



**NOAA**  
**FISHERIES**

# NOAA Fisheries Strategy Passive Acoustic Gliders

Shannon Rankin<sup>1</sup>

Christian Reiss<sup>1</sup>

Erin Oleson<sup>2</sup>

Selene Fregosi<sup>3</sup>

David Mellinger<sup>4</sup>

Erik Norris<sup>2</sup>

<sup>1</sup> Southwest Fisheries Science Center, NOAA Fisheries, La Jolla, CA

<sup>2</sup> Pacific Islands Fisheries Science Center, NOAA Fisheries, Honolulu, HI

<sup>3</sup> Ocean Associates, Inc., contracted to NOAA PIFSC

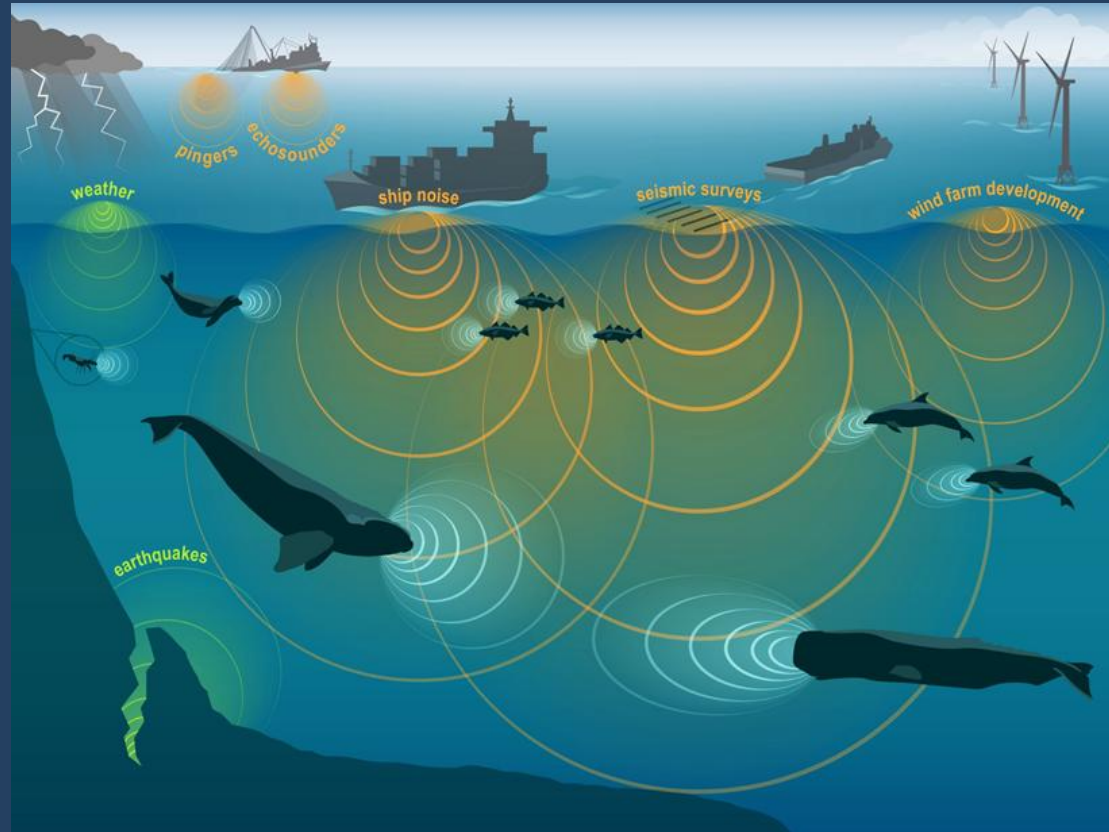
<sup>4</sup> Cooperative Institute for Marine Ecosystems and Resources Studies, Oregon State University  
& NOAA Pacific Marine Environmental Laboratory (PMEL)



