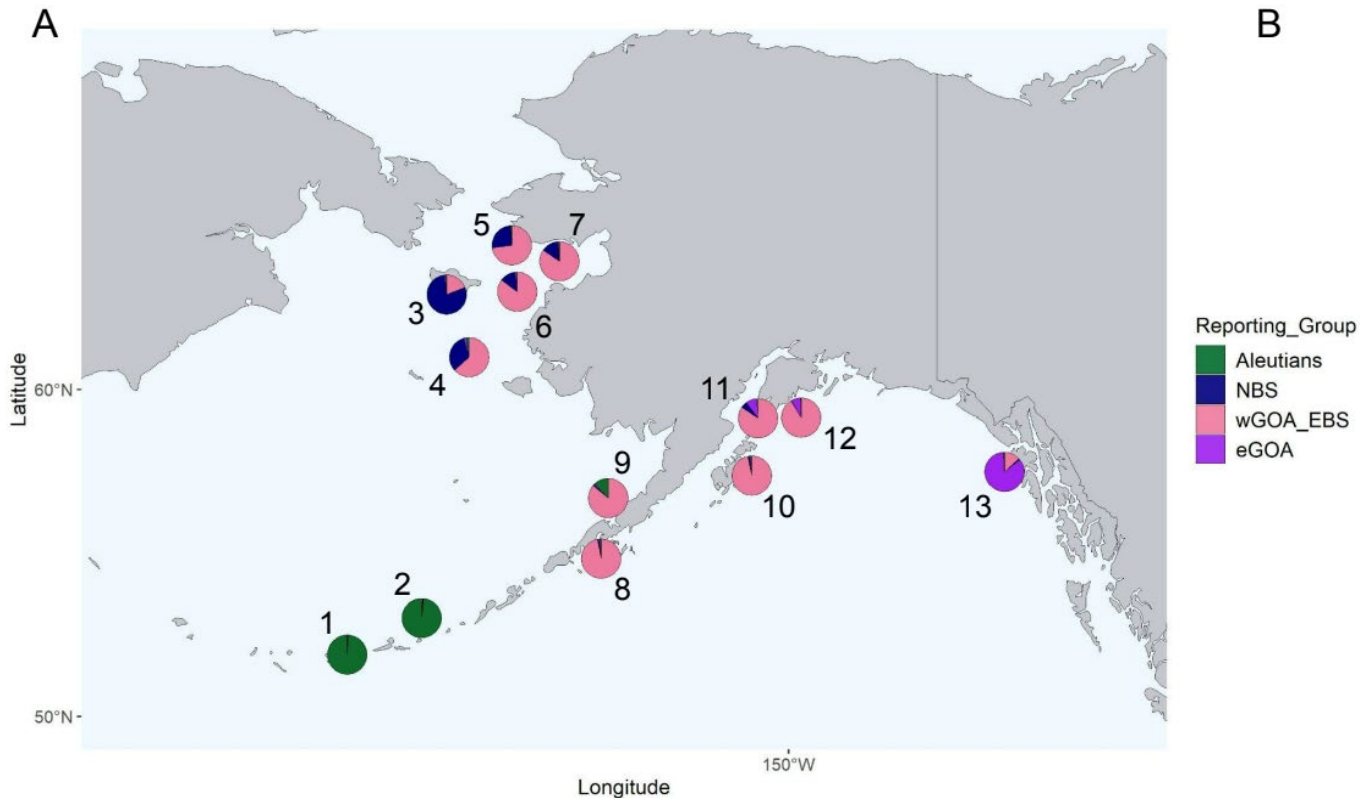


Research Topics

- Tagging
 - 373 pSATs
 - + 7 from Beauty Bay in Oct
 - Funding for remaining
 - Acoustic receiver trials Unimak Pass



