

# PMEL Ocean Molecular Ecology:

## Characterizing the impacts of warming, ocean acidification, and hypoxia on Arctic and West Coast Ecosystems

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**Objective 1:** Establish long term biomolecular observations of marine ecosystems

**Objective 2:** Characterize and measure stress responses from climate change and anthropogenic threats in key taxa

### Environmental (e)DNA



Collection Extraction/PCR



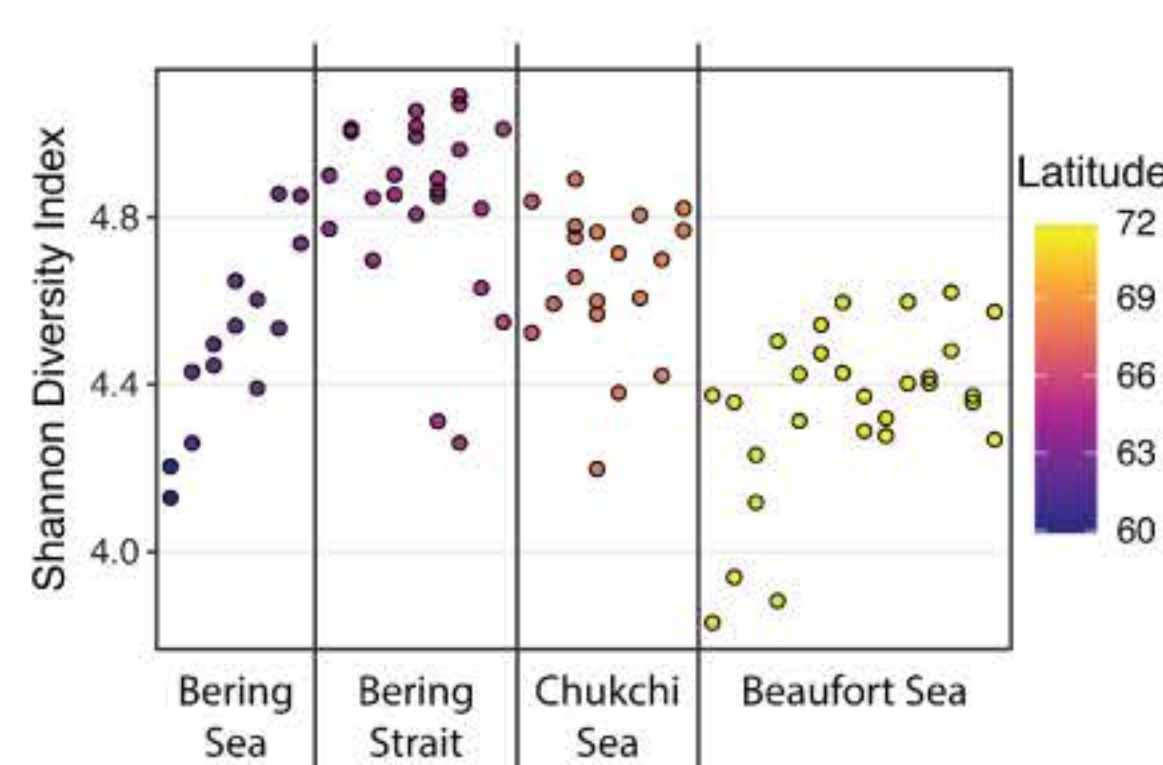
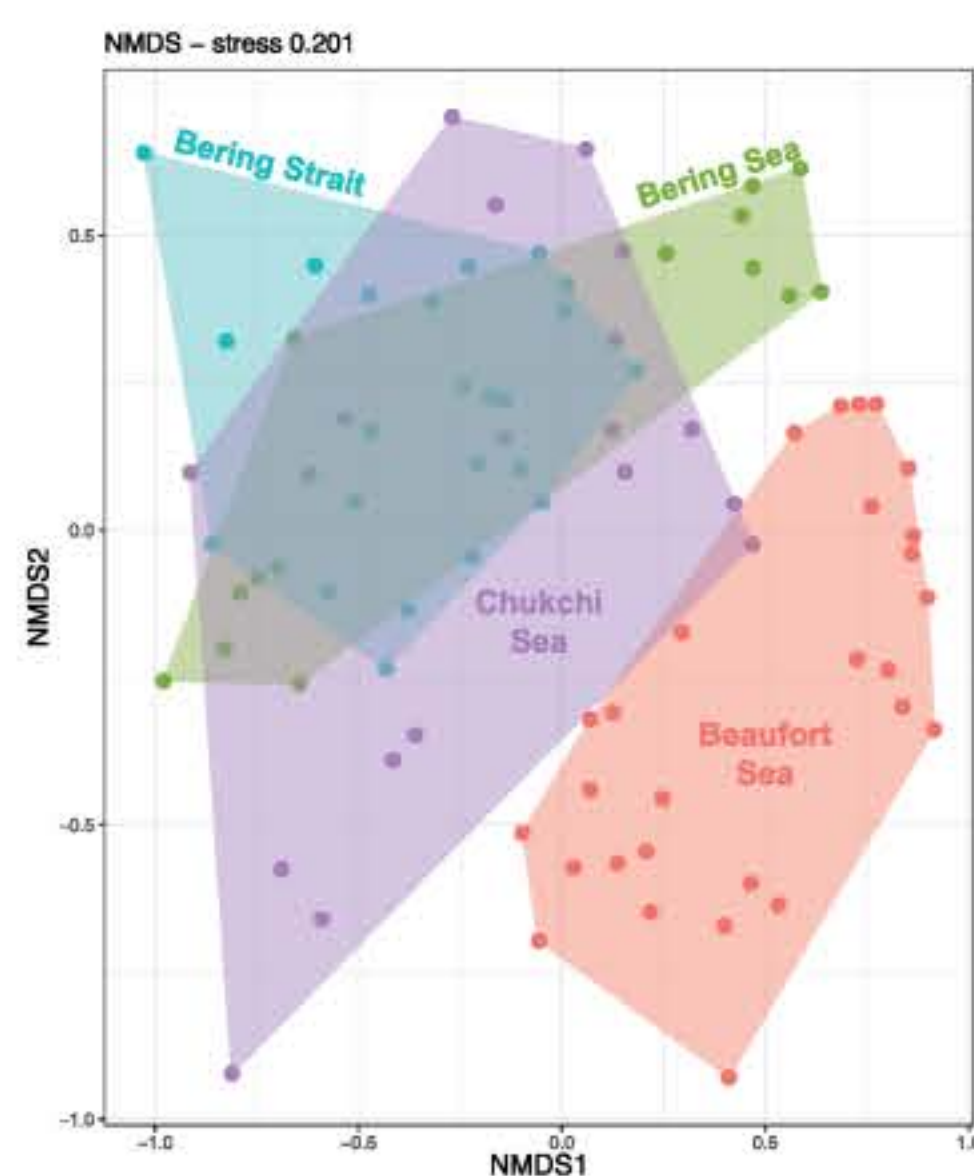
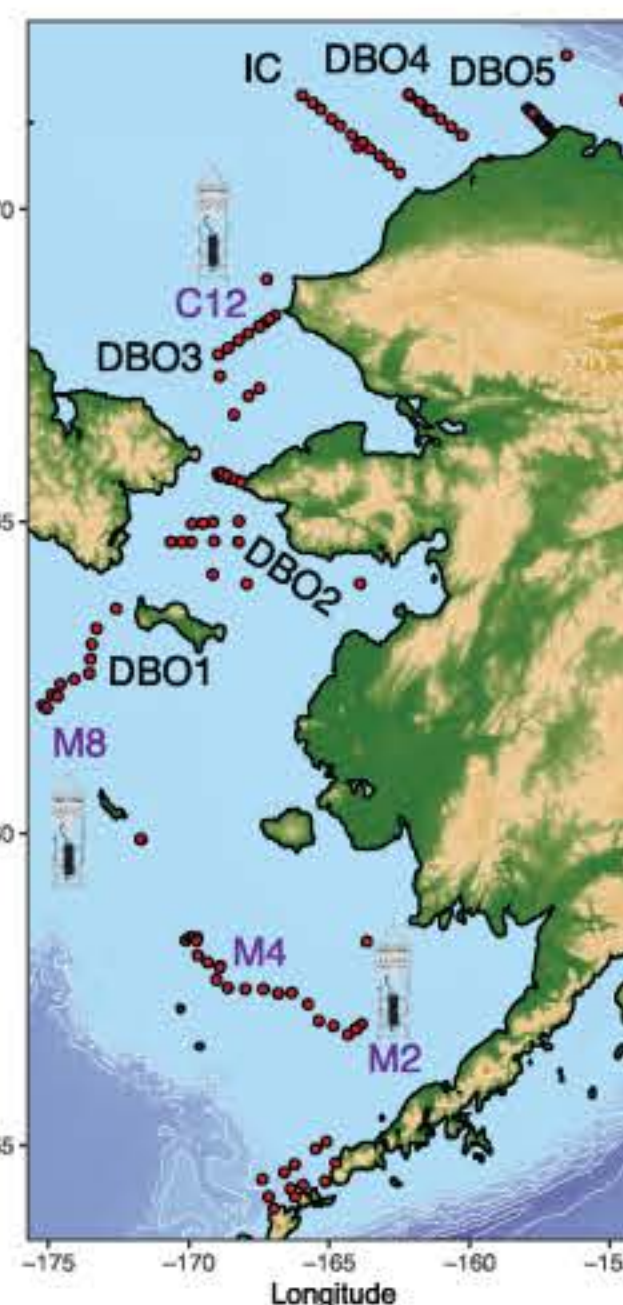
Microbes to Whales – multi-marker ecosystem monitoring & forecasting