# PASSIVE ACOUSTIC MONITORING (PAM)

## Contributors to Soundscape

- Biological
- Environmental
- Anthropogenic

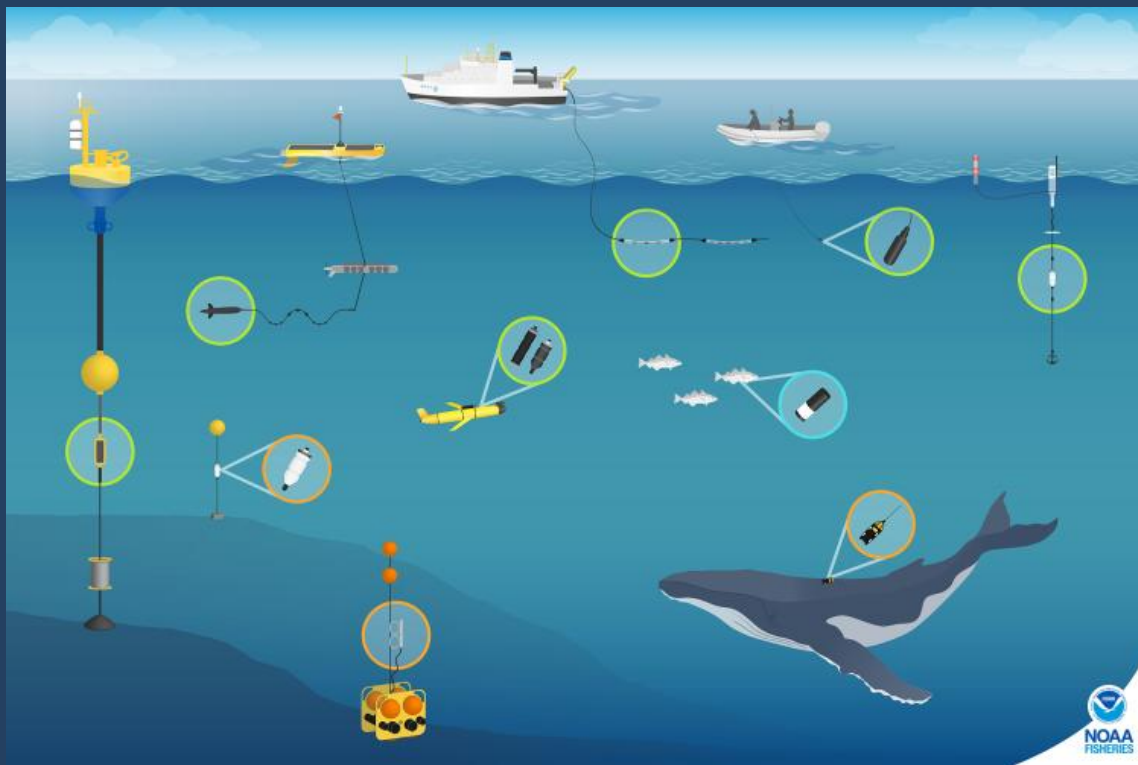




# PASSIVE ACOUSTIC MONITORING (PAM)

## Why Gliders?

- Technology is Operational
- Spatial/Temporal Sampling
- Increasingly Cost Effective
- Reduce costly ship time





# PAM-UxS STRATEGIC INITIATIVE

## GOAL

Develop a **Research to Operations Plan** for PAM-gliders to support our science-based management & conservation.

- Identify Technology
- Field Test Technology (“Glider Rodeo”)
- Conduct Concurrent Shipboard & Glider Surveys
- Advancing Data Analysis
- Field Test Ecosystem Studies (“Plankton to Whales”)



# IDENTIFY TECHNOLOGY



## SeaGlider (University of Washington)

- WISPR 3.0 (high-frequency)

*Pacific Islands Fisheries Science Center*



## Slocum Glider (Teledyne- Webb)

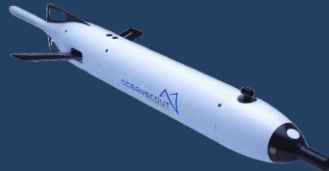
- DMON (low frequency)
- WISPR 3.0 (high-frequency)

*Southwest Fisheries Science Center*

## Ocean Scout (Hefring)

- WISPR 3.0 (high-frequency)

