Ecosystem Status Report Aleutian Islands 2026 – GPT NOV

Hydra Scientific LLC

Thank you !

Ivonne Ortiz



With contributions from:

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photos: photolib.noaa.gov

Pacific States Marine Fisheries Commission

AOOS Alaska Ocean Observing System

Sea Grant Alaska

NOAA FISHERIES



- Response to comments from GPT November 2024
- Ecosystem Considerations for Risk Tables
- Ecosystem Assessment
  - 2026 Conditions
  - Multi-year trends

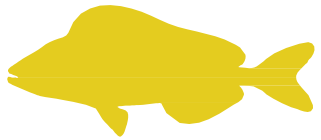
Nov 2024 GPT comments

- *With respect to specific indicators, the Team recommended the authors contact the state demographer to shed insight on the use of school metrics as an index of ecosystem health as this is also connected to educational funding disparities.“*

The ESR author paused this effort as the ESR team continues to engage with NOAA’s Alaska Fisheries Science Center to advance the development of socioeconomic metrics that could be used in ESRs.

Sustained Level 2

Atka mackerel





- Warm winter conditions
- Smaller species in copepod communities
- Deeper mixed layer: potential impact on availability of prey in water column
- Lower than average fish condition across the entire chain
- Increased competition for prey (high rockfish abundance)

Lowered from Level 2 to 1

AI Pacific cod



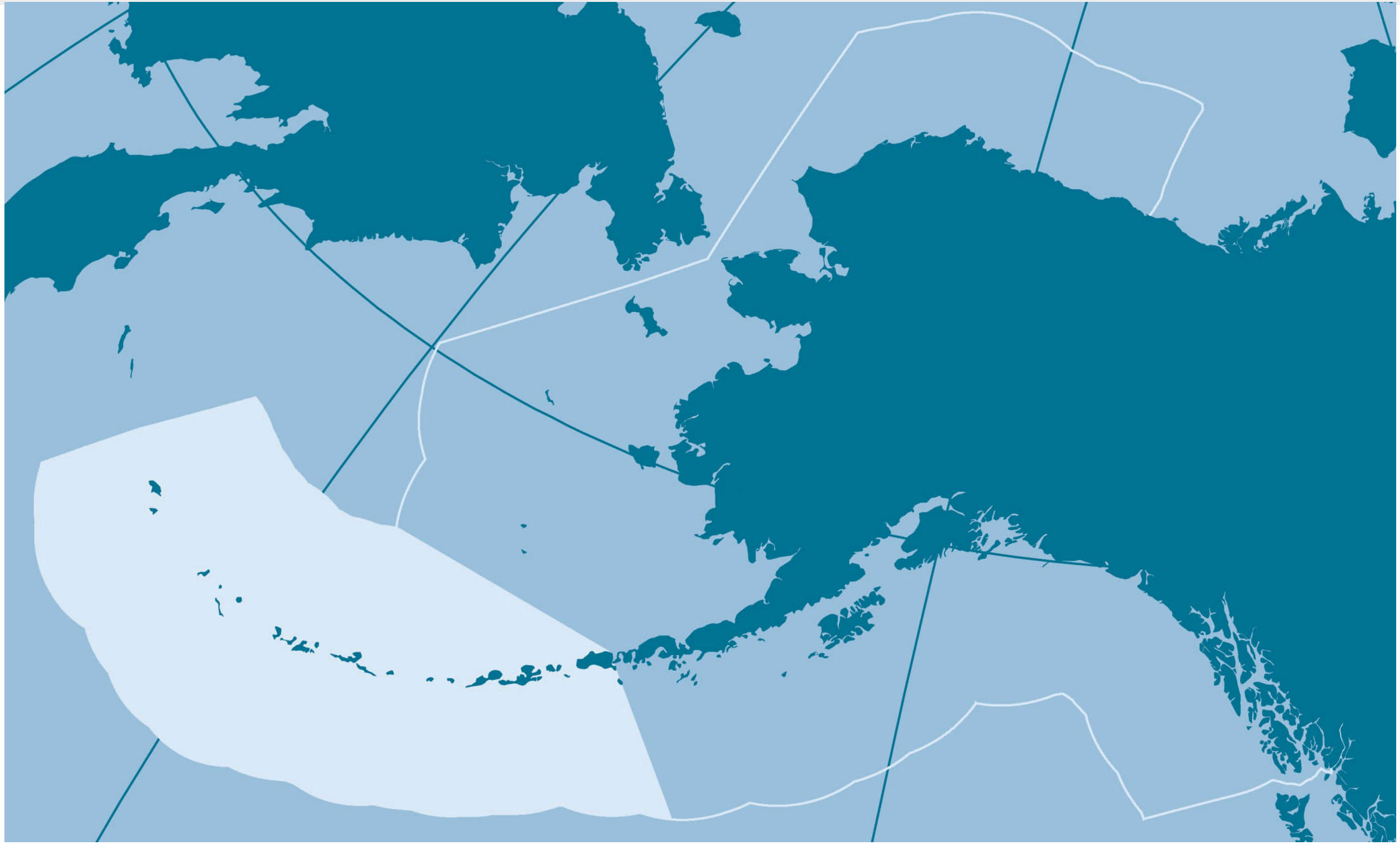


- Warm winter conditions
- Higher amount of fish in diet since ~2010
- Higher prey quality resulting in improved fish condition
- Higher consumption of Atka as prey

Sustained Level 1

•Pacific ocean perch •AI pollock •Bogoslof pollock •R&B rockfish • Shortraker • Other rockfish

2026 Ecosystem Assessment



Conditions through the year: Fall 2025

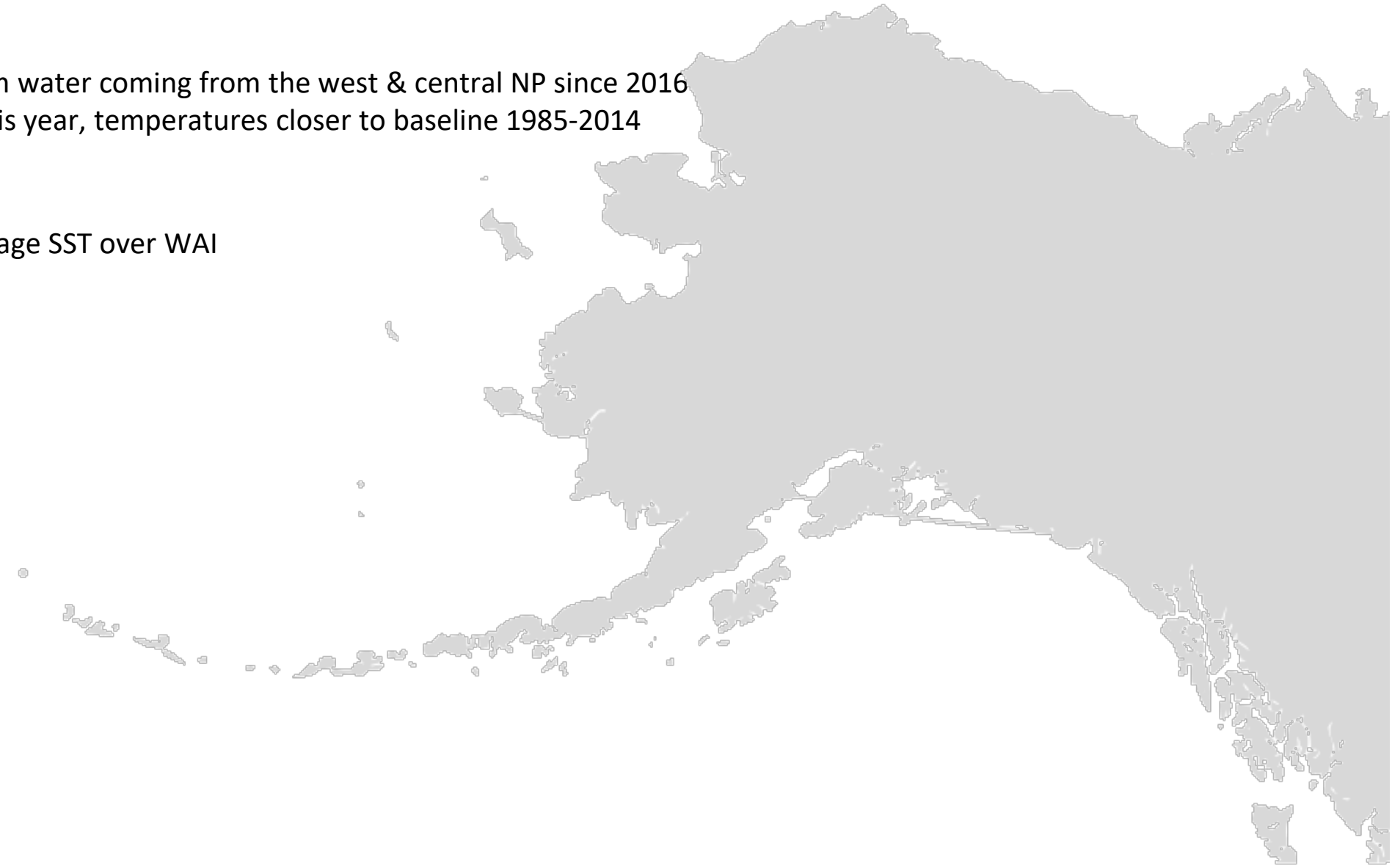
2026 over all

- Higher retention in WAI; warm water coming from the west & central NP since 2016
- Reprieve from warm water this year, temperatures closer to baseline 1985-2014

