



Advisory Board

Maine Offshore Wind Research Consortium

June 3, 2026

Maine OSW Research Consortium

Established to better understand the local and regional impacts of floating OSW in the Gulf of Maine

The consortium includes representation from fishing industry, ocean experts, and others to inform research priorities, and will work to align with related regional and national efforts.

GOAL: develop and execute a research strategy to better understand the local and regional impacts of floating offshore wind power projects in the Gulf of Maine, including:

- Opportunities and challenges to existing uses in the GOM, including how to best support co-existence with the fishing industry

- Methods to avoid and minimize impacts on ecosystems and existing uses

- Ways to realize cost efficiencies in commercialization

- Conservation actions and projects for impacted species and habitats (NEW from LD 1895)



Meeting Objectives

- Introduce new Advisory Board members
- Receive brief updates on relevant research in the Gulf of Maine
- Receive updates on two Consortium-funded expert workshops
- Discuss workshop outcomes to inform future rounds of research funding

Meeting Agenda

- 9:00** **Welcome & Meeting Overview** – *Terry Alexander, Co-Chair; Katy Bland, Maine Sea Grant*
- 9:15** **Introduce New Advisory Board Members** – *Katy Bland, Maine Sea Grant*
- 9:30** **Relevant Maine Research Updates** – *Casey Yanos & Becca Peters, Maine Department of Marine Resources; Anthony Viselli, University of Maine; Nate Fuller, Biodiversity Research Institute; Trish Souder, Geo SubSea; Amrit Verma, University of Maine*
- 10:10** **Break**
- 10:20** **Expert Workshop Debrief** – *Luke Feinberg; Emily Shumchenia, RWSC*
- 11:10** **Discussion on Workshop Outcomes** – *Katy Bland, Maine Sea Grant; Meghan Suslovic, Department of Energy Resources*
- 11:55** **Wrap Up and Next Steps** – *Katy Bland, Maine Sea Grant*
- 12:00** **Adjourn**

A Few Guidelines for Today

Advisory Board Members

- Practice common rules-of-the road: Share the floor and respect differences of opinion
- **In-person:** Please raise your hand or place name placard sideways to indicate you would like to speak
- **Remote:** Please use video (if you can) and use hand-raise function (*9 on phone). We'll try to be sure we pause periodically to make sure you can participate fully but shout out if you need to or put ideas in the Chat.
- Please put a star (*) in front of your name so we can quickly identify AB members

Collaborators

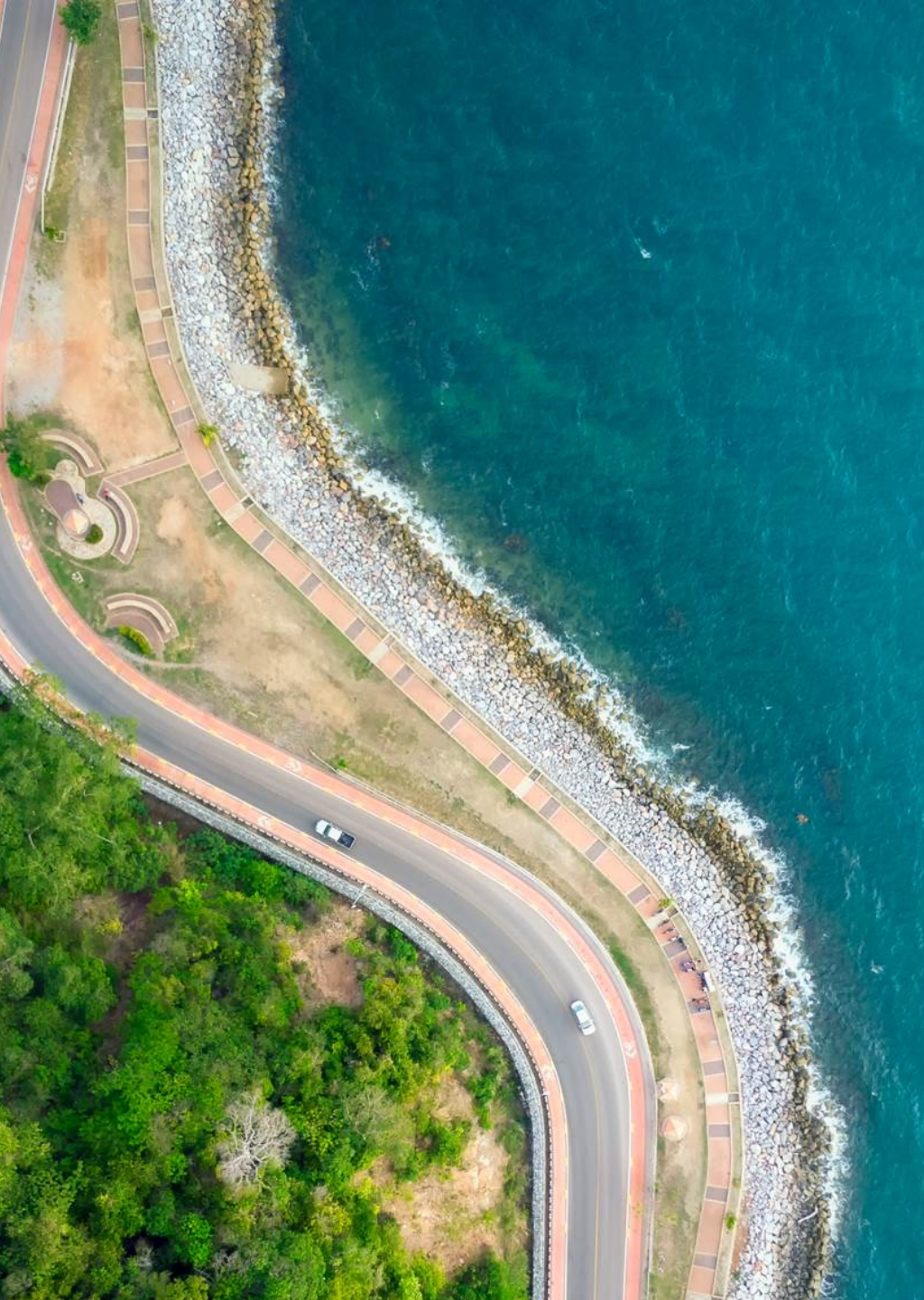
- Please "rename" yourself on Zoom to include your affiliation