*Southwest Fisheries Science Center*



## Sea Explorer (Alseamar)

- Auris (high-frequency)

*Service provided to NOAA Fisheries*

*\*\* Funding DMON capacity expansion for high frequency sampling*



# GLIDER RODEO

## Field Test:

- Gliders, Acoustic Processors
- 2 weeks (each): Hawaii, US West Coast
- Repeated offshore circuits
- Comparison via standard metrics
- Assess strengths/limitations of each system
- Potential for (unfunded) participation




**The PAM-Glider Rodeo**  
Passive Acoustic Monitoring (PAM) Glider Comparison  
Erik Norris<sup>1</sup>, Shannon Rankin<sup>2</sup>, Erin Olsson<sup>3</sup>, Christian Reiss<sup>4</sup>, Selene Fregoso<sup>5</sup>, David K. Møllinger<sup>4</sup>

**Testing 4 different gliders:**  
1. SeaGlider  
2. Stocum  
3. SeaExplorer  
4. OceanScout




**Come fly with us!**  
Talk to us if you want to:  
a) Field test PAM gliders  
b) Field test other PAM systems  
c) Analyze rodeo data  
d) Discuss metrics to consider and compare

**Testing 3 integrated PAM systems:**  
1. DMON  
2. WISPR  
3. Alseamar Acoustic Acquisition System

**Anticipated dates:**  
two weeks each, late 2025 to mid 2026  
For more info visit:  
  
<https://nmfs-pam-glider.github.io/GliderRodeo>

**Hawaii Rodeo**  
Main Hawaiian Islands

**West Coast Rodeo**  
US West Coast

**Participants:**  
 Southwest Fisheries Science Center (SWFSC)  
Pacific Islands Fisheries Science Center (PIFSC)  
 Oregon State University  
 PILSC

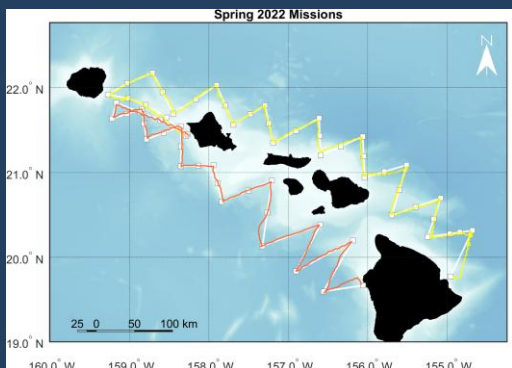
## More Information

- Updates
- Suggested Metrics
- Participation (unfunded)

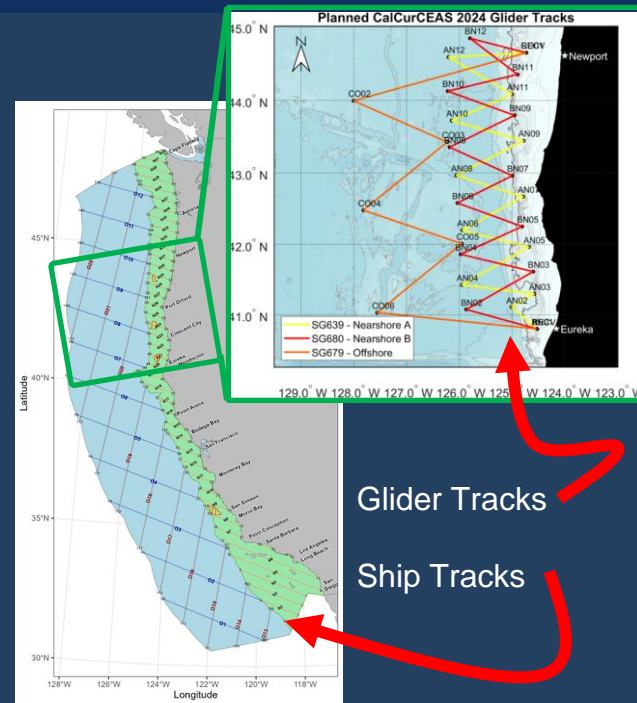
# CONCURRENT SHIPBOARD & GLIDER SURVEYS

## US West Coast Shipboard Marine Mammal Survey

- Ongoing (now!)
- Partner with OSU: 3 @ SeaGliders off Oregon
- Data used to improve downstream analysis methods
- Inform Research to Operations Plan