### Regional biomonitoring networks

#### West Coast

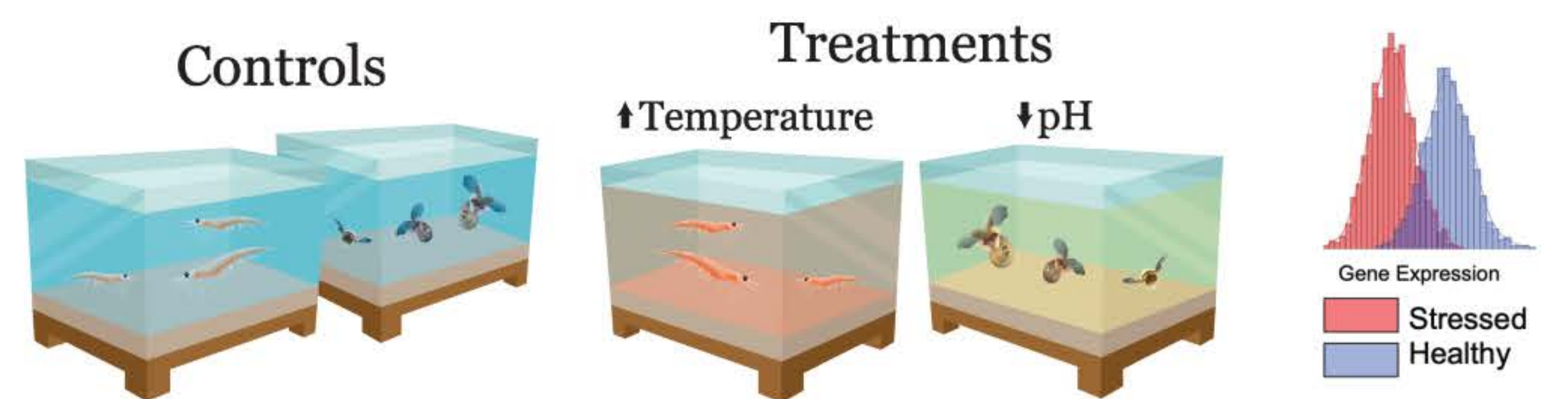


#### Arctic



Detecting spatial and environmental trends driving changes in biodiversity

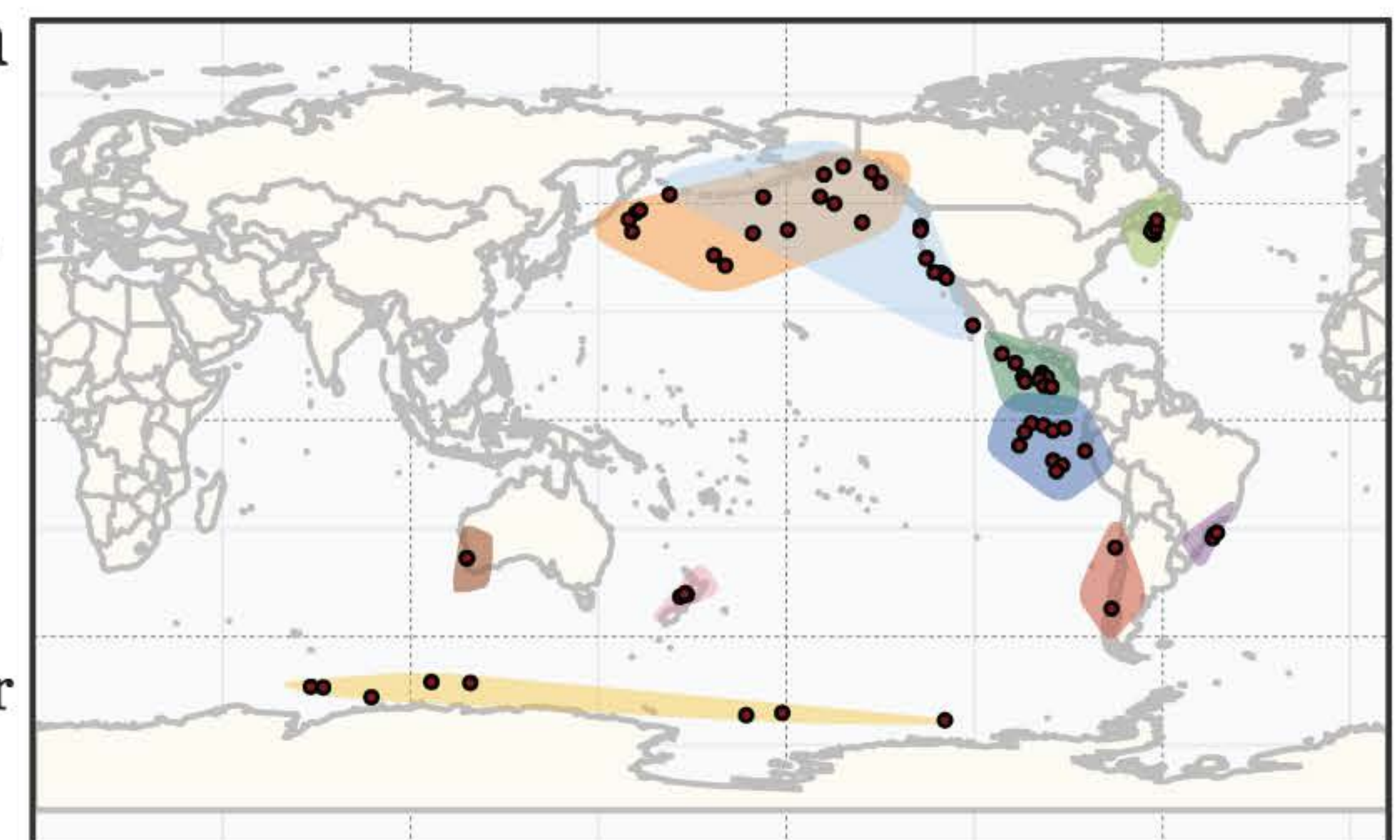
### Transcriptomics



Identifying indicator genes for organismal responses to multi-stressors at multiple trophic levels