Research Topics



- Genetics

- Four Groups

- Sampling kits out on FLC boats

- Partners

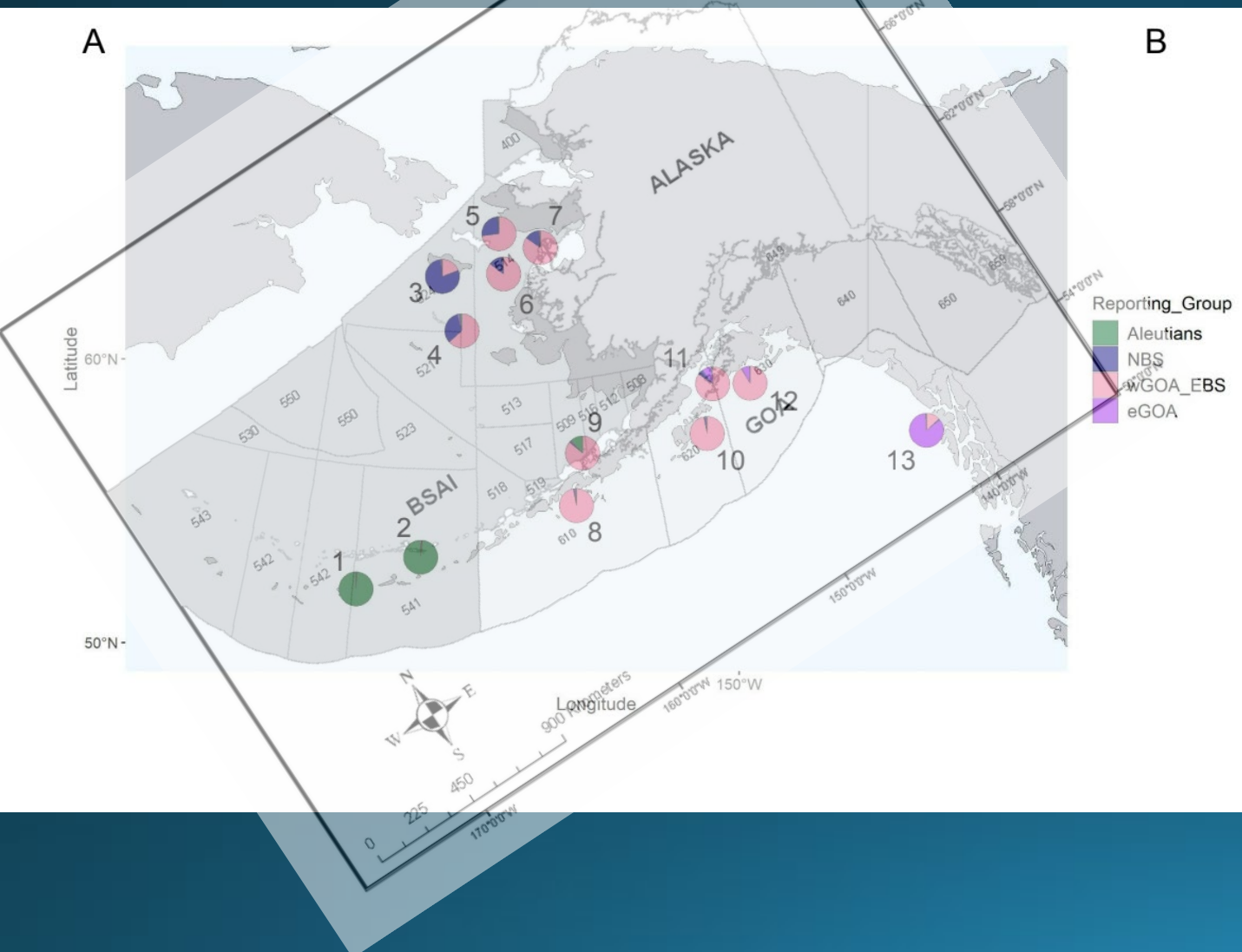
- NMFS

- BBSRI

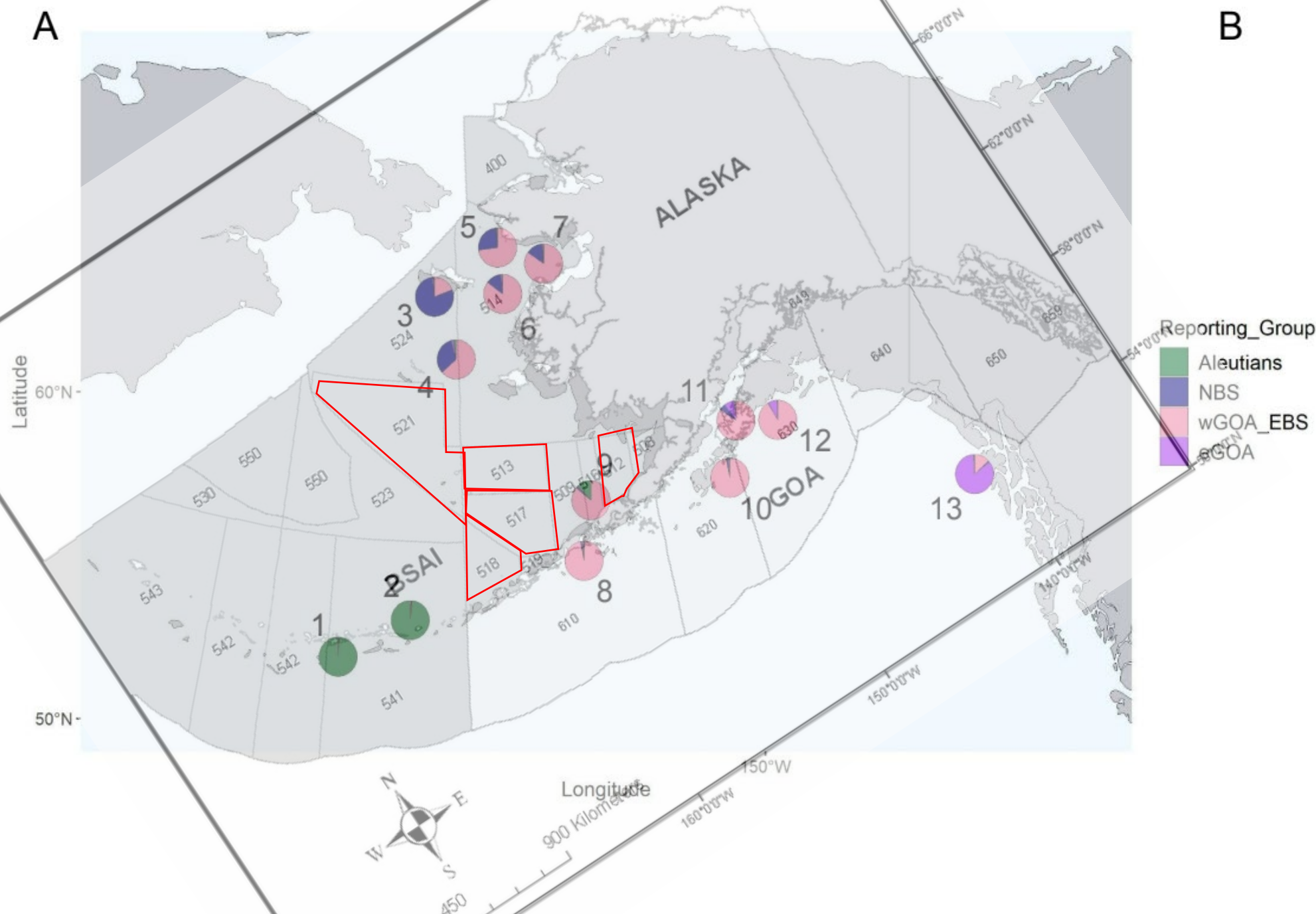
Research Topics



- Genetics
 - Four Groups
 - Sampling kits out on FLC boats
- Partners
 - NMFS
 - BBSRI



A



B

Research Topics

• Genetics

• Four Groups

• Sampling kits out on FLC boats

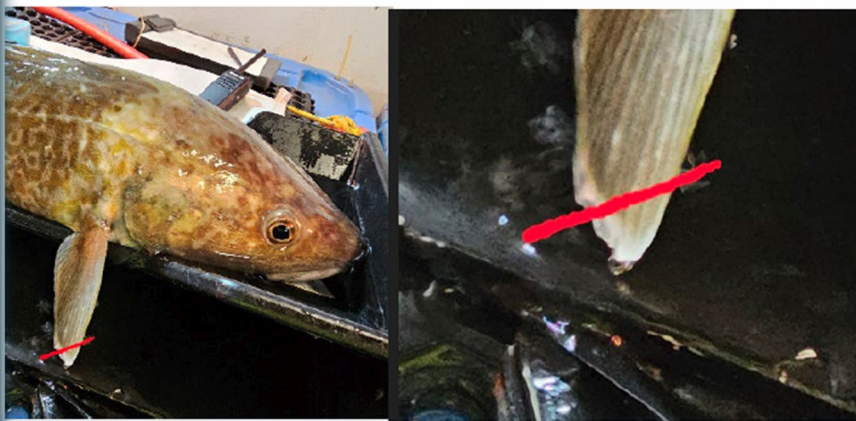
• Partners

• NMFS

• BBSRI



II. Sampling Methods



Cut a small 1cm x 1cm clip from pectoral fin

Pacific Cod Tissue Sampling for DNA Analysis
Instructions for FLC boat crew

I. General Information

Four genotypes of Pacific cod have been identified off Alaska (UGOA, ALWGON/LBS, NBS). Where the fish is caught is often different from where it was spawned. A small (1cm x 1cm), clean, carefully preserved fin clip from a Pacific cod has enough DNA to determine which genotype a fish belongs to. The most important thing to remember is that quality tissue samples give quality results. This means:

- Fin clips need to come from freshly caught fish.
- Fin clips need to be preserved by drying them in a clean atmosphere.