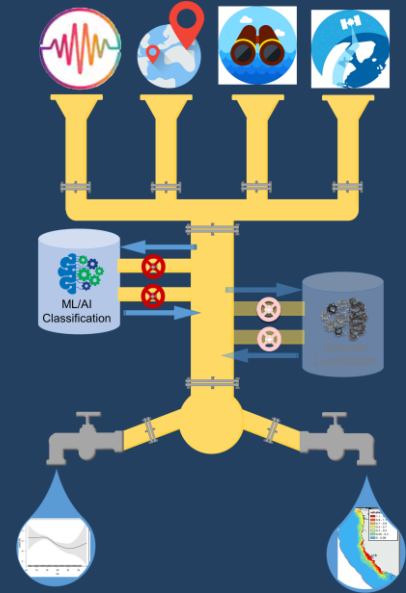
**Hawaii Survey: February 2026**





# ADVANCED ANALYTICS

- **Data Pipeline**
- Soundscape
- Population Assessment
- Public Access to Data and Data Products

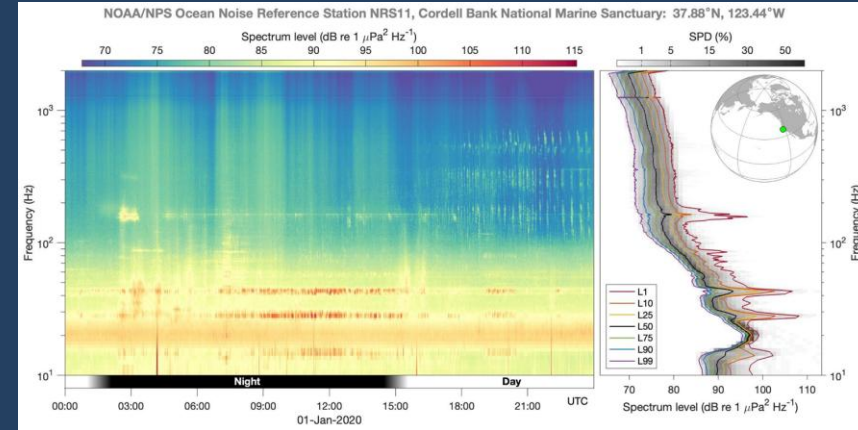






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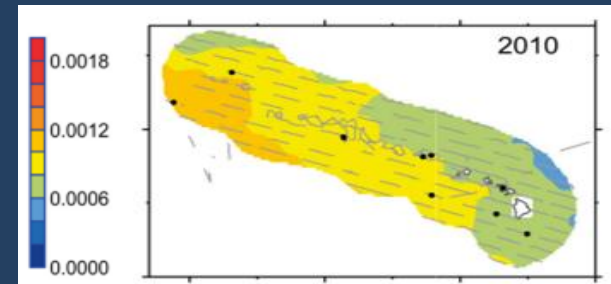
