OCEAN ACOUSTICS EDUCATION AND EXPERTISE: WORKSHOP

April 09-10, 2026

Ocean Acoustics Education and Expertise Workshop

April 9-10, 2026

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THURSDAY, APRIL 9, 2026

Purpose

- Shape a vision for what the Ocean Acoustics community should look like in the next 5-10 years
- Identify metrics needed to achieve vision

9:00–9:10 **Welcome and Opening Remarks**

Candace Kairies-Beatty, ONR

Jennifer Miksis-Olds, UNH

9:10–9:45 **Opening Group Activity**

Explore weak points in Ocean Acoustics Career's Education and Training Pathways

9:45–10:00 **Waypoint Introduction: Translating Navy Training to Civilian Opportunities**

Speakers: Christian Lagarde, UNH; TBD

10:00–11:00 **Discussion of solutions or models to meet waypoint (breakout rooms)**

Guiding Discussion Questions: Can articulation agreements be constructed within 5 - 10 years with several colleges/universities? Will these programs increase the degree completion rate by enlisted personnel in acoustics relevant fields? Is there a higher retention rate of enlisted personnel with acoustics skills in civilian careers within - 10 years? How does the community accomplish this goal and what needs to be measured?

11:00–11:10 **BREAK**

11:10–11:30 **Break out room report outs**

11:30–12:00 **Waypoint Introduction: Meeting Government Agency Employment Needs**

Speakers: Erica Staaterman, BOEM; Laurie Failkowski, NRL; Daniel Duane, NUWC; Doug Fenneman, ONI; Brady Marrinan, ONI

12:00–12:45 **Discussion of solutions or models to meet waypoint (breakout rooms)**

Guiding Discussion Questions: What training, education, or outreach efforts will be needed to meet government agency ocean acoustics related employment needs in the next 5-10 years? How does the community accomplish this goal and what needs to be measured?

12:45–1:40 **Working Lunch**

Lunch can be bought at our café on the 3rd floor

1:40–2:00 **Break out room report outs**

2:00–2:15 **Waypoint Introduction: Meeting Industry Workforce Needs**

Speakers: Dylan Temple, Integer Technologies; Horatio Brooks, Fugro

2:15–3:15 **Discussion of solutions or models to meet waypoint (breakout rooms)**

Guiding Discussion Questions: What is the 5 - 10-year employment outlook? What training, education, or outreach efforts will be needed to meet industry ocean acoustics related employment needs in the next 5-10 years? How does the community accomplish this goal and what needs to be measured?

3:15–3:30 **BREAK**

3:30–3:50 **Break out room report outs**

3:50–4:50 **Discussion of synergies among solutions/models across waypoints**

Are there models or solutions that cut across multiple waypoints?

4:50–5:00 **Wrap up and closing remarks**

END OF DAY 1

FRIDAY, APRIL 10, 2026

9:30–9:45 **Welcome and Recap of Day 1**

Are we missing any waypoints?

9:45–10:00 **Waypoints: Education Pathways: Building Awareness and promoting collaboration**

10:00–10:45 **Discussion of solutions or models to meet waypoint (breakout rooms)**

Guiding Discussion Questions: Are there core competencies every ocean acoustics professional has, regardless of where or how they trained — and who should define that? How do we build a shared multi-university program or network that achieves the critical mass no single institution can reach alone?

10:45–11:00 **BREAK**

11:00–11:15 **Break out room report outs**

11:15–11:45 **Discussion of synergies among solutions/models across waypoints**

Are there models or solutions that cut across multiple waypoints?

11:45–12:45 **Discussion of vision for community over the next 5-10 years and metrics to track**

- What do you see the ocean acoustics community looking like in the next 5-10 years?
- What additional waypoints do you think the community should focus on to actualize the vision?
- How do we gauge success and progress at the 5-10 year mark? What metrics should we start tracking?

12:45–1:00 **Closing remarks and meeting wrap up**

MEETING ADJOURNS

Ocean Acoustics Education & Expertise

Background on Waypoints

Overview

This document summarizes the National Academies Ocean Acoustics Education and Expertise Workshop planning committee's waypoints along a roadmap for the ocean acoustics community over the next 5-10 years. The waypoints are a starting point for discussion and grew from the Ocean Acoustics Education and Expertise report recommendations.

Waypoint 1: Translating Navy Training to Civilian Employment & Education

Better translation of acoustics training received while in Navy service to employment and higher education opportunities.