Follow the instructions below in order to obtain fin clips that can be used for genetic analysis.

Target sample size is 50 fin clips per trip.

II. Sampling Methods

A. Sampling Instructions

- Prior to sampling:**
 - Get up workspace on top of bait container of observer table.
 - Fill out two sample cards.
- Sampling:**
 - Wipe fin with clean paper towel prior to cutting.
 - Wipe or rinse scissors and forceps between samples to reduce cross-contamination.
 - Using scissors for cutting and forceps for handling, cut one fin clip per fish.
 - Place one fin clip onto grid. Follow numerical sampling order, printed on card.
 - Staple each sample to the sample card. 5 samples per card.
- When sampling is complete, place a piece of landscape cloth over the samples, protecting the tissue samples for storage/handling. DO NOT STAPLE LANDSCAPE CLOTH.**
- Loading the Pelican cases:**
 - Remove everything from the Pelican case then.
 - Place first loaded sample card in Pelican case with TISSUE SAMPLES FACING UP.
 - Place blotted paper directly over the card and
 - Place one desiccant pack on top.
 - Place second loaded sample card in Pelican case with tissue samples facing up.
 - Place blotted paper directly over the card and
 - Place one desiccant pack on top.
 - Close and secure lid.
 - Do not open case for 24 hrs.
 - DO NOT OPEN Pelican case for at least 24 hours after inserting cards to ensure tissue preserves properly.
- Post-sampling Storage:**
 - All sample cards will remain in a Pelican case for a minimum of 24 hours after being sampled.
 - Once removed from a Pelican case, cards will be stored in a file box containing desiccant packs in a clean dry location.
- Target sample size is 50 fin clips per trip.**

B. Cross Section of Properly Loaded Pelican Case

III. Sampling Kits:

- Scissors - for cutting fin clips.
- Forceps - for handling fin clips.
- Genetics sample card - holds fin clips.
- Heavy duty stapler - secures tissue to card.
- Staples.
- Two Pelican cases (Model 1150).
- Four Desiccant packs - removes moisture from samples.
- Blotted paper - covers sample card in Pelican case.
- Printed.
- File box - long term dry storage of sample cards.



Attach fin clip to sample card with one staple. One fish per numbered grid.

Cod predation on crab in the eastern Bering Sea



**Jon Reum¹, Jim Armstrong²,
Scott Hansen³, Ric Hibpshman¹,
Kerim Aydin¹**

¹NOAA Alaska Fisheries Science Center

²Freezer Longline Coalition

³F/V Beauty Bay

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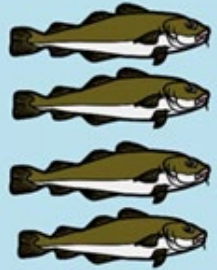
March 19, 2026

Cod vs. Crab: It's Not Just Cod Abundance—Size Influences Predation on Crab

A new study uses spatial models to precisely map how Pacific cod prey on commercially important snow and southern Tanner crabs in the eastern Bering Sea.



IT'S COD VS. CRAB



Small cod's motto:
"see crab, eat crab"