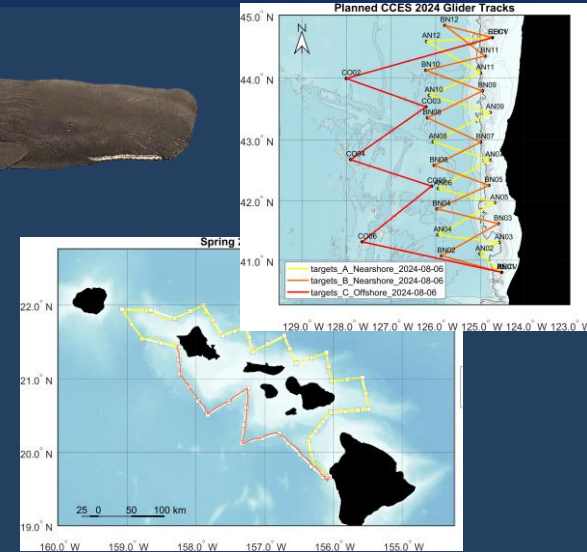
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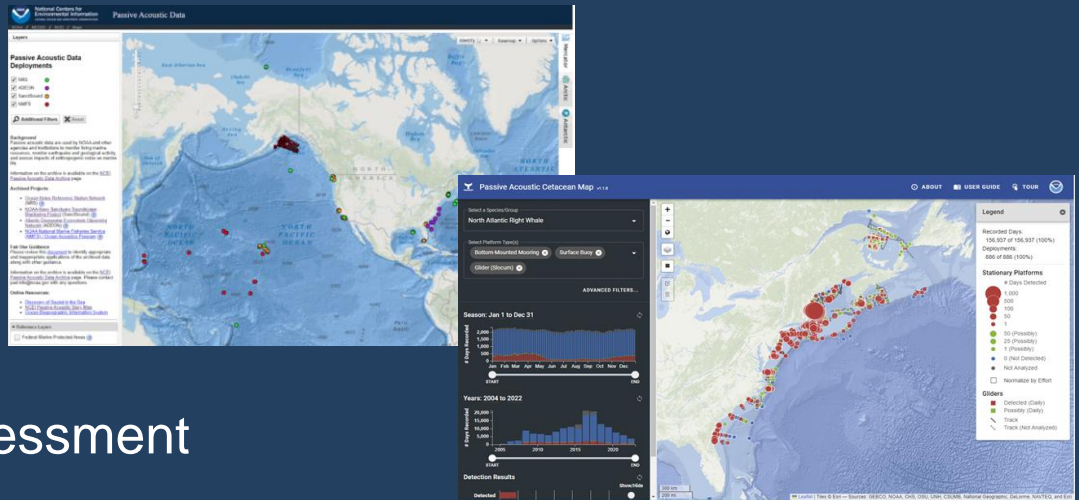
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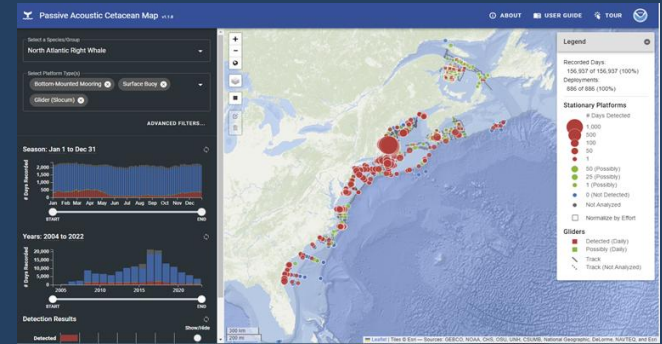
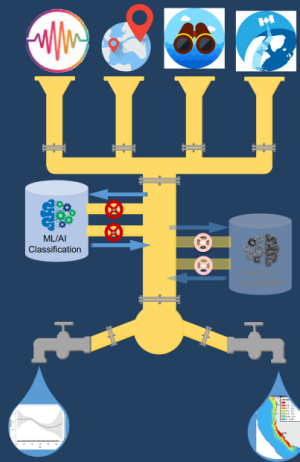
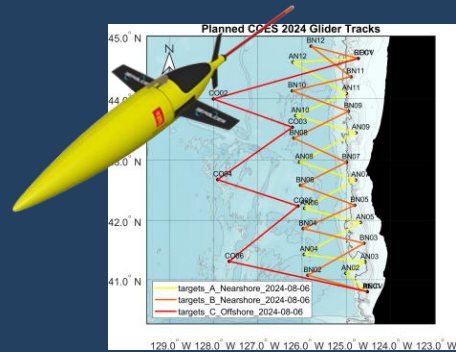