Observers

- Thank you for joining, we are glad you are here. We'll answer Advisory Board questions first but try to make sure we leave time for additional questions as well.
- Please keep video off and so we can focus discussion on the Advisory Board members.
- Please identify yourself when participating in the meeting.

Everyone

- Mute unless speaking please (*6 on phone to unmute)



Programmatic Updates

Program Management, starting July 2026

Roles and Responsibilities

Program Manager: Julia Hiltonsmith

- Primary contact point for AB/SC
- Connect work to communities

DOER with DMR and DIFW

- Work directly with Program Manager and advisors
- Manage state RFP and contracting processes
- State fiscal responsibilities and liaison with Legislature
- Participate on AB/SC

Expert Advisor: Carbon Trust

- Support with scoping and delivery of research projects
- Coordination of research activities with wider industry
- Help identify funding opportunities
- Continued identification of research priorities

Program Management

Supports work of Research Consortium, including coordination, meeting facilitation and implementation of RFP process



New Advisory Board Members

- Jack Clark, Penobscot Nation
- Nathanael Kutz, Edison Chouest Offshore
- Brian LeFebvre, James Caird Maritime Solutions
- Jess Reilly-Moman, VHB
- Grant Provost, Ironworkers Local 7 Maine
- Ryan Raber, F/V Ocean Spray Partnership
- Geoffrey Smith, The Nature Conservancy
- *To-be-finalized rec/charter/for-hire fishing representative*



Simplified Recruitment Process (starting December 2025)

- PM determined seats to fill
- PM recruited candidates
- SC reviewed robust slate of candidates with the goal to balance different types of perspectives, expertise areas, and representation
- SC invitations sent to new members
 - AB now at 30 members (*31 with to-be-finalized member*)
 - SC approved exceeding the member cap (30) in TOR