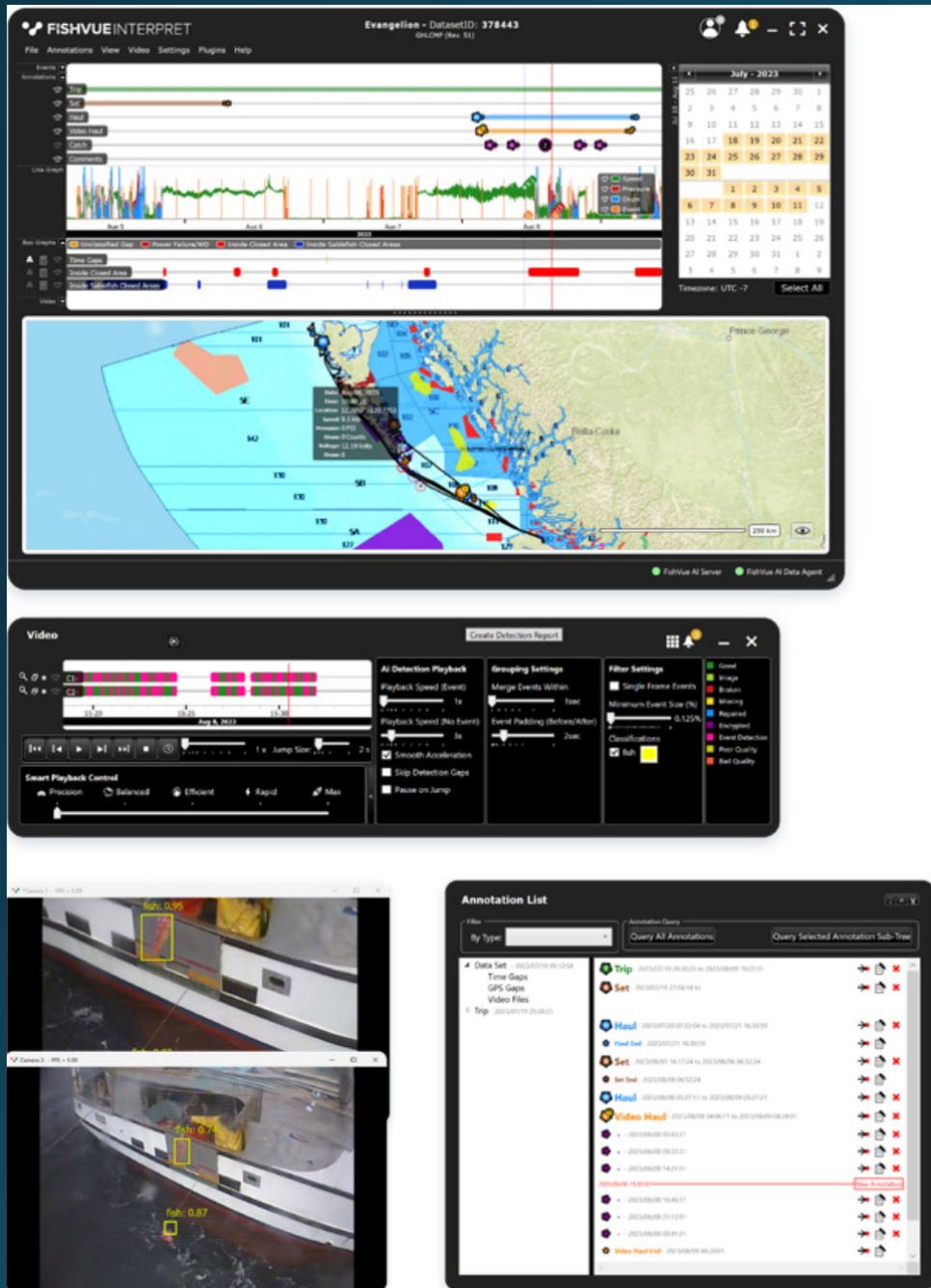
Large cod's motto:
"not trying to eat
every one"



NOAA
FISHERIES

Research Topics

- EM
 - New Direction
 - Funding
 - Partners
 - Roadmap



Research Topics

Pilot Project Summary

Fall
2026

	Milestone	Objective	Key Outputs
Phase 1	M1: Installation	Install EM systems	System configuration
	M2: Performance	Ensure operability	Performance reports
	M3: Flow Scale	Verify test, monitoring	Validation report
Phase 2	M4: Effort	Collect gear, effort data	Data report, comparison with obs-based
	M5: Catch	Characterize catch	Catch data report, comparison with obs-based
	M6: Seabirds	Monitor interactions	Interaction data
	M7: Marine Mammals	Monitor interactions	Interaction data
Phase 3	No Observer/EFP	EM validation of eLogbook reporting	Final equivalency report

2027

2028

- EM

- New Direction

- Funding

- Partners

- Roadmap

Research Topics

Phase 1 – EM System Setup (Fall 2026)

Milestone 1 – EM System Installation and Operability

The EM provider will install cameras, sensors, and data systems on selected vessels.

- Completed installation on ___ vessels
- Documentation of cameras, sensors, storage, and system performance

Milestone 2 – EM System Performance at Sea

Evaluate system performance during initial fishing trips.

- Adequate video quality
- Unobstructed camera views
- Reliable system performance

Milestone 3 – Flow Scale Monitoring

Evaluate EM capability to monitor flow scale testing.

- Verification of testing procedures
- Verification of flow scale operation

• EM

• New Direction

- Funding
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• Roadmap

Research Topics

Phase 2 – EM, eLogbook, and Observer (2027 Fishing Season)

Side-by-side EM and observer data collection will occur. EM-derived data will be compared to observer data.

Milestone 4 – Fishing Effort Data Collection

- Hooks per magazine
- Magazines per set
- Number of sets
- Hook spacing

Milestone 5 – Catch Data Collection

- Species identification
- Catch tally and weight
- Target species sampling
- Halibut PSC monitoring

Milestone 6 – Seabird Interactions

- Seabird avoidance measures
- Incidental catch

Milestone 7 – Marine Mammal Interactions

- Sightings
- Depredation
- Entanglements

- EM
 - New Direction
 - Funding
 - Partners
 - Roadmap

Research Topics

Phase 3 – EM and eLogbook (No Observer; EFP Required) – 2028

Selected trips will occur without onboard observers under an Experimental Fishing Permit.