- Cooler fall 2025: close to average SST over WAI
- Large eddy throughout 2025







Lemagie, Callahan, Cheng, Pelland

Conditions through the year: Winter 2026

- Weak Aleutian Low: less storms
- Large eddy mixing waters in WAI
- Cold winds from the Arctic and Bering Sea shelf



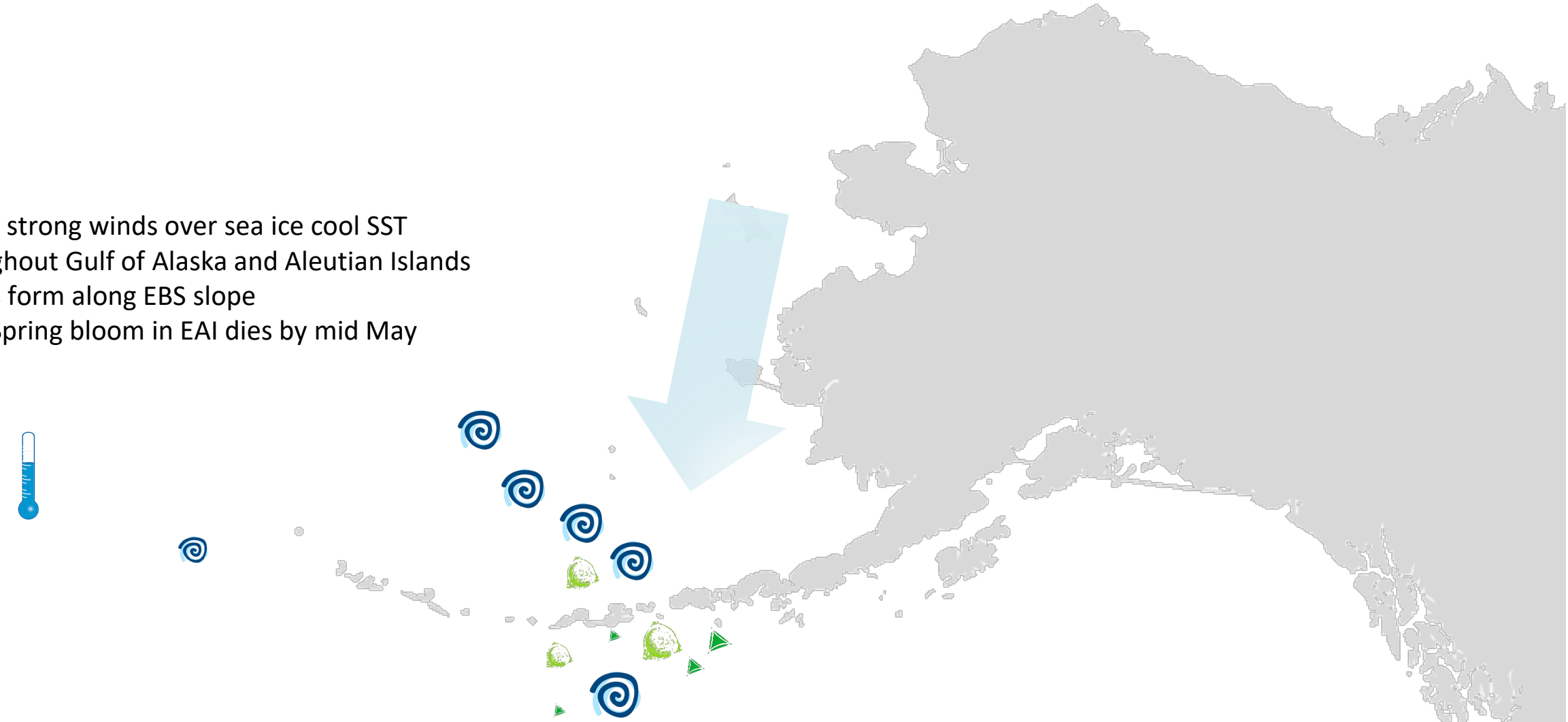




Lemagie, Callahan, Cheng, Pelland

Conditions through the year: Spring 2026

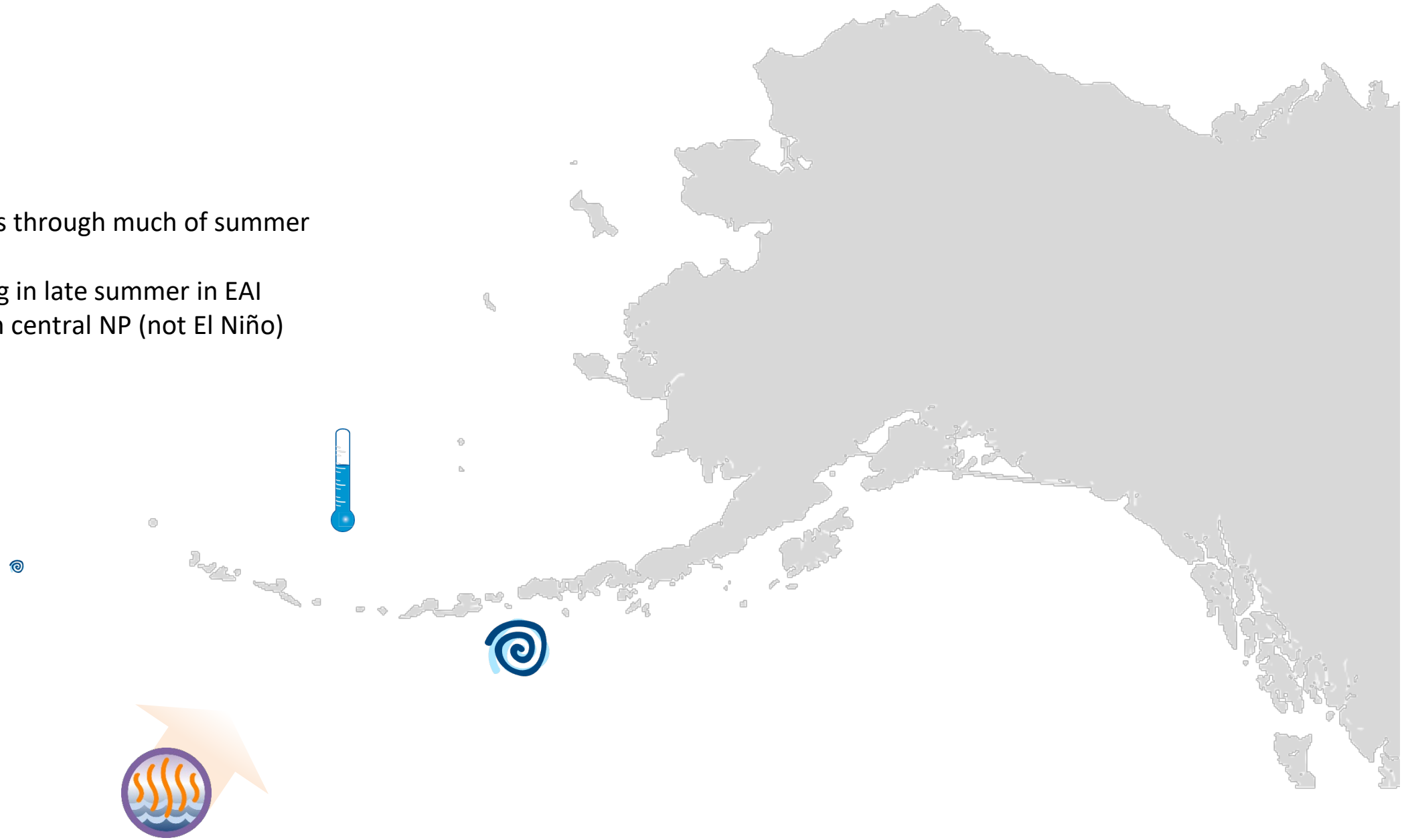
- March strong winds over sea ice cool SST throughout Gulf of Alaska and Aleutian Islands
- Eddies form along EBS slope
- Early Spring bloom in EAI dies by mid May