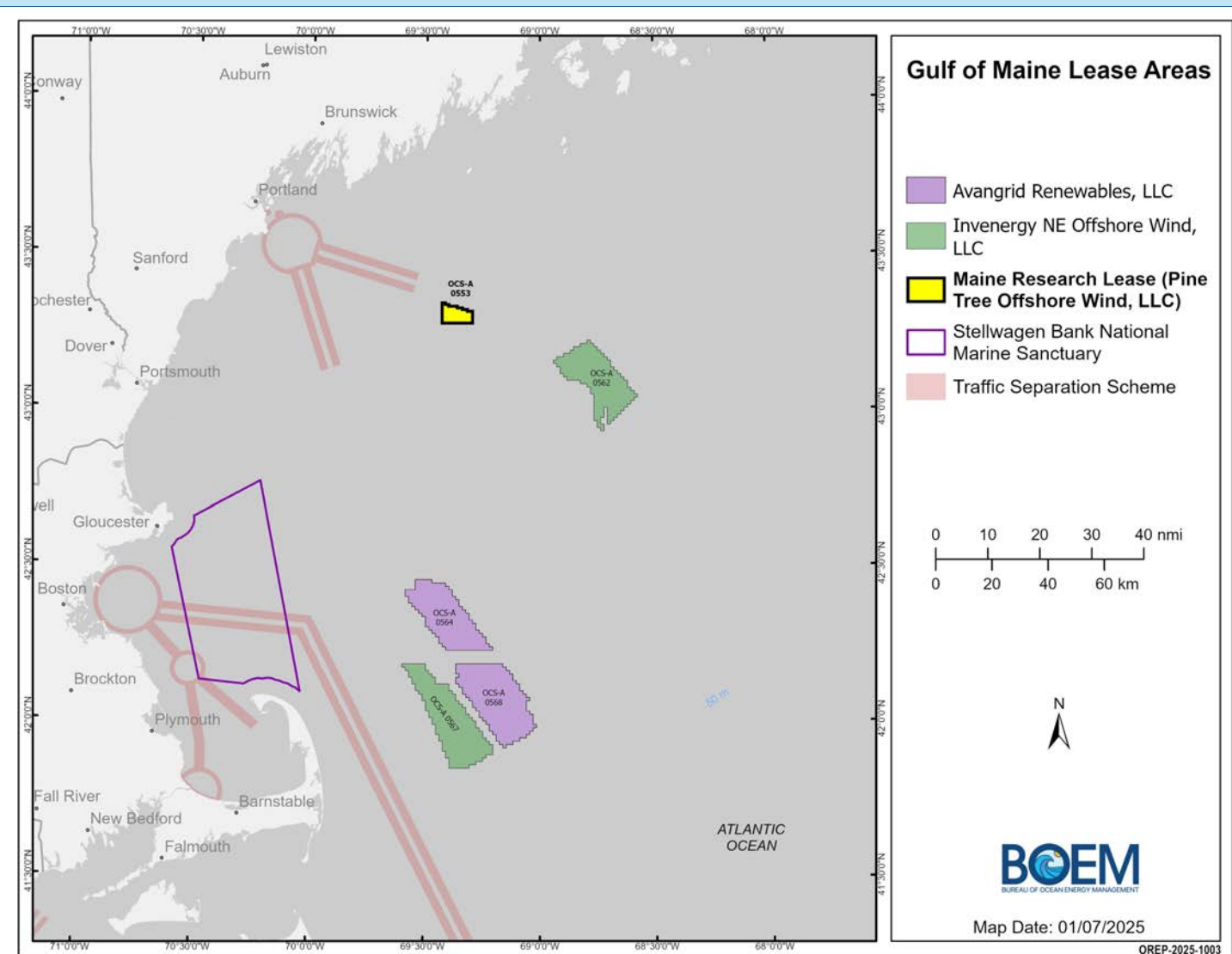


Relevant Maine Research Updates

MAINE DMR OFFSHORE WIND RESEARCH ARRAY UPDATE JUNE 2026



MAINE FLOATING OFFSHORE WIND RESEARCH ARRAY



- OCS-A 0553
- Area covers a little less than 15,000 acres
- It is located 28 nautical miles off the coast of Maine on the U.S. Outer Continental Shelf