- Retained catch data
- Discard data
- PSC accounting
- Fishing effort metrics
- Compliance verification

- **EM**

- **New Direction**

- **Funding**
 - **Partners**

- **Roadmap**

Research Topics

	OFL	ABC	State GHL	(%)	TAC
GOA-wide	49,782	41,520	11,410	27%	30,110
Western GOA:		10,297	3,604	35%	6,693
Central GOA:		28,732	7,183	25%	21,549
Eastern GOA		2,491	623	25%	1,868
Reg Area and Sector	Annual allocation (mt)	A Season		B Season	
		% of annual non-jig TAC	Seasonal allocation (mt)	% of annual non-jig TAC	Seasonal allocation (mt)
Western GOA:					
Jig (3.5% of TAC)	234	3.50%	141	N/A	94
Hook-and-line CV	90	0.70%	45	0.70%	45
Hook-and-line CP	1,279	10.90%	704	8.90%	575
Trawl CV	2,480	31.54%	2,037	6.86%	443
Trawl CP	155	0.90%	58	1.50%	97
All Pot CV and Pot CP	2,454	19.80%	1,279	18.20%	1,176
Total Non-jig	6,459	63.84%	4,123	36.16%	2,335
Total	6,693		4,264		2,429
Central GOA:					
Jig (2.0% of TAC)	431	2.00%	67	N/A	44
Hook-and-line <50 CV	1,608	9.32%	1,967	5.29%	1,116
Hook-and-line ≥50 CV	738	5.61%	1,185	1.10%	232
Hook-and-line CP	562	4.11%	867	1.00%	211
Trawl CV 1	4,579	25.29%	5,342	16.29%	3,440
Trawl CP	462	2.00%	423	2.19%	463
All Pot CV and Pot CP	3,062	17.83%	3,765	9.98%	2,107
Total Non-jig	21,118		13,549		7,569
Total	21,549	64.16%	27,165	35.84%	15,182
Eastern GOA	1,868	Inshore (90% of Annual TAC)		Offshore (10% of Annual TAC)	
		1,681		187	