Lemagie, Callahan, Cheng, Pelland

Conditions through the year: Summer 2026

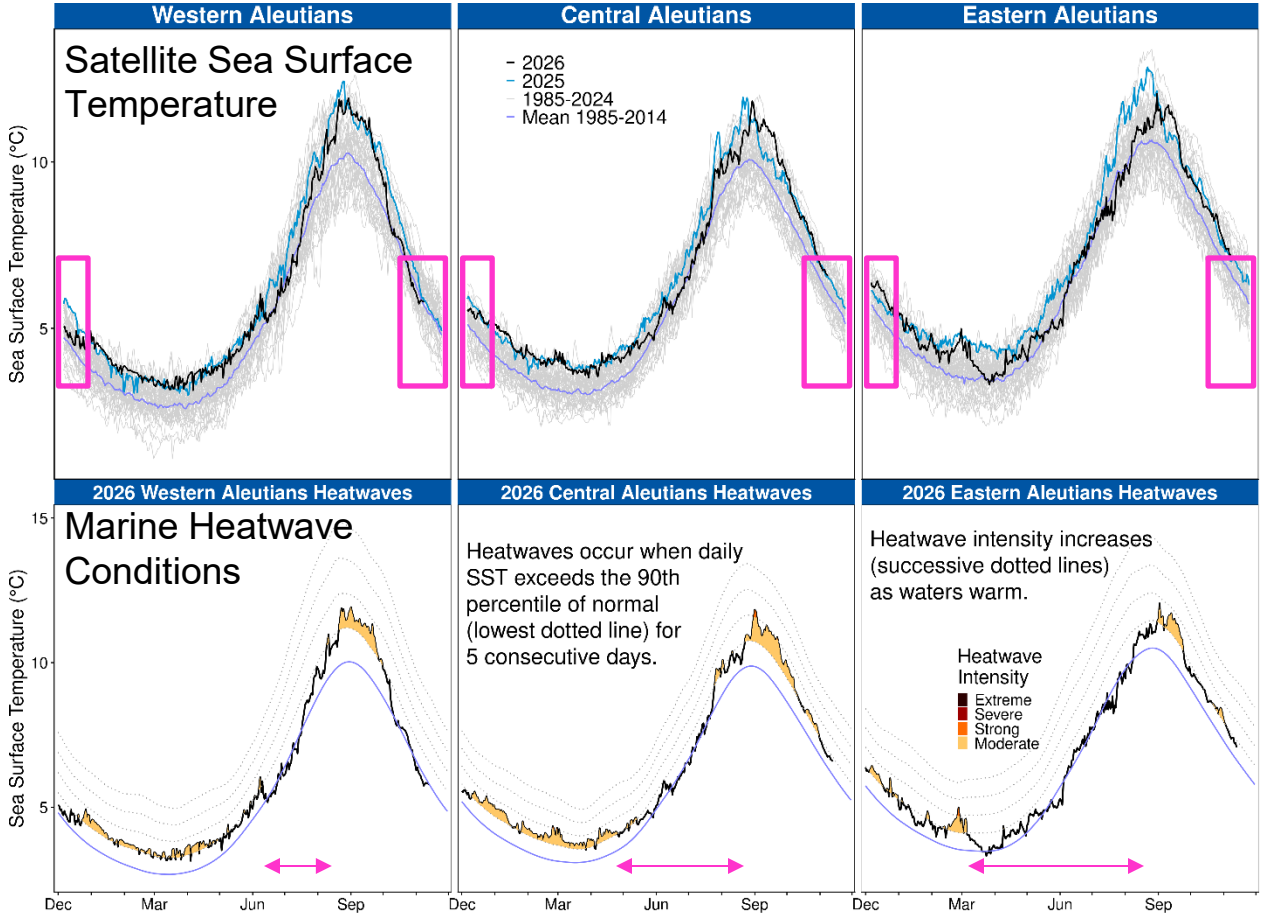
- Cold water prevails through much of summer WAI to EAI
- Eddy strengthening in late summer in EAI
- Warm waters from central NP (not El Niño)



Lemagie, Callahan, Cheng, Pelland

Temperatures closer to baseline, temperature gradient W-E, warmer in WAI

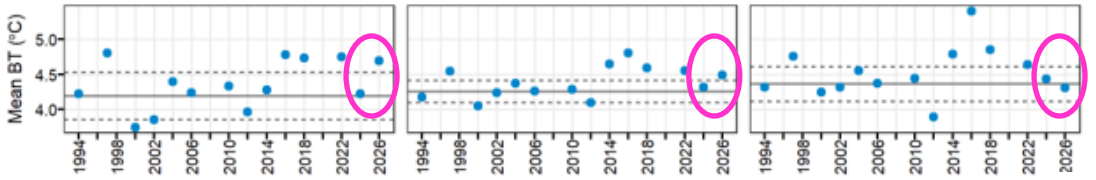
data through 11-16-2026

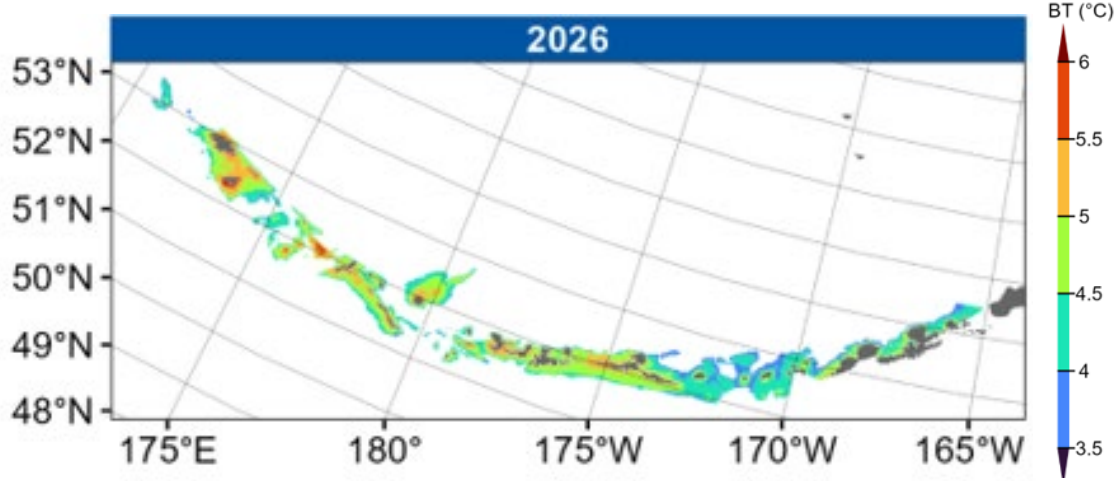


NOAA Coral Reef Watch data, courtesy NOAA Pacific Islands Ocean Observing System (Updated: 11-13-2026)
Data are modeled satellite products and periodic discrepancies or gaps may exist across sensors and products.
Contact: matt.callahan@noaa.gov, Alaska Fisheries Science Center

- Cooler fall 2025
- Warm winter throughout, among 10 warmest winters
- Cooler summer with shorter reprieve in WAI, longer EAI
- Cooler fall 2026

Bottom temperatures from bottom trawl survey

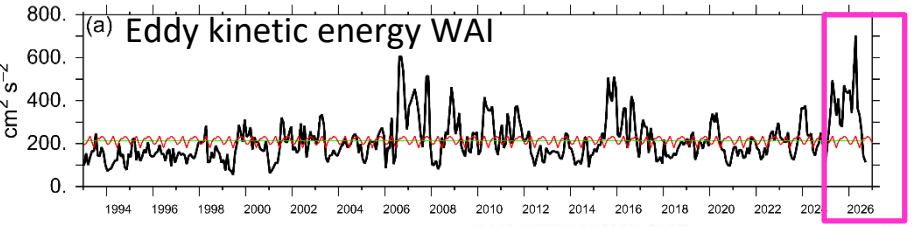


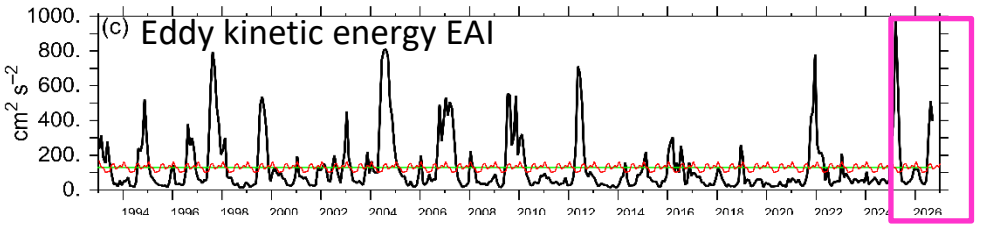


Lemagie & Callahan, Rohan & Howard

Strong eddies and early spring phytoplankton bloom

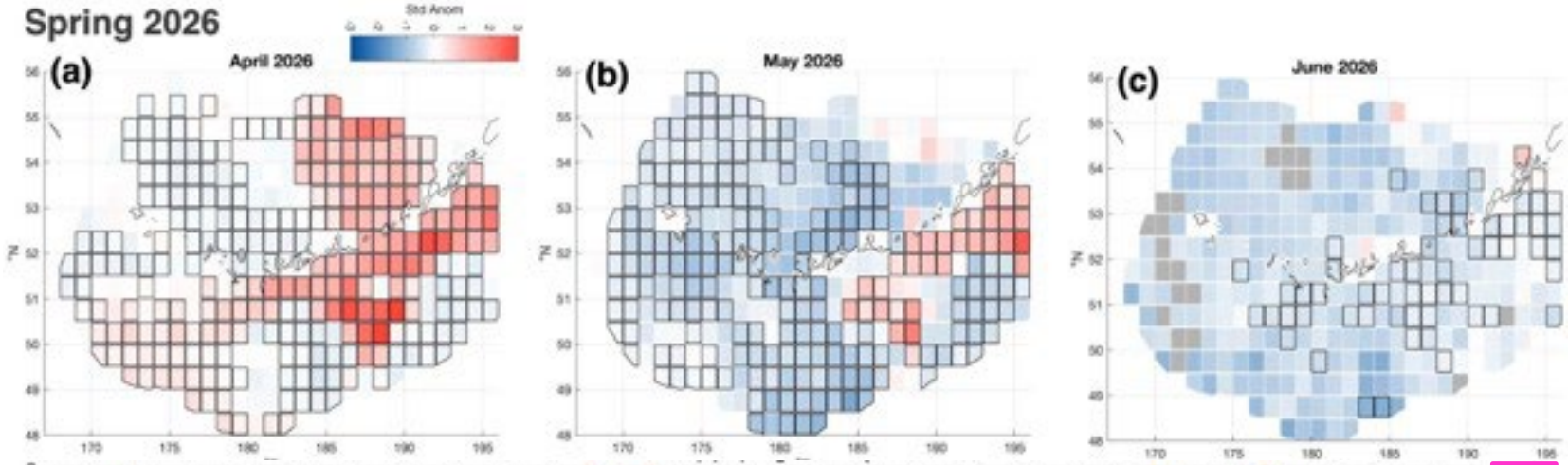
- Eddy activity related to early, short-lived spring phytoplankton bloom
- Widespread areas of below average phytoplankton biomass in May and June (from sat chla)