### Population genomics

Identify discrete populations for management

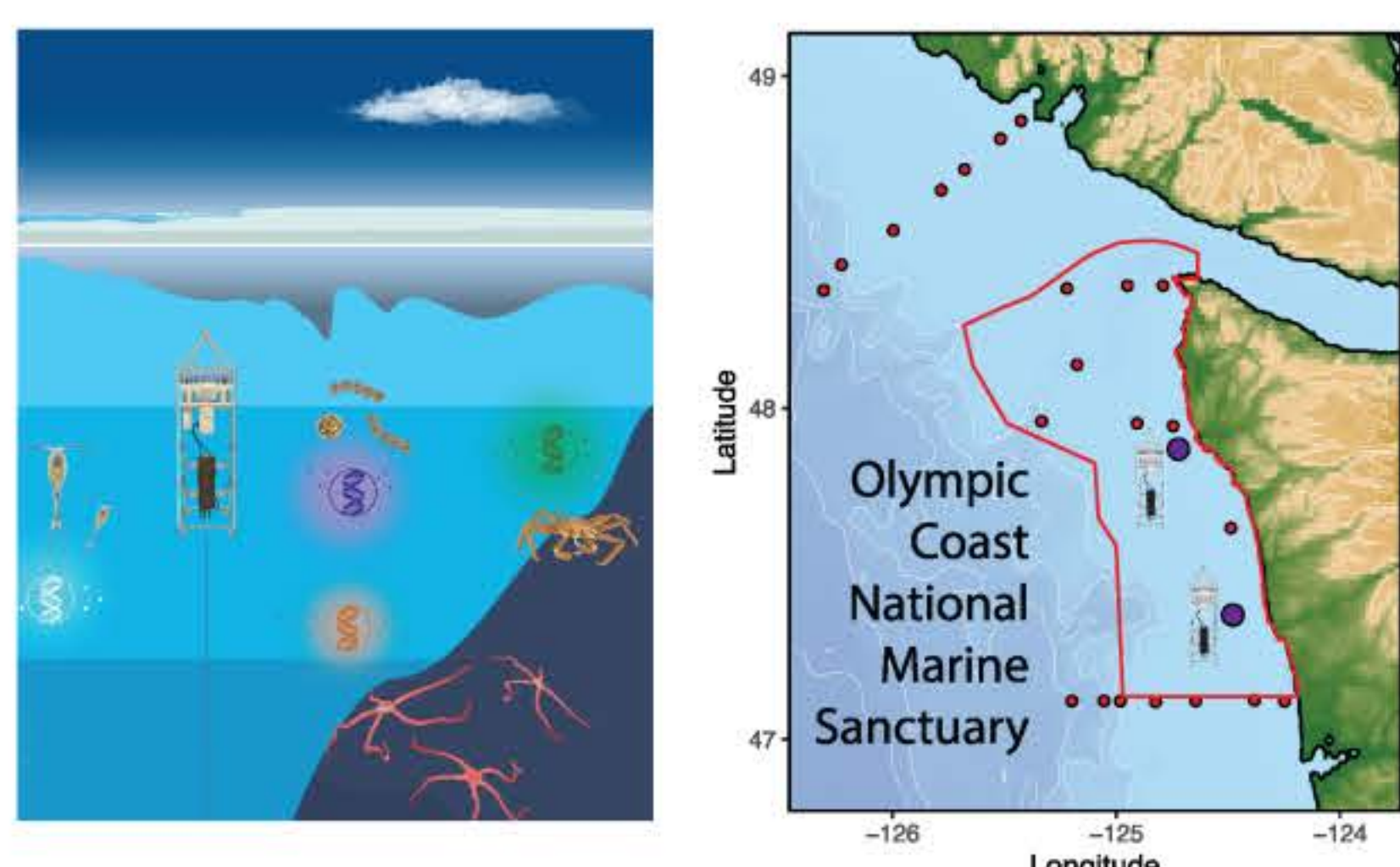


**Objective 3:** Service towards improving 'Omics tools and advancing NOAA mission objectives

### Modernizing ecosystem assessment

