FY25 NOAA PMEL Annual Highlights
Ocean Molecular Ecology

Highlights

- Designed and validated a **qPCR eDNA assay for sunflower stars** (*Pycnopodia helianthoides*)
  - spawning a slough of new and ongoing research partnerships and funding to identify remnant populations in California, understand the drivers of eDNA fate and transport, and to benchmark quantitative abundance estimation.
- **Tripled our lab processing and sequencing efficiency** over the last two years,
  - increasing our ability to generate high throughput ocean biomolecular observations.
- **Advanced our biomolecular data management workflows**,
  - developing a robust laboratory information management system that records data from sample collection to data provisioning. This included publishing **2 peer reviewed manuscripts** and publishing **25 SOPS** (BeBOP FAIRe protocols).

By the Numbers

Cruises

We participated in **six** cruises in FY25.

Year	Cruise Name	Region	Project	Participant
FY25	EcoFOCI Spring Mooring Cruise DY25-04	Bering Sea	EcoFOCI	Han Weinrich
FY25	OCNMS PPS May 2025 Deployment	OCNMS	OCNMS	Shannon Brown
FY25	Sikuliaq 2025	Bering and Chukchi Seas	EcoFOCI	Sam Setta
FY25	MiniWCOA PS250701	Oregon Coast	PMEL Carbon Program	Zachary Gold
FY25	EcoFOCI Fall Mooring Cruise DY25-08	Bering Sea	EcoFOCI	Zachary Childs
FY25	AFSC Gap Survey	Bering Sea	NE Pacific and Arctic DNA Reference Barcodes	Emily Markowitz

Sample Collection and Processing

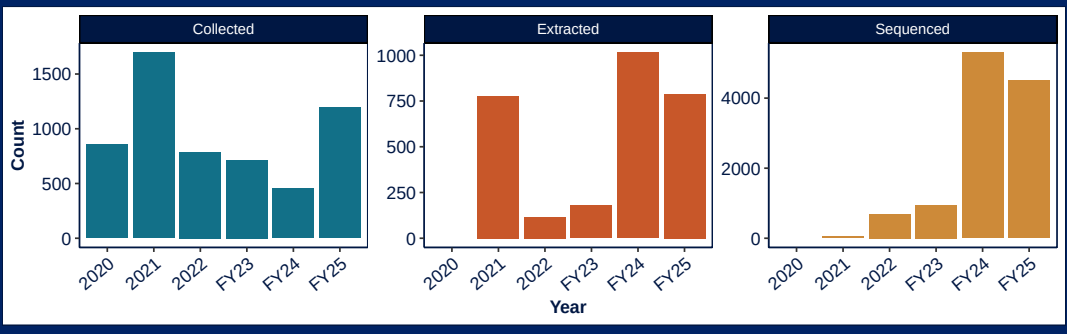

Figure 1. OME has continued to maintain efficiency and execute sample collection and processing.

People

- **Brynn Zalmanek** joined our team in March 2025 as a data scientist shared between OME and Reseach Services Devision. She's spearheading our FAIRe data management efforts and developing end to end software pipelines for streamlined data delivery.
- We hosted **5 interns** and research associates in 2025.

Figure 2. Left:Capturing eDNA from Dungeness Crab Light Trap. Right:Collecting eDNA from SKQ25 Cruise.

Publications

1. Satterthwaite EV, Field JC, Fassbender AJ, Aceves-Medina G, Bograd SJ, Hazen EL, et al. The essential role of large research vessels in marine ecosystem observations and ocean sustainability. Limnology and Oceanography. 2025;70(9):2767–92.

2. Parsons KM, May SA, Gold Z, Dahlheim M, Gabriele C, Straley JM, et al. Using eDNA to supplement population genetic analyses for cryptic marine species: Identifying population boundaries for alaska harbour porpoises. Molecular Ecology. 2025;34(5):e17563.

3. Theroux S, Sepulveda A, Abbott CL, Gold Z, Watts AW, Hunter ME, et al. What is eDNA method standardisation and why do we need it? Metabarcoding and Metagenomics. 2025;9:e132076.

4. Gold Z, Brown S, Collins A, Girard M, Goodwin K, McAllister S, et al. Introduction to developing DNA reference barcode sequences [Internet]. Zenodo; 2025. Available from: https://doi.org/10.5281/zenodo.14867763