Related Report Recommendations:

- New investment in programs supporting development of ocean acoustics skills at non-advanced-degree levels (i.e., 2-year marine/acoustic technical degrees or certificates), while continuing to support research and advanced degree programs.
- Develop or update programs to translate military ocean-acoustics experience into recognized civilian credentials to retain skilled veterans in the civilian workforce.

Waypoint 2: Meeting Government Agency Employment Needs

Understanding and meeting government agency employment needs related to ocean acoustics research, research applications, and policy positions.

Related Report Recommendations:

- Engage senior university leadership to protect and expand acoustics programs emphasizing their importance for national security and the blue economy.
- Create and fund sponsored chairs or similar positions in ocean acoustics at universities to strengthen mentorship, research, and direct ties to agency and industry needs.

Waypoint 3: Meeting Industry Workforce Needs

Understanding and meeting industry workforce needs related to ocean acoustics.

Related Report Recommendations:

- Offer mission-related professional development (short courses, tutorials, workshops, including online) on a consistent, recurring basis so students and professionals can reliably build and update their skills.
- Integrate co-op and internship-style experiential learning into degree programs to connect classroom knowledge with real-world ocean acoustics applications and create direct hiring pipelines.

Waypoint 4: Community Collaboration Across Education Pathways

Better community collaboration and coordination across formal education pathways

Related Report Recommendations:

- Develop clear curriculum guidelines and competency frameworks for ocean acoustics, created jointly by higher-education institutions, the ocean acoustics workforce, and professional societies, covering both research and applied roles.
- Expand curriculum content beyond traditional physics and signal processing to include marine bioacoustics, soundscape modeling, AI/ML and data science, numerical modeling, scientific computing, and data management, plus early, hands-on lab/field experiences.

Waypoint 5: Building Awareness & Career Pathways in Ocean Acoustics

Improve mechanisms for awareness of the field of ocean acoustics, and potential career paths.

Related Report Recommendations:

- Increase visibility of ocean acoustics careers and their societal value in both academic and non-academic settings to counter low awareness and misperceptions about limited career options.
- Improve public and media understanding of ocean acoustics as a key tool for observing the ocean (e.g., mapping seafloor, monitoring marine life, supporting offshore energy and hazard assessment).

Ocean Acoustics Education & Expertise Workshop

Community Listening Session Notes

March 5-6, 2026

Summary

Overview

This document summarizes community input gathered during the listening session to plan an Ocean Acoustics Education and Expertise Workshop.

Waypoint 1: Translating Navy Training to Civilian Employment & Education

Key Question: *How can we better translate acoustics training received during Navy service into university credit and civilian job opportunities?*

Impediments Identified

- No clear 1-to-1 translation of Navy sonar school training to university course credit; each institution has its own requirements
- Lack of detailed, shared understanding of what skills and technical certificates sonar school produces
- Small number of relevant jobs makes it difficult to convince universities to build dedicated programs
- O*NET occupational database is outdated; CAGE codes need updating to reflect current industry roles

Opportunities & Ideas

- Non-degree-seeking professional development certificates (e.g., OSU) as a bridge pathway
- Multi-university shared programs (online and hands-on) to overcome the critical mass problem at any single institution
- Leverage SMART Fellowship and similar matching databases to connect veterans with programs
- Engage contractors (e.g., Leidos, Raytheon) and bring all stakeholders — Navy, industry, universities — into the same room
- Widen the pipeline: attract a broader range of people into ocean acoustics, not just former Navy personnel

Waypoint 2: Meeting Government Agency Employment Needs

Key Question: *What impediments and opportunities exist in fulfilling government hiring needs in ocean acoustics research, applications, and policy?*

Impediments Identified

- Small student numbers at any one institution make it hard to justify dedicated courses or faculty lines
- Ocean acoustics is highly interdisciplinary, spread thinly across many departments with no dedicated home
- Risk of losing institutional knowledge when experienced staff retire, with limited succession planning
- Insufficient alignment between agencies and universities on what personnel competencies are needed

Opportunities & Ideas

- Named/endowed faculty positions to create continuity and preserve expertise
- Expand Micro credential programs (e.g., UNH model) that allow government agencies to hire staff with targeted, stackable credentials
- Create an umbrella center or national/regional center of excellence (similar to PMEC offshore energy model, NOPP-funded)
- Start small — e.g., coordinate within the University of California system — and scale from there
- Use ASA (Acoustical Society of America) to broaden scope beyond just underwater acoustics
- Model on UW Fisheries–State Dept. of Fish & Wildlife partnerships as an example of university-state agency collaboration
- Offer a modular "menu" of courses at varying levels (not one-size-fits-all); explore e-campus delivery