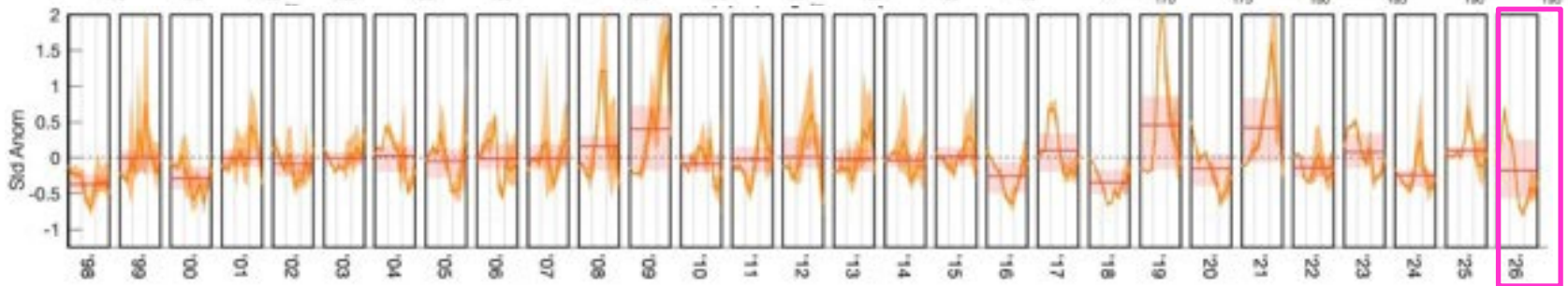


Satellite chlorophyll *a*

proxy for phytoplankton biomass



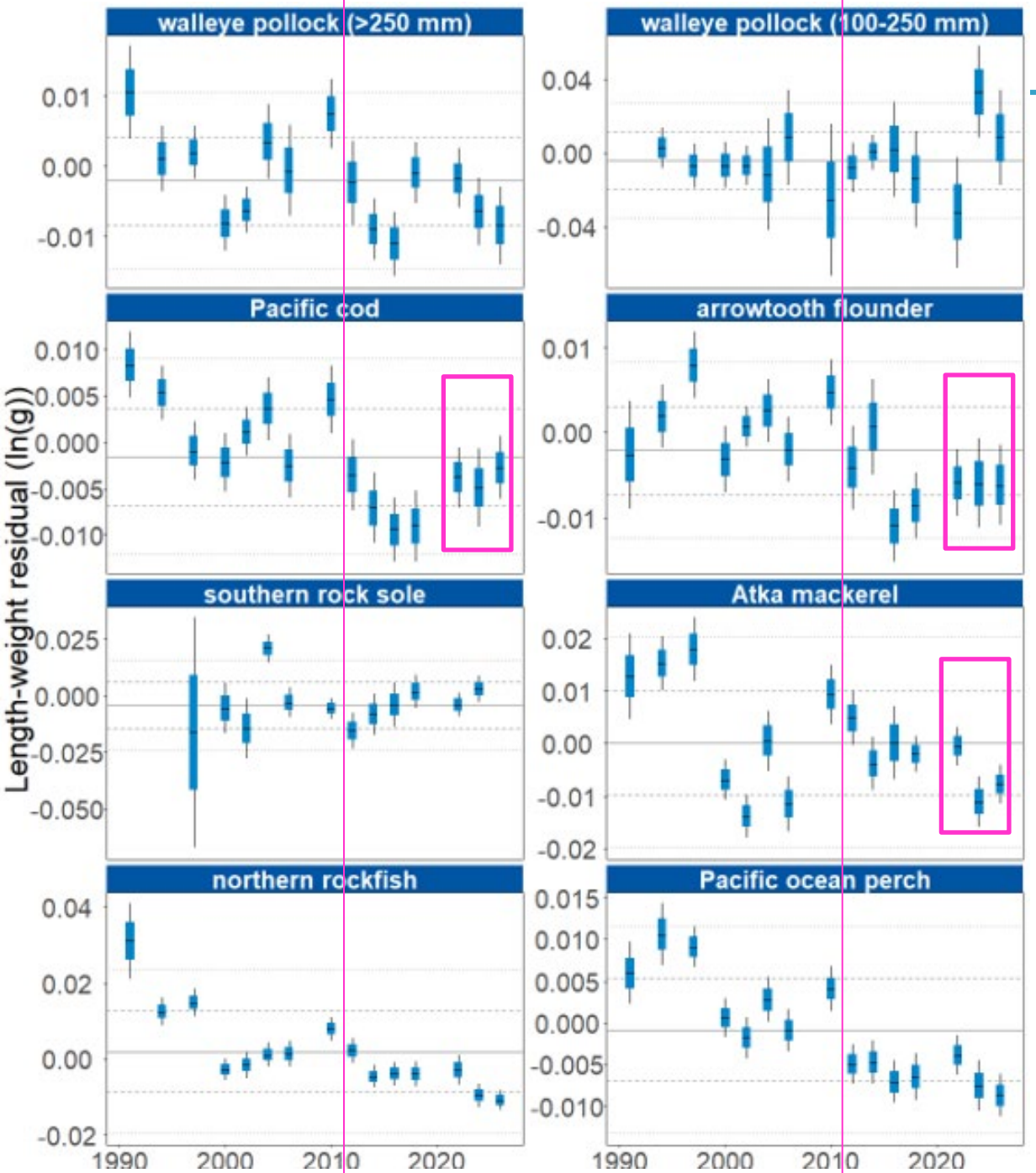
Spring Anomaly Apr-Jun

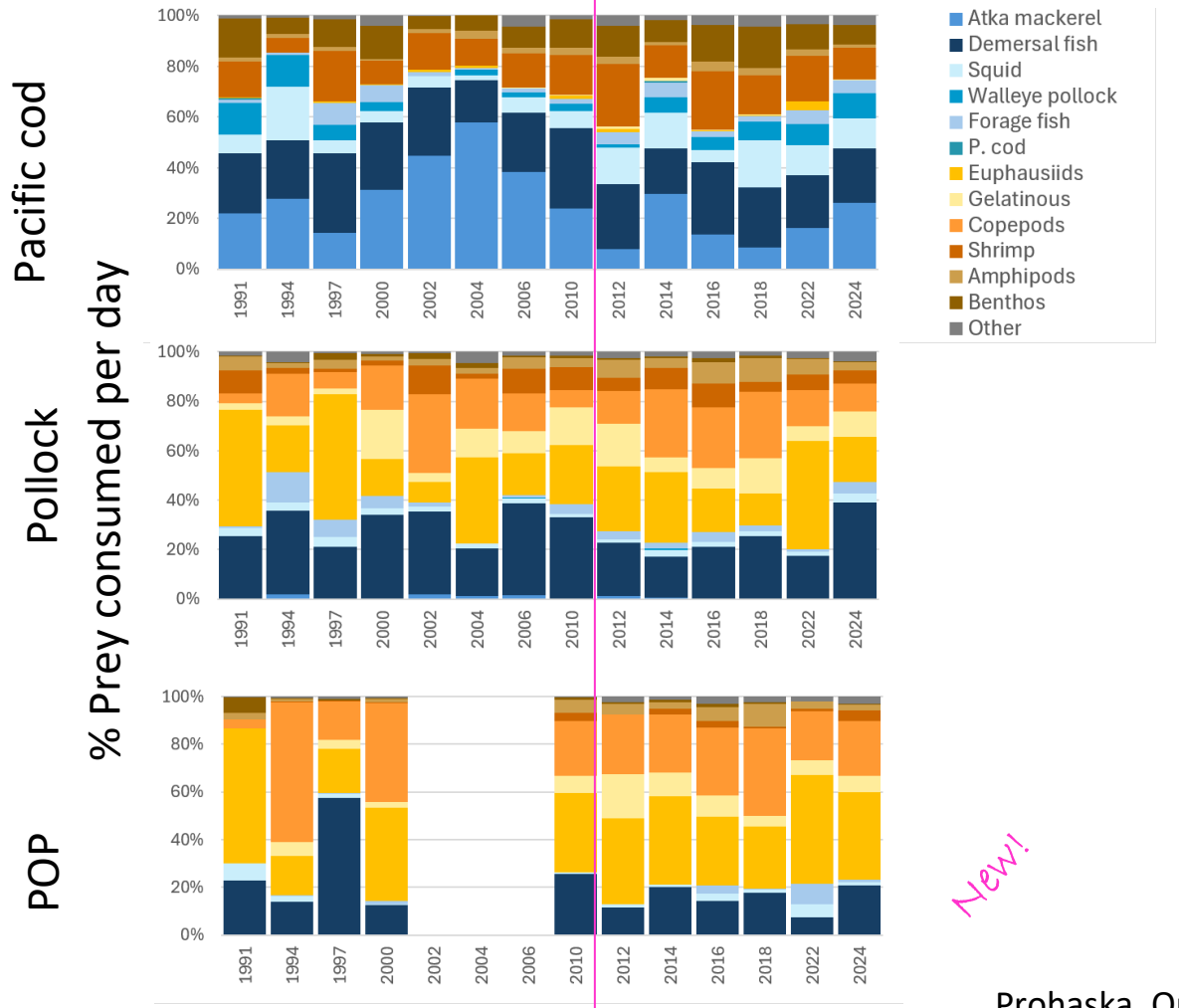


Cheng, Pelland

Improvement in fish condition; more fish in diets

- Small pollock, southern rock sole above baseline condition
- Improved condition of Pacific cod and Atka mackerel
- More fish in pollock and cod diets