RESEARCH ARRAY BIOLOGICAL SURVEY FOCUS

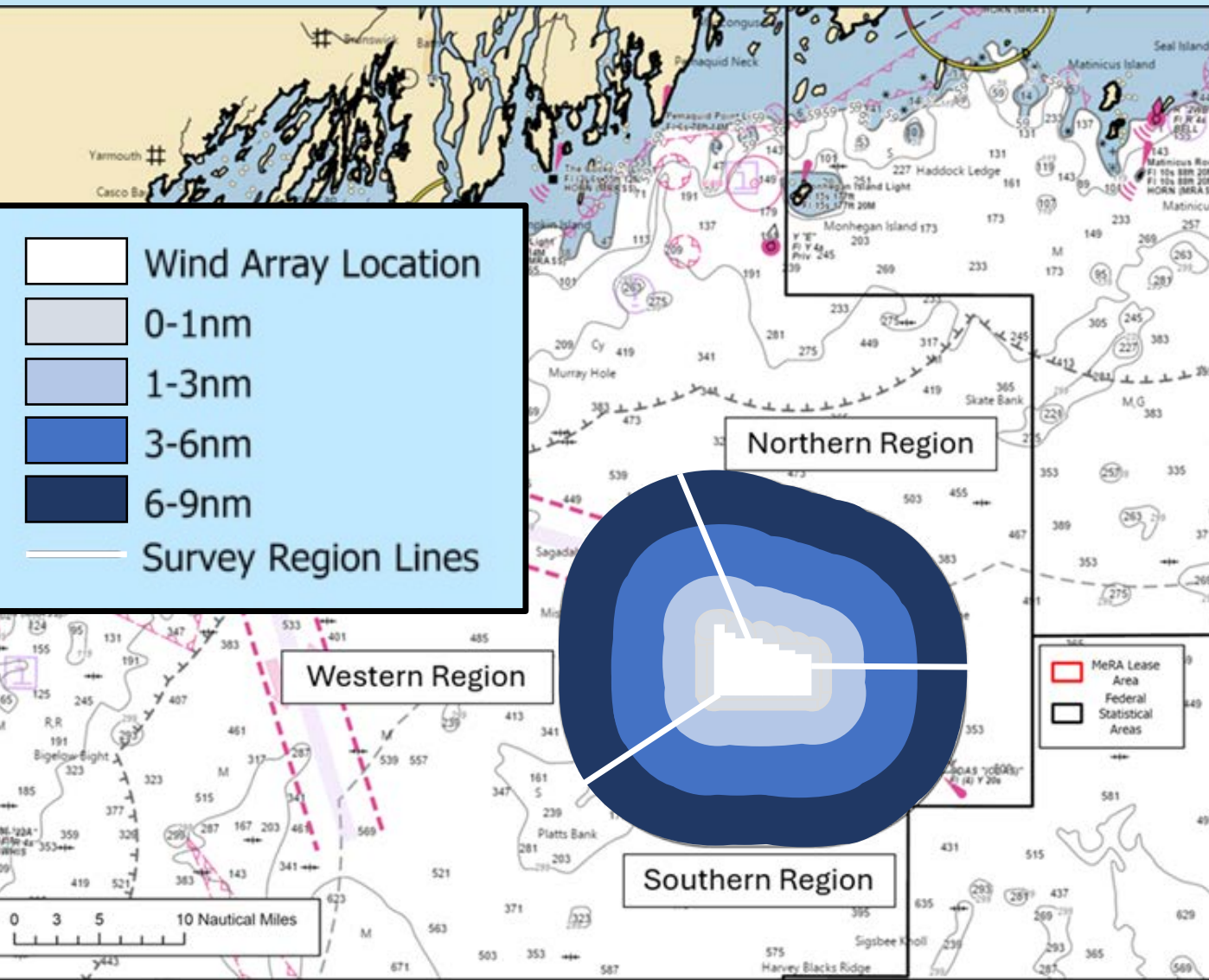
Our focus is on baseline data collection.

There are significant data gaps on species presence and abundance and environmental conditions.

We need to fill these gaps to understand any potential changes.

We need multiple years of baseline data to separate any potential changes caused by offshore wind from natural variability.