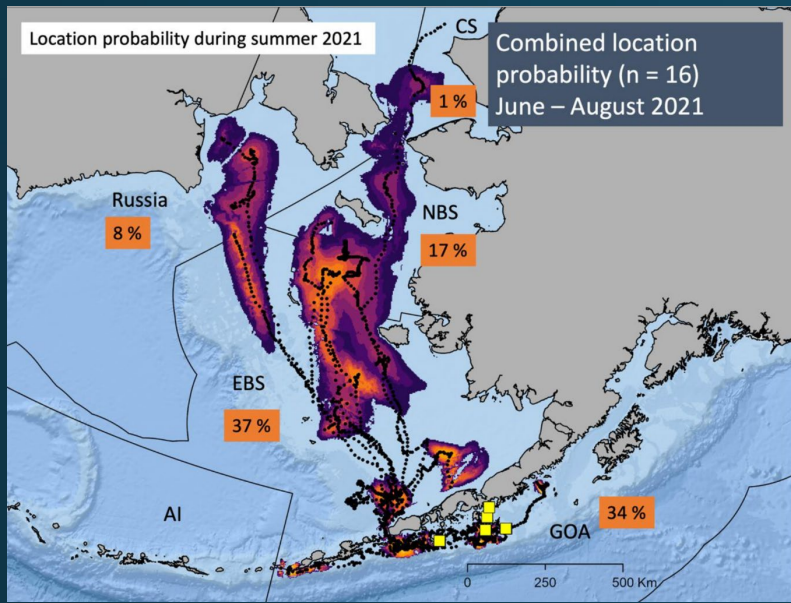
• Assessments

- Furlough impacts
 - GOA ABC adjustment
 - EBS + AI projections

• Overhaul

- Genetics-based stocks
- New platform
- Incorporate movement

+ 38% 30,193 → 41,520

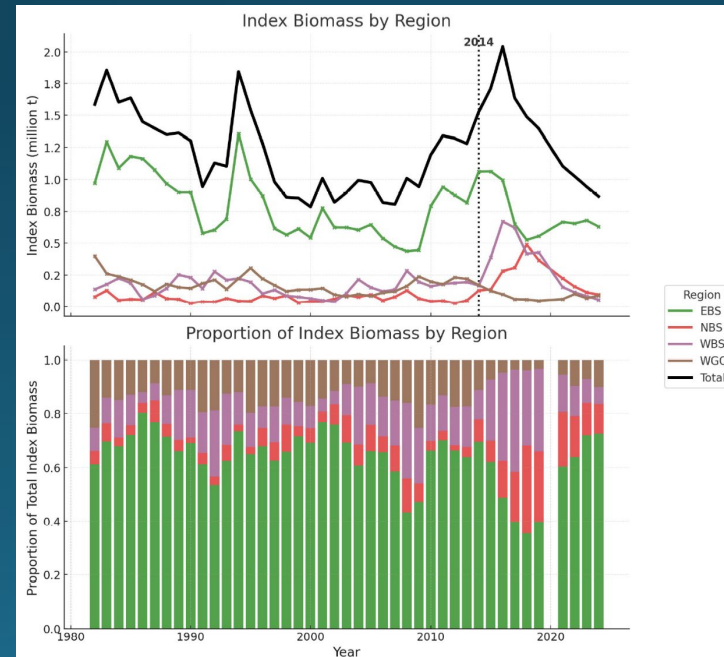
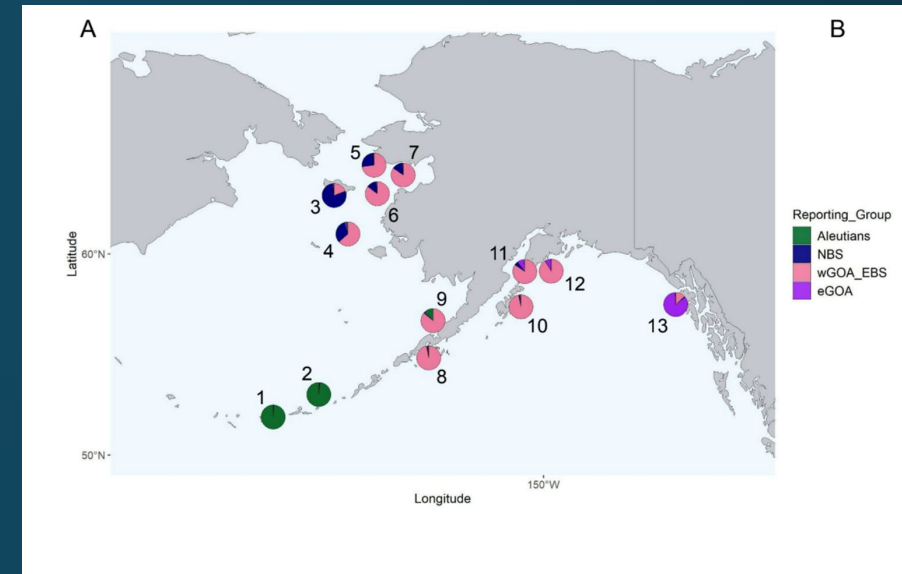


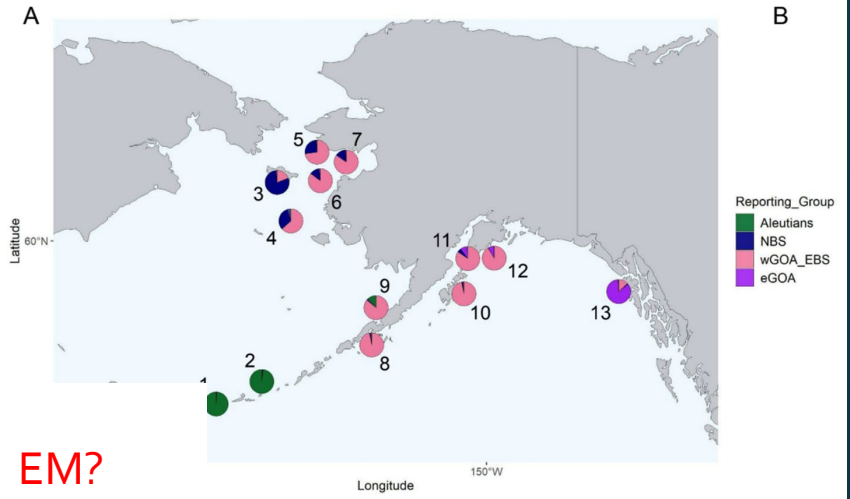
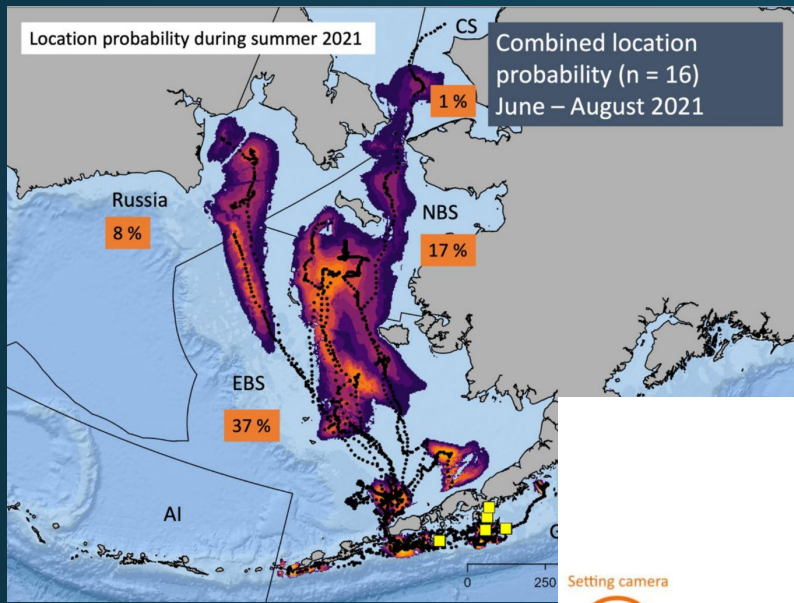
Overhaul