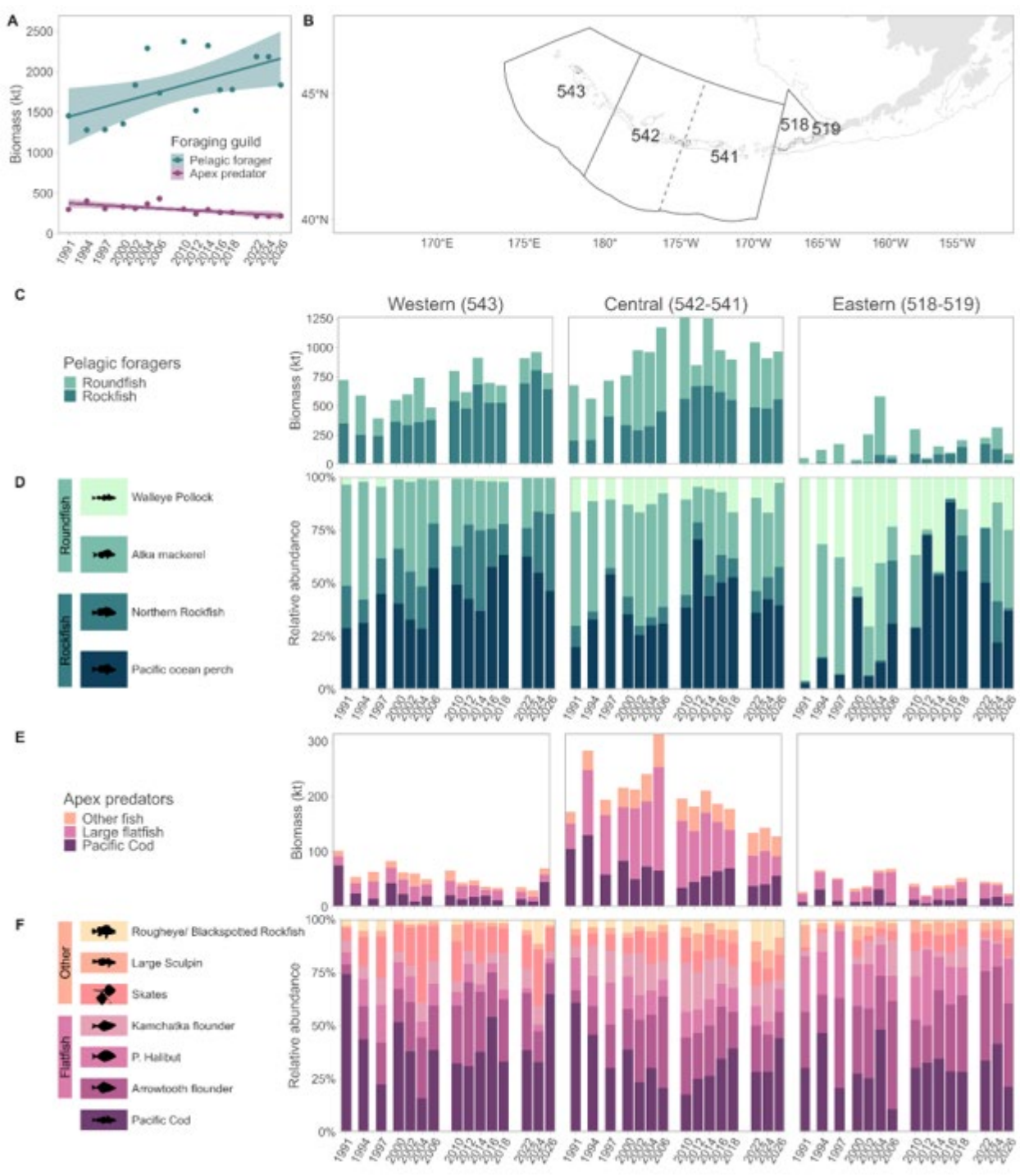


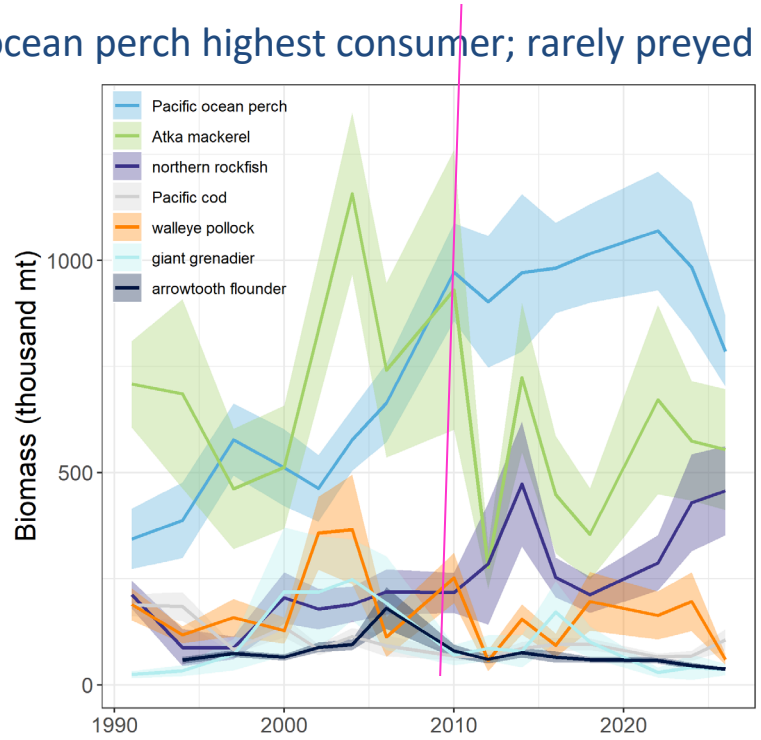


Prohaska, Ortiz

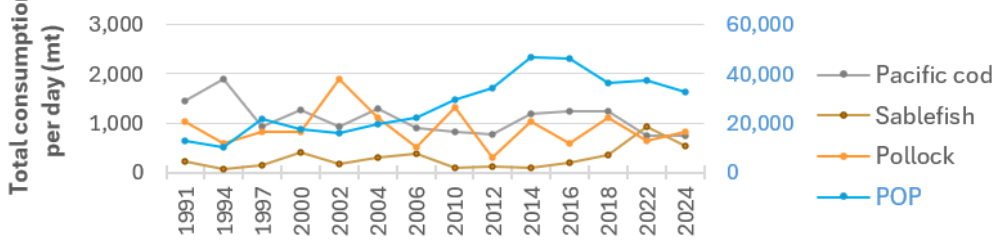
Groundfish: Rockfish stable in WAI dominate pelagic foragers

- Decrease of pelagic foragers driven by Pacific ocean perch (POP); northern rockfish increase when POP decreases in WAI
- Increase of apex predators, Pacific cod in WAI
- Pacific ocean perch highest consumer; rarely preyed on





New!

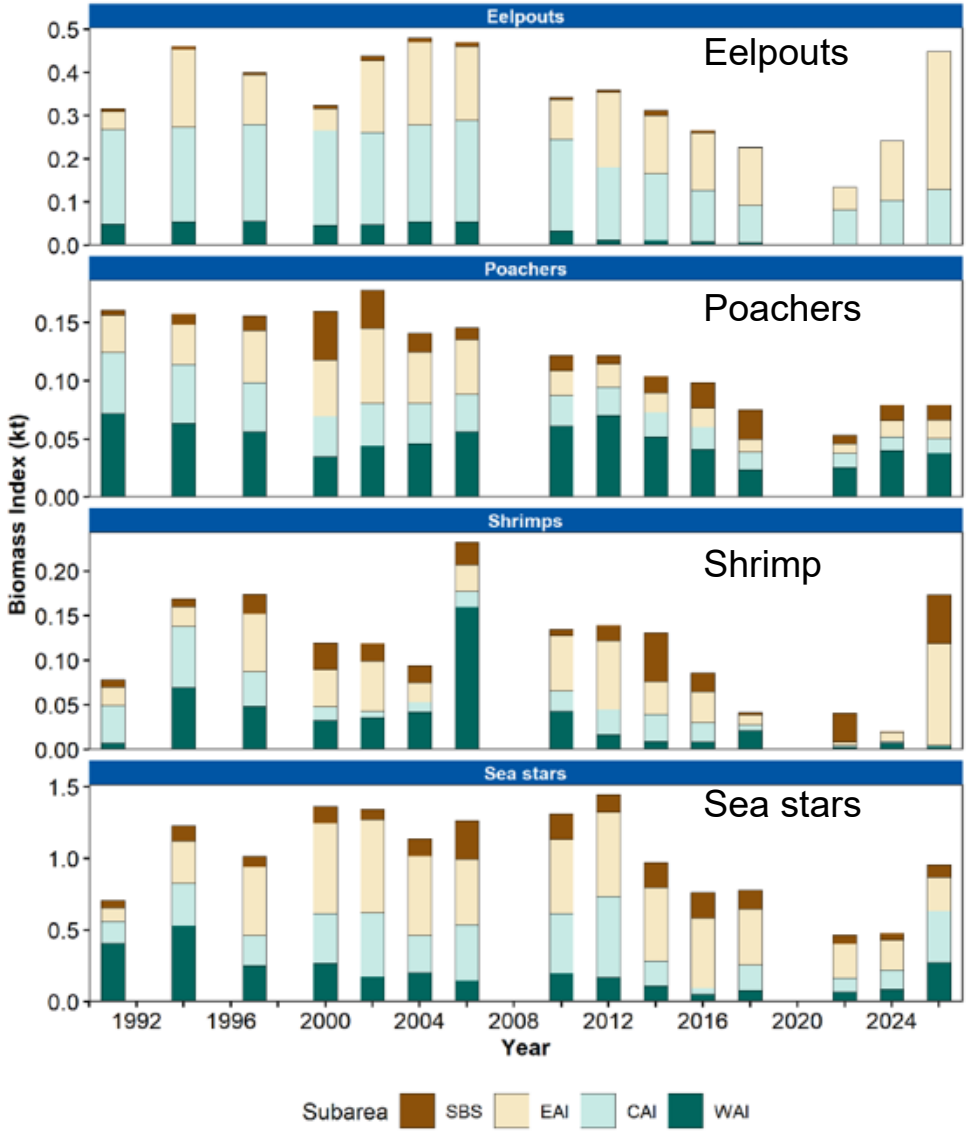


Updated!