BEFORE-AFTER-GRADIENT APPROACH

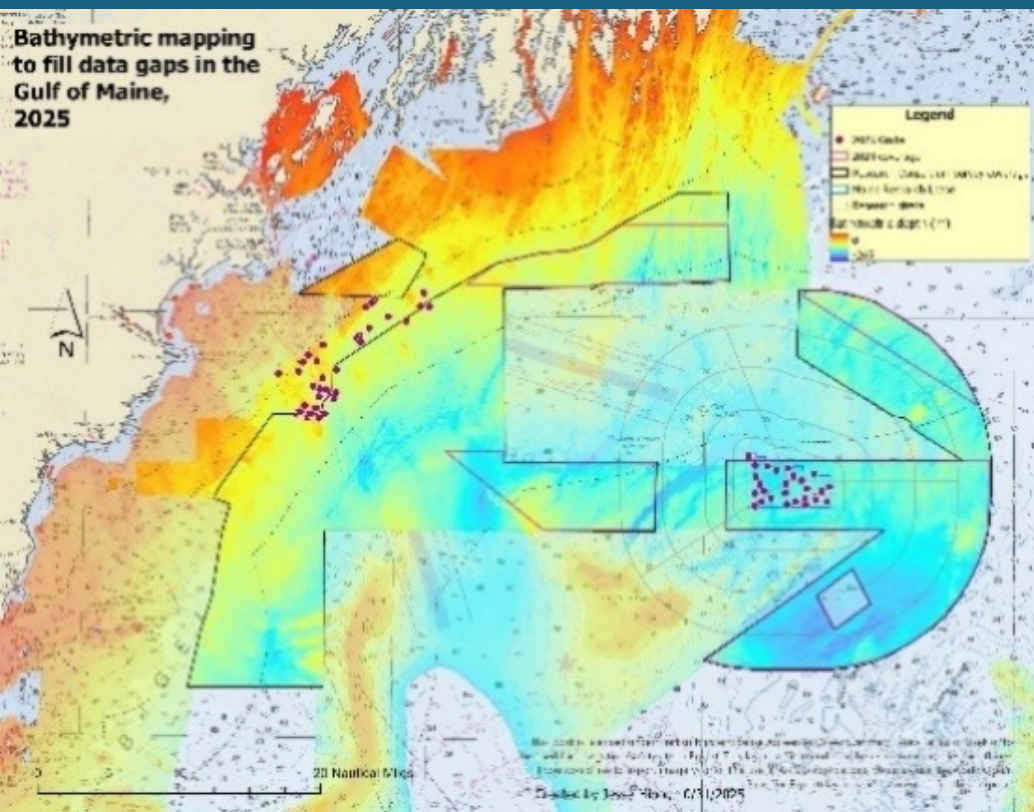


- Sampling across a gradient allows us to see how far any impacts reach
- Gradient sampling eliminates the need for a control region

RESEARCH ARRAY BIOLOGICAL SURVEYS

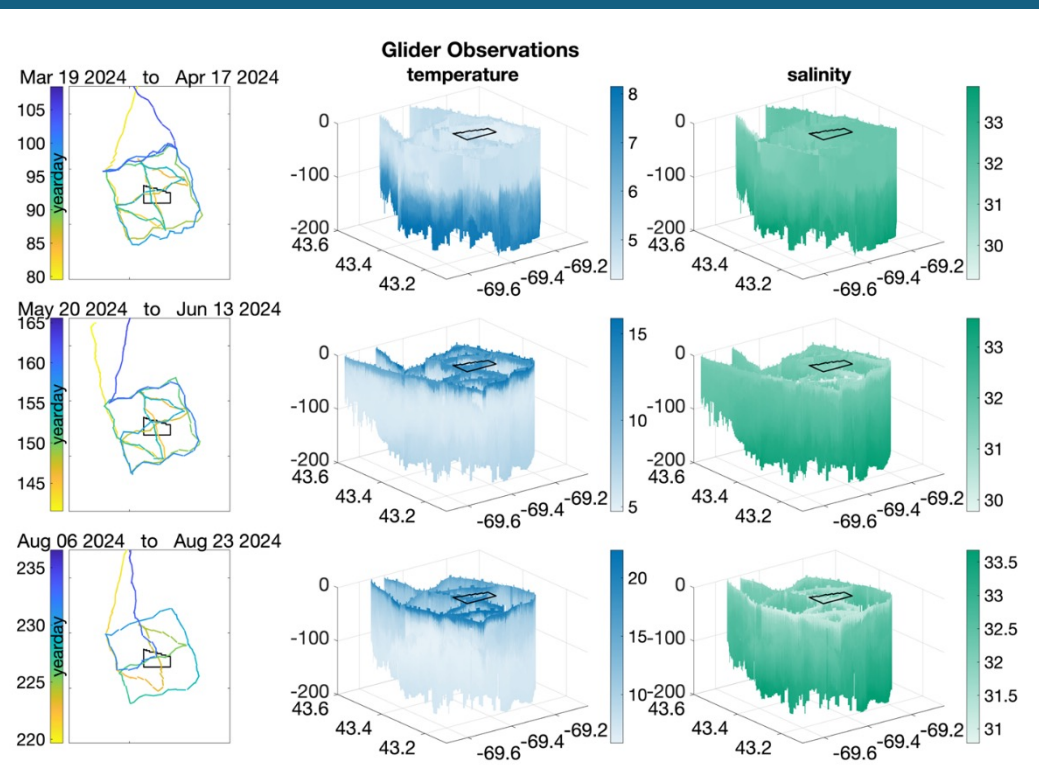
- **Seafloor mapping and benthic sampling**
- Oceanographic monitoring
- **Plankton sampling**
- Active acoustic monitoring
- **Bottom trawl survey**
- Highly migratory species monitoring

SEAFLOOR MAPPING AND BENTHIC SAMPLING