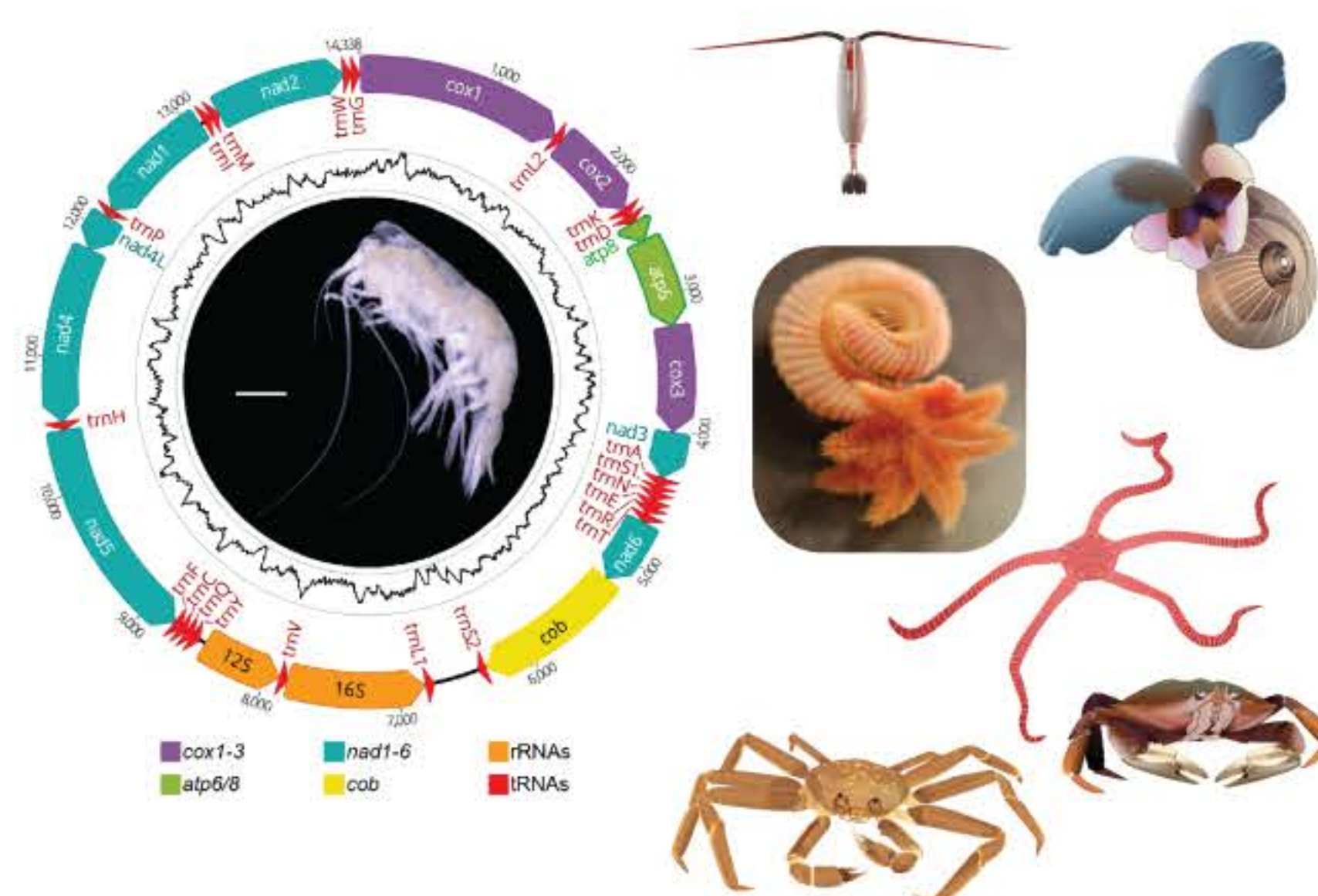


Automated eDNA sampler (PPS) Long-term moored deployments



### Improving reference databases

#### Mitochondrial genome sequencing

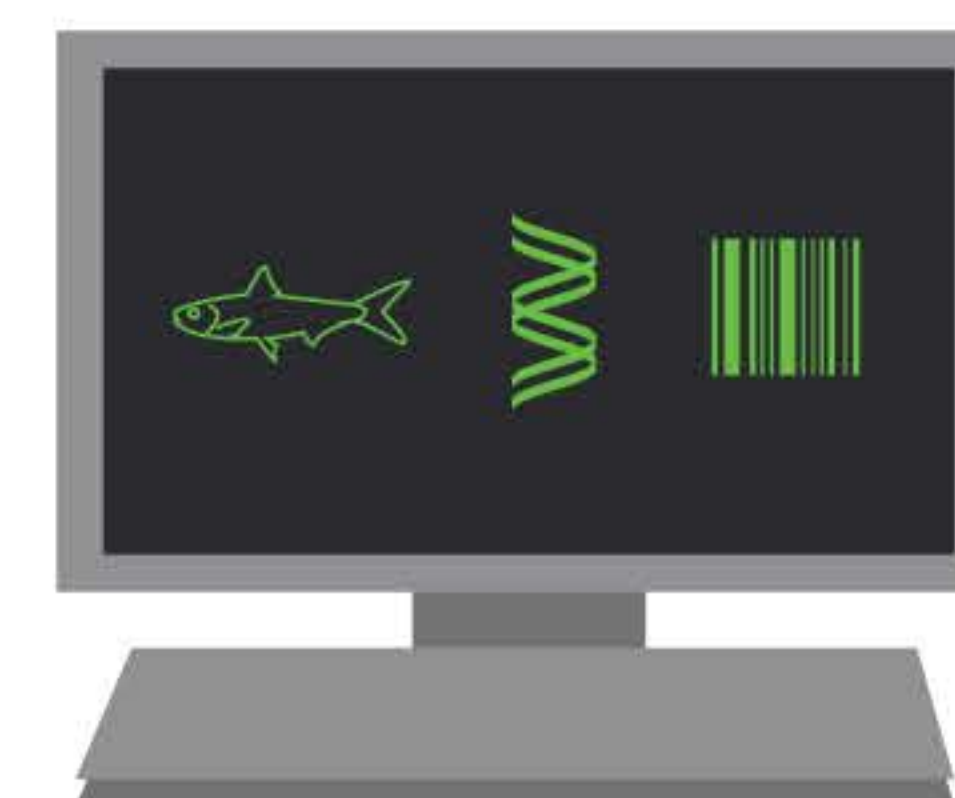


Filling NCBI database gaps



Data management guidelines, standardization, & accessibility

### Streamlining bioinformatic analyses



Rapid and reproducible analyses



See collection on the OME GitHub

### Partners



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