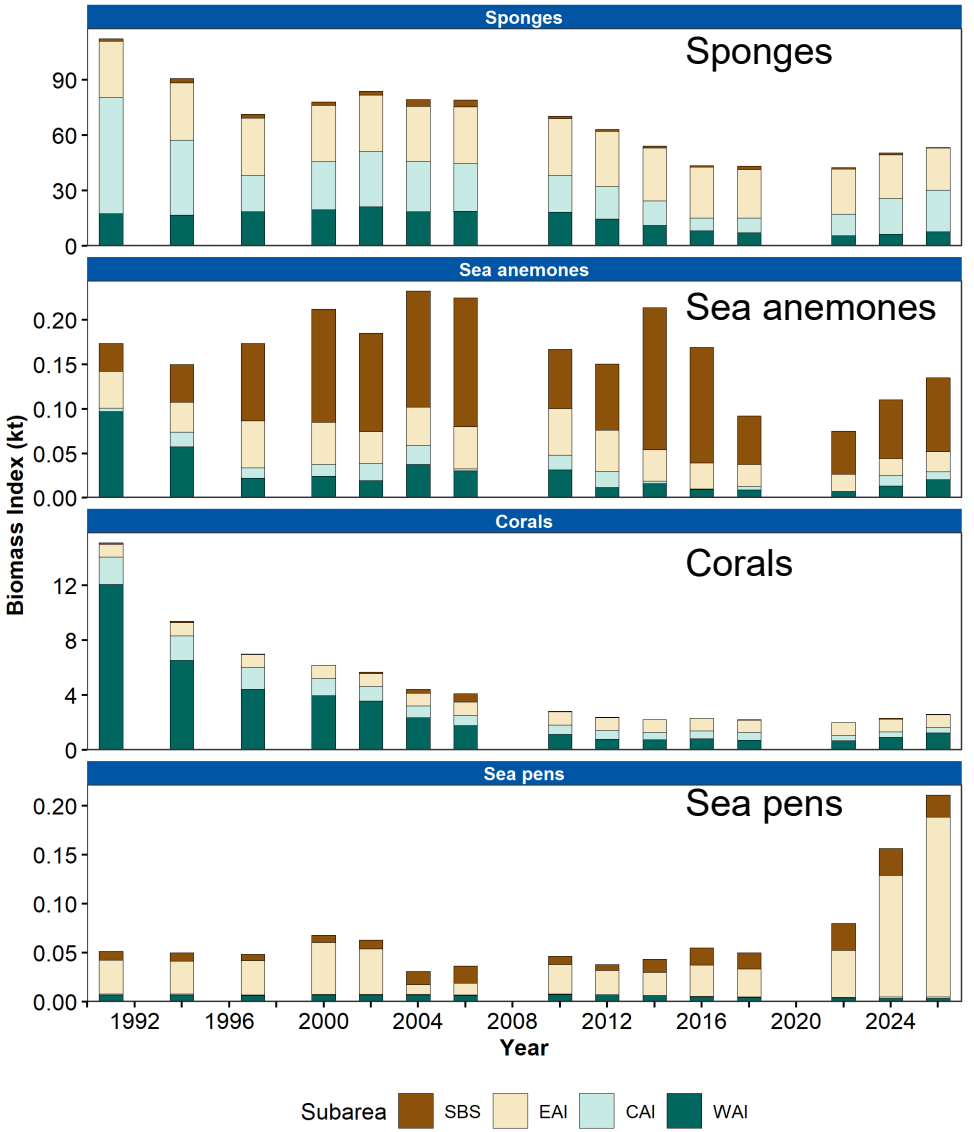
Top biomass: Rohan, Callahan, Barnett, Ferriss, Ortiz;
Guilds: Ortiz, Jacuzzi, Tanja; Consumption: Aydin and Ortiz,

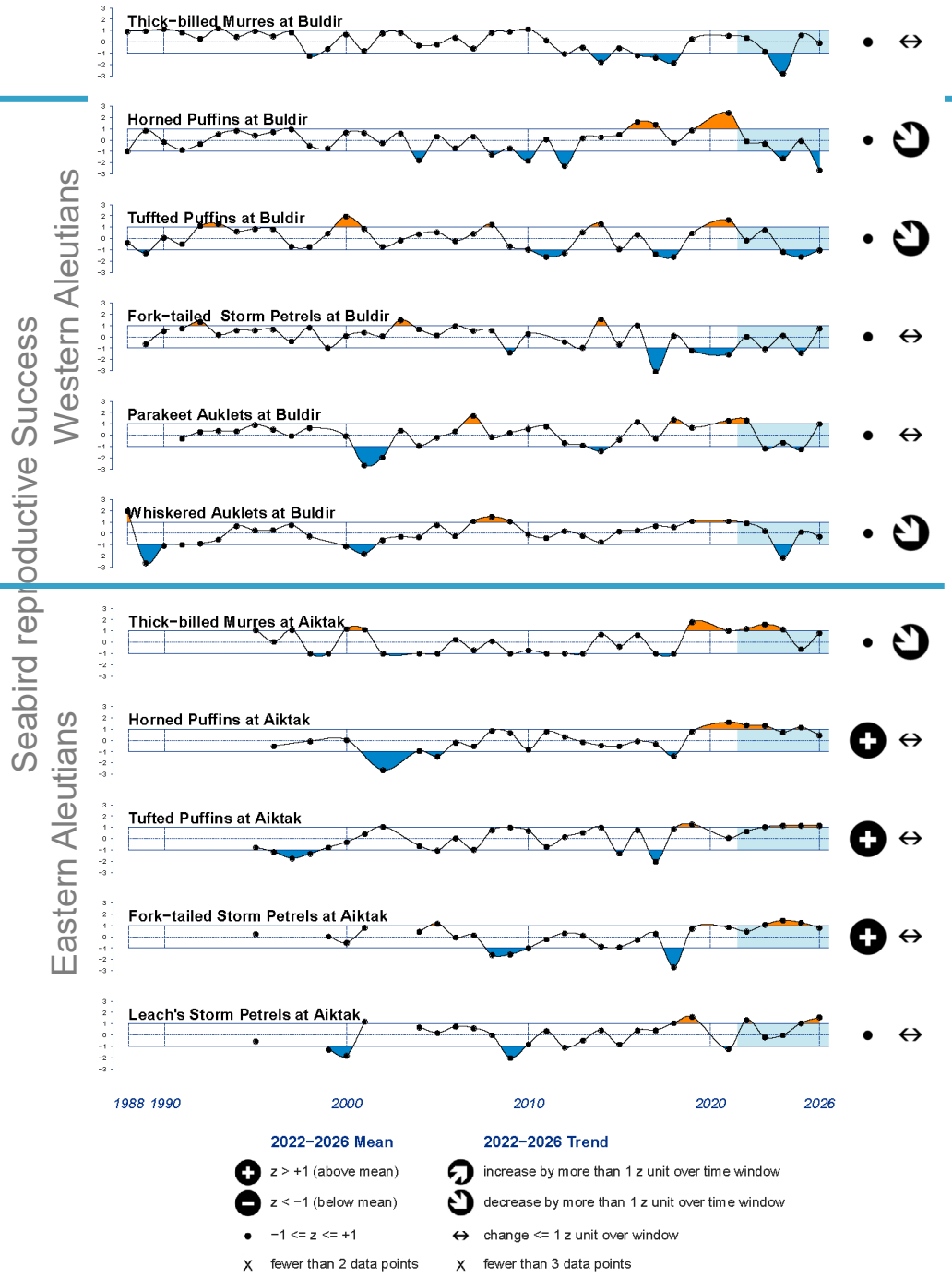
Increases in alternative fish prey, shrimp, and living habitat, preferred as foraging and nursery areas