Waypoint 3: Meeting Industry Workforce Needs

Key Question: *What impediments and opportunities exist in fulfilling industry hiring needs related to ocean acoustics?*

Impediments Identified

- Difficulty getting a consistent read on industry needs as a whole, no central clearinghouse
- Many defense/Navy contractors do classified work, limiting public engagement about needs, limiting workforce pool, U.S. citizenship
- PhD-level workforce demand often requires U.S. citizenship, but the majority of PhD students are international — a structural mismatch
- Gap in understanding of how underlying technology works among potential hires

Opportunities & Ideas

- Many industry firms can find generalist hires with math/applied physics backgrounds — frame recruitment this way
- Increase industry presence on campuses: structured internship programs, visiting industry professionals
- Engage defense industry via NDIA conference; invite VP-level executives and senior leaders to academic discussions
- Build a rolodex / contact network through ASA and peer connections to map industry needs
- Explore pathways for commercializing basic research and involving industry in startup development
- URI example: state blue economy priorities created external pressure that supported job boards and program development
- Focus areas: acoustic technologies and signal processing as core skill sets in demand

Waypoint 4: Community Collaboration Across Education Pathways

Key Question: *What impediments and opportunities exist for cross-departmental and cross-organizational collaboration?*

Impediments Identified

- Regional inter-university agreements are very difficult to establish and maintain; no one is tracking enrollment across institutions
- Ocean acoustics is dispersed across small programs at many schools; lacks critical mass at any single institution
- Out-of-state tuition is a barrier for students accessing programs at other institutions

- Shared instruction requires investment in recording and asynchronous delivery technology
- AI tools mean students may produce code without foundational physics understanding — curriculum must account for this

Opportunities & Ideas

- Develop shared competency frameworks rather than rigid curricula — enables flexibility across departments and institutions
- Ocean acoustics microcredentials co-designed by industry, academia, and government (MTS model) to ensure cross-sector value
- NE consortium model: program allowing engineering students to take courses across participating schools (initiated by Deans)
- Summer open-enrollment field/lab courses (UC system model) where students earn transferable credit
- Shared asynchronous online instruction and openly shared resources (e.g., YouTube content, DOSITS website, BOAT effort)
- Climate Match Academy as a model: NGO-run program to rapidly upskill students in a specialized area
- Vertical integration of curriculum from introductory to advanced levels with clearly communicated credential meaning
- Develop generative AI-integrated short courses that build conceptual physics understanding alongside modern tools
- Development of an acoustics education network across organizations

Waypoint 5: Building Awareness & Career Pathways in Ocean Acoustics

Key Question: *What impediments and opportunities exist for raising awareness of ocean acoustics as a field and career?*

Impediments Identified

- Identity crisis: ocean acoustics lacks a clear brand; students rarely choose it intentionally — they stumble into it
- No undergraduate degree programs; most recruitment happens at the graduate level, limiting the pipeline
- Small and aging community with limited presence on online/social platforms
- Faculty are stretched thin, limiting capacity for outreach and recruitment
- Field is largely absent from inland and non-coastal universities, creating geographic inequity in awareness

Opportunities & Ideas

- Leverage bioacoustics as an entry point: charismatic megafauna, whale sounds, and ocean soundscapes are compelling hooks for students
- Use music and acoustics broadly as a hook — play with audio filtering, demonstrate acoustic principles through music
- AI/ML and data science as a hook: students drawn to data are natural recruits for acoustic signal processing work
- Engage AP instructors (Physics, Bio, Engineering) and high school programs; Scripps Institution offers model field trip programs
- Ocean Discovery Day and similar events for middle schoolers (UNH model)
- Regional career "speed dating" symposia bringing together industry, academia, and government
- Faculty should join graduate admissions panels to advocate for ocean acoustics as a field

- Outreach to aquariums (e.g., Monterey Bay Aquarium) as public science engagement partners
- Better cross-linking of shared resources: cabled arrays, DOSITS, institution websites — make these findable nationally

Cross-Cutting Themes

The following themes emerged across multiple waypoints:

- **Critical mass problem: Ocean acoustics is too dispersed at any single institution; collaborative, multi-institutional models are essential**
- **Stakeholder alignment: Government, industry, and academia need to be in the same room to define competencies and credentials**
- **Competency-based microcredentials are a flexible mechanism: Stackable, modular credentials can serve Navy veterans, government hires, and industry workers alike**
- **Bioacoustics and AI/ML as growth areas: Both are expanding and serve as natural entry points for new students**
- **Define the problem before defining solutions: The group emphasized the need for clearer problem framing before selecting interventions at the upcoming workshop**