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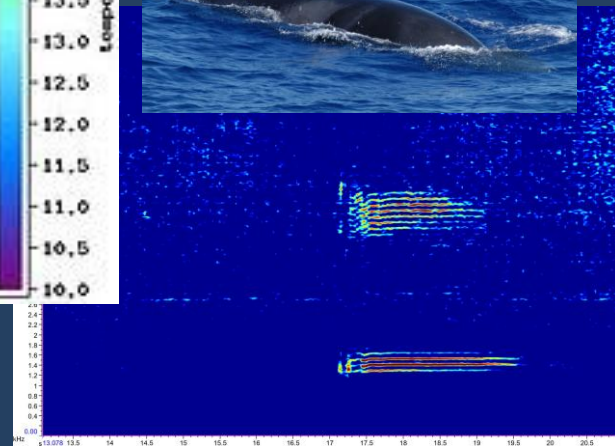
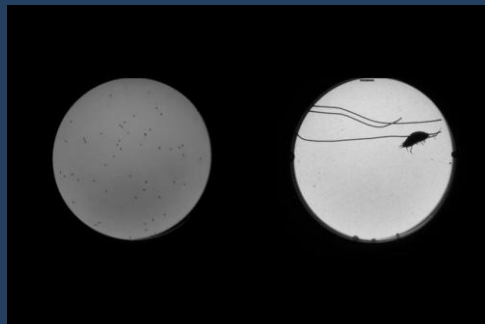
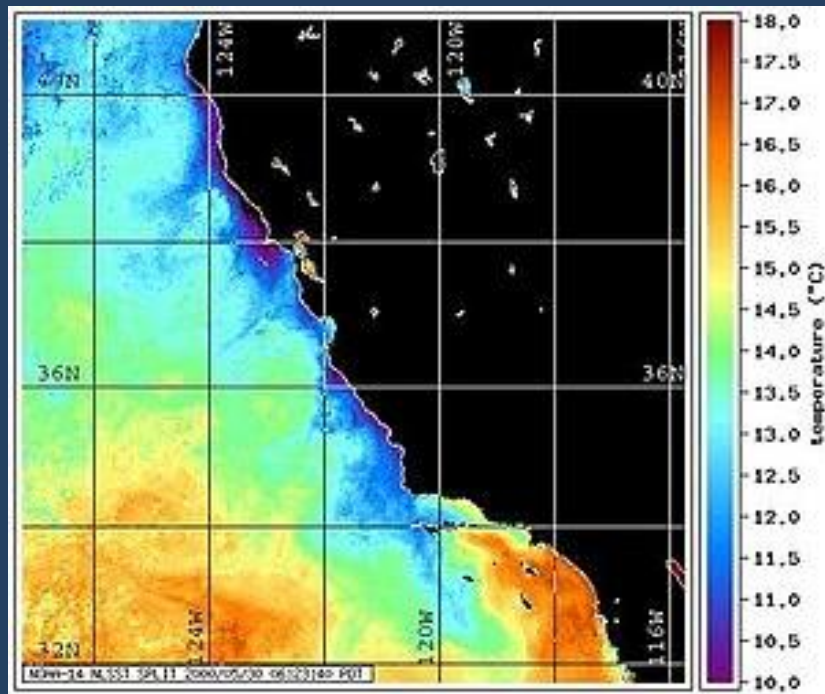
- Data Pipeline
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- Population Assessment
- **Public Access to Data and Data Products**



# TREES TO THE FOREST



# PLANKTON TO WHALES





# NATIONAL STRATEGY ROADMAP FOR PAM-GLIDER OPERATIONS



- Pacific-wide Research to Operations Plan
- Match appropriate technology to research question
- Streamline standardized data lifecycle
- Improve data accessibility for managers
- Framework to monitor technological developments
- Adjust RoadMap as technology evolves



# ACKNOWLEDGEMENTS



<https://nmfs-pam-glider.github.io/PAM-UxS/>

NOAA PAM-SI, NOAA PAM-UxS Strategic Initiative  
Working Group members

NOAA SWFSC CalCurCEAS Survey

National Centers for Environmental Information (NCEI)

NOAA OMAO UxS Office (Plankton Gliders, PAM Gliders)

NOAA US AMLR Program (Shadowgraph camera  
development)

NOAA SWFSC Offshore Wind Program- REFOCUS  
Glider Upgrades (batteries, Ecopucks)