Miscellaneous species: benthic prey; shrimp –preferred cod prey



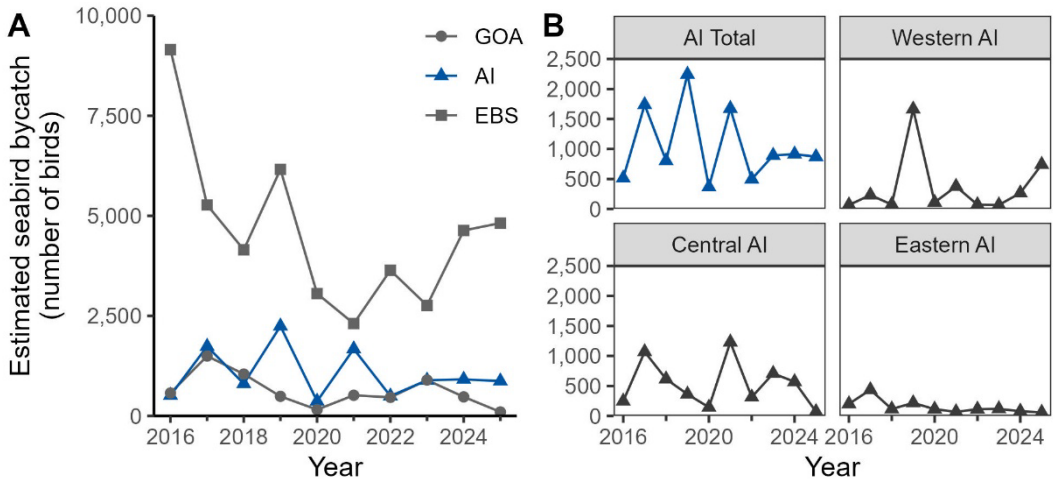
Structural epifauna: both non-calcifying & calcifying increased





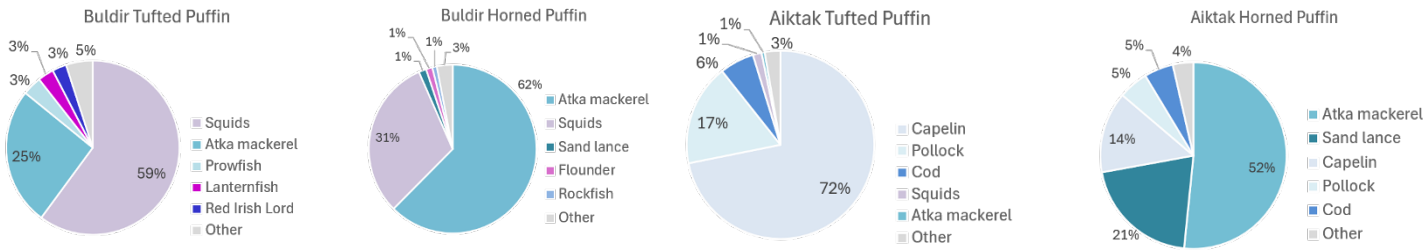
W-E gradient in seabird reproductive success, and bycatch

- Mostly average to above average reproductive success for all seabirds, suggesting good foraging conditions
- Below average puffins and least auklets suggest specific prey were not available
- Shearwaters bycatch increased in WAI, no clear explanation



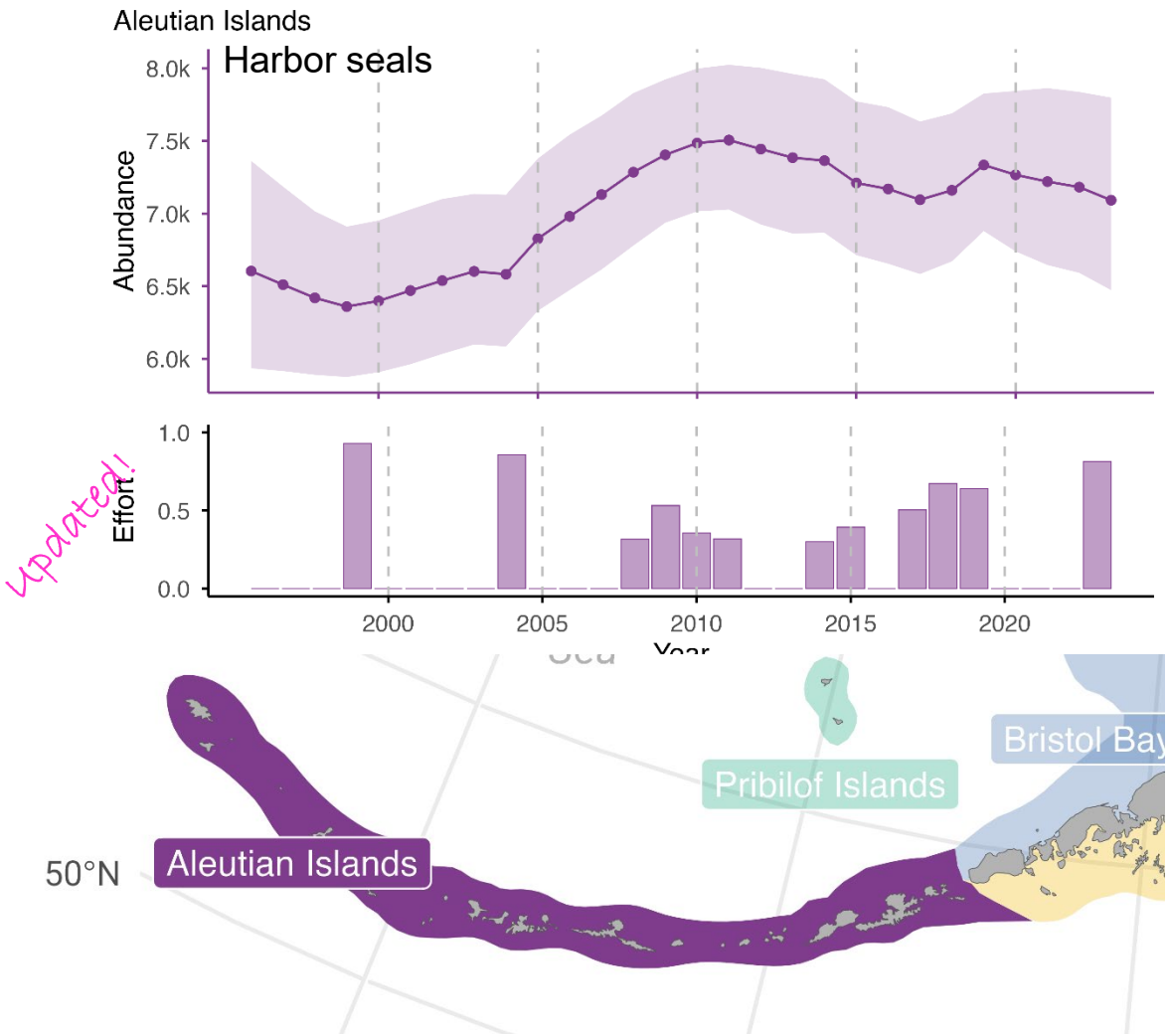
Updated!

Diets: Mostly squid, Atka mackerel in WAI; capelin and Atka mackerel in EAI



Seabird bycatch: Beck, Tyde, Chan;
Seabird Reproductive success and diets: Rojek, Beck, Sullivan, Kaler, Ortiz ,

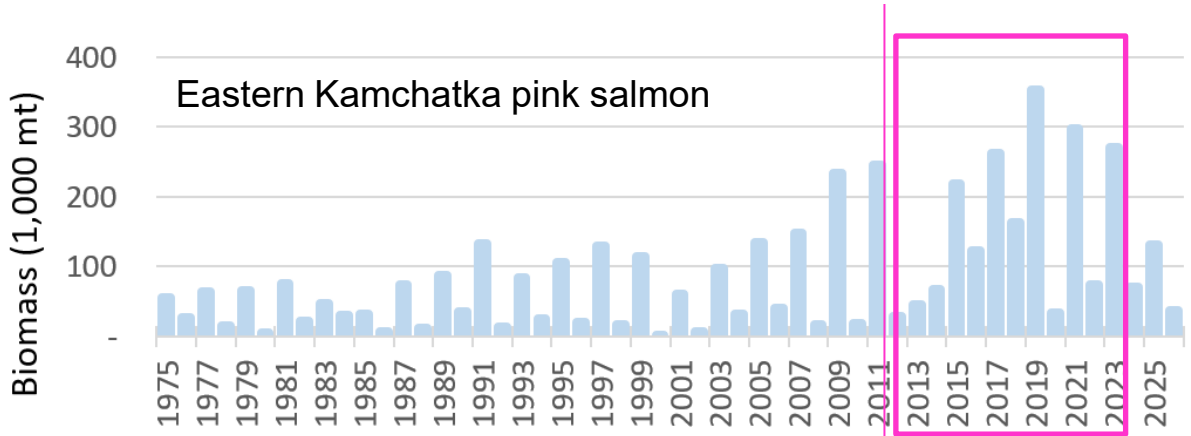
Stability at low levels with potential W-E gradient