Genetics-based stocks

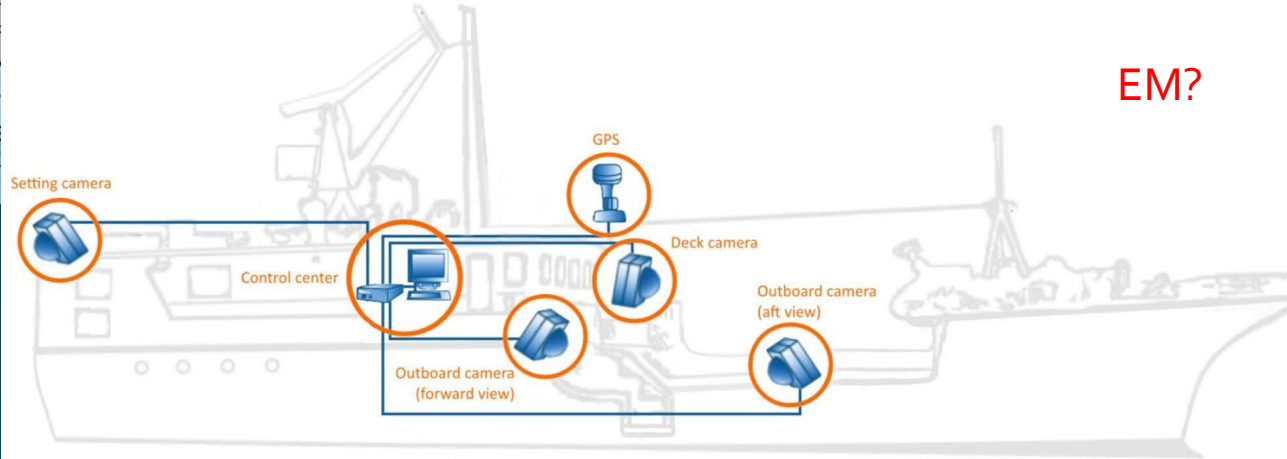
New platform

Incorporate movement

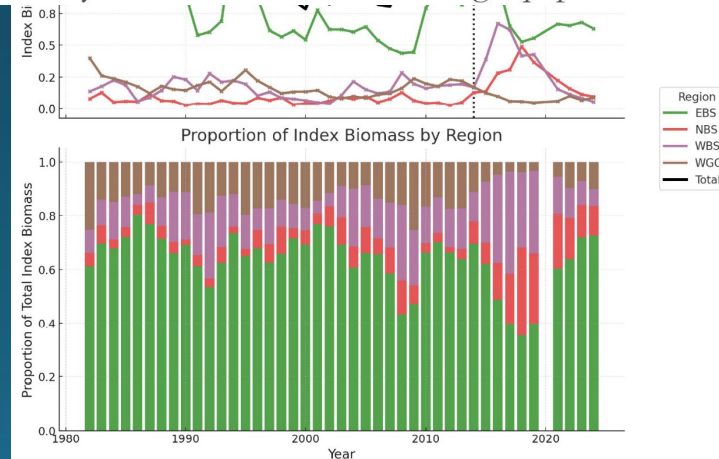




EM?



Pictured Above: The layout of electronic monitoring equipment on a typical longline vessel





Questions?