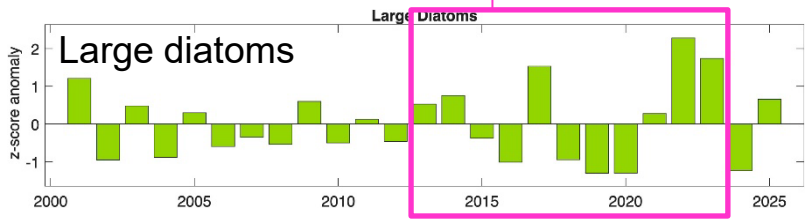


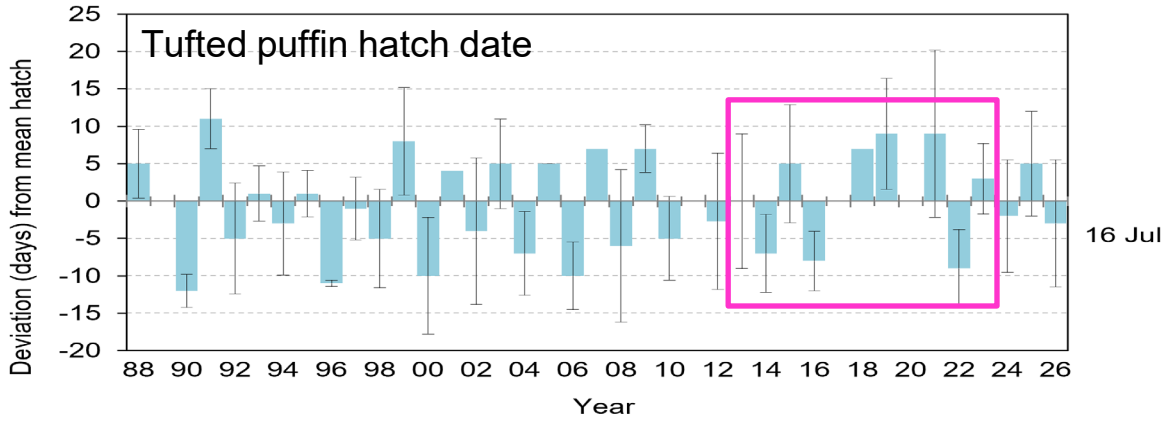
- One population throughout the archipelago
- Relatively stable in recent years – albeit at historically low abundance levels
- Some evidence that seals in the western region remain in decline while harbor seal abundance in the eastern region shows signs of recent growth

London, McClintock, Ziel, Dahle ,

Disruptions in biennial pattern



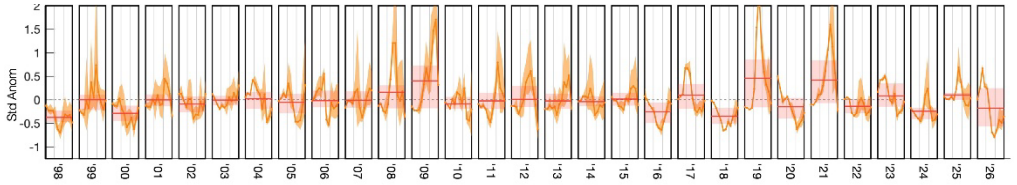




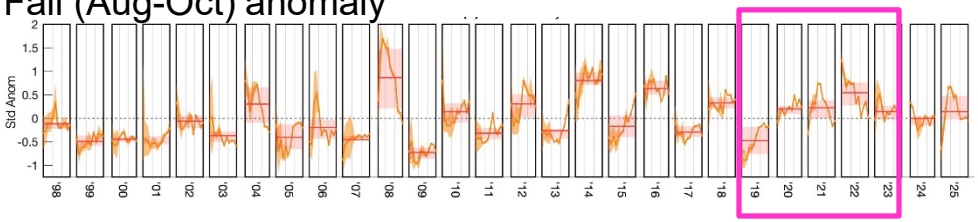
16 Jul

- No hatchery production in the region
- Values include catch and spawner abundances.
- Increasing variability in biomass, starting 2009
- Potential disruption of biennial pattern observed in other parts of the ecosystem

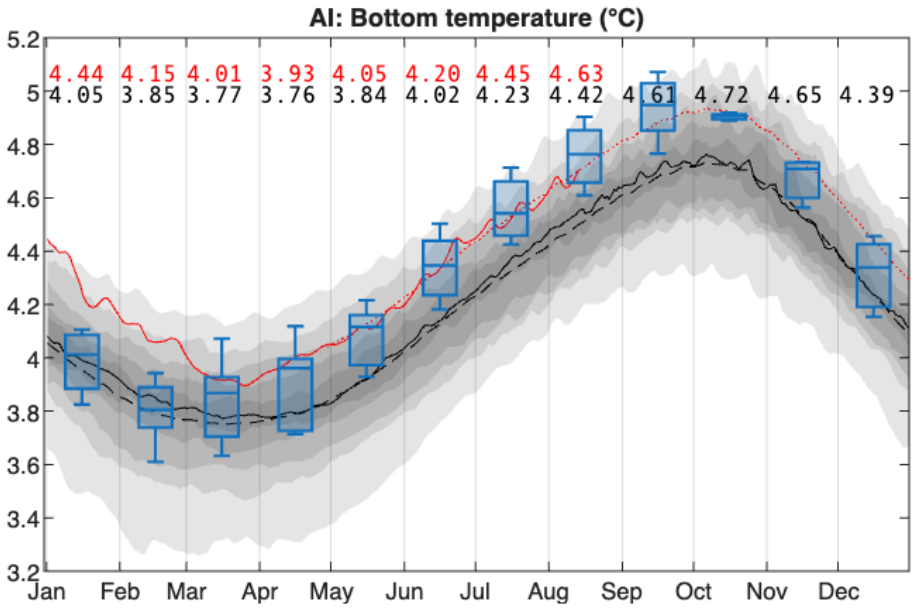
Spring (Apr-Jun) anomaly



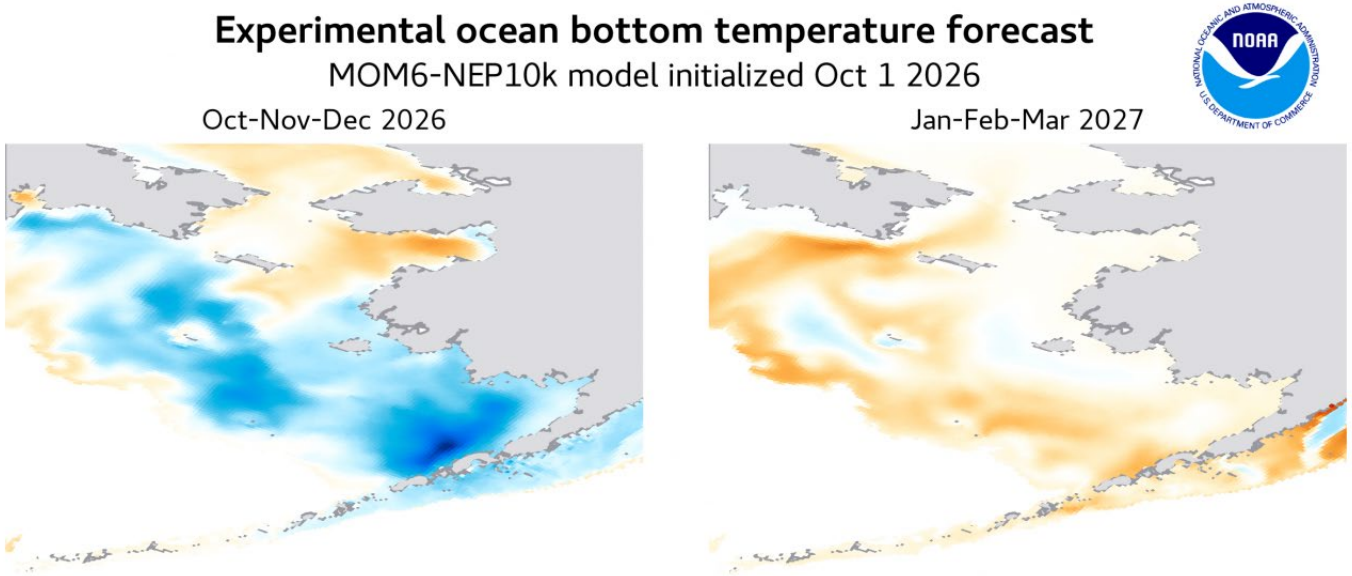
Fall (Aug-Oct) anomaly



Ortiz et al. *in prep*



- Bottom temperatures form MOM6 NEP10k, similar foreact for SST from NMME
- Cooler winter average, but pattern similar to past years: higher cooling in the east, heat retention in the west
- Bottom (and surface) temperatures expected to increase later in the year
- Predictability in both NMME and MOM6 NEP 10k deteriorate towards the west



Summary and implications

Jan – Mar among 10 warmest winter on record SST, cooler spring & summer

Concern remains for winter survival and winter spawners; but reprieve and lower temperatures have allowed some recovery

Less storms, strong eddies, early spring phytoplankton bloom

Mixing driven by more local processes, bloom centered in CAI-EAI reinforces W-E gradient

More fish in pollock, cod, diets

Reduced thermal stress and increased fish improved fish condition

Stable rockfish biomass dominate pelagic forage fish biomass

Stability and dominance of POP-northern rockfish keep Atka mackerel, pollock at lower levels, particularly in the west

Mostly average to above average reproductive success across the chain except for puffins and least auklets in WAI

Suggests adequate foraging conditions with good availability of planktonic and fish prey, except for some specific prey in the WAII

Increasing variability in Eastern Kamchatka pink salmon biomass

Biennial patterns potentially associated to EK pink salmon may be disrupted as high biomass variability may affect more than year specific processes.

Some recovery in biomass of miscellaneous fish, structural epifauna,

potentially more alternative fish prey and shrimp in the system and decreasing critical habitat

W-E productivity gradient for piscivorous predators (lower in WAI, higher in EAI), potentially influenced by 1) transition of the ecosystem to a state where rockfish are the main pathway of zooplankton into food web in the west and 2) higher heat retention in the west

Additional Information Available

Eddies in the Aleutians, 2025-2026



Ecosystem Status Reports through 2025 are available here:

ESR Reports (1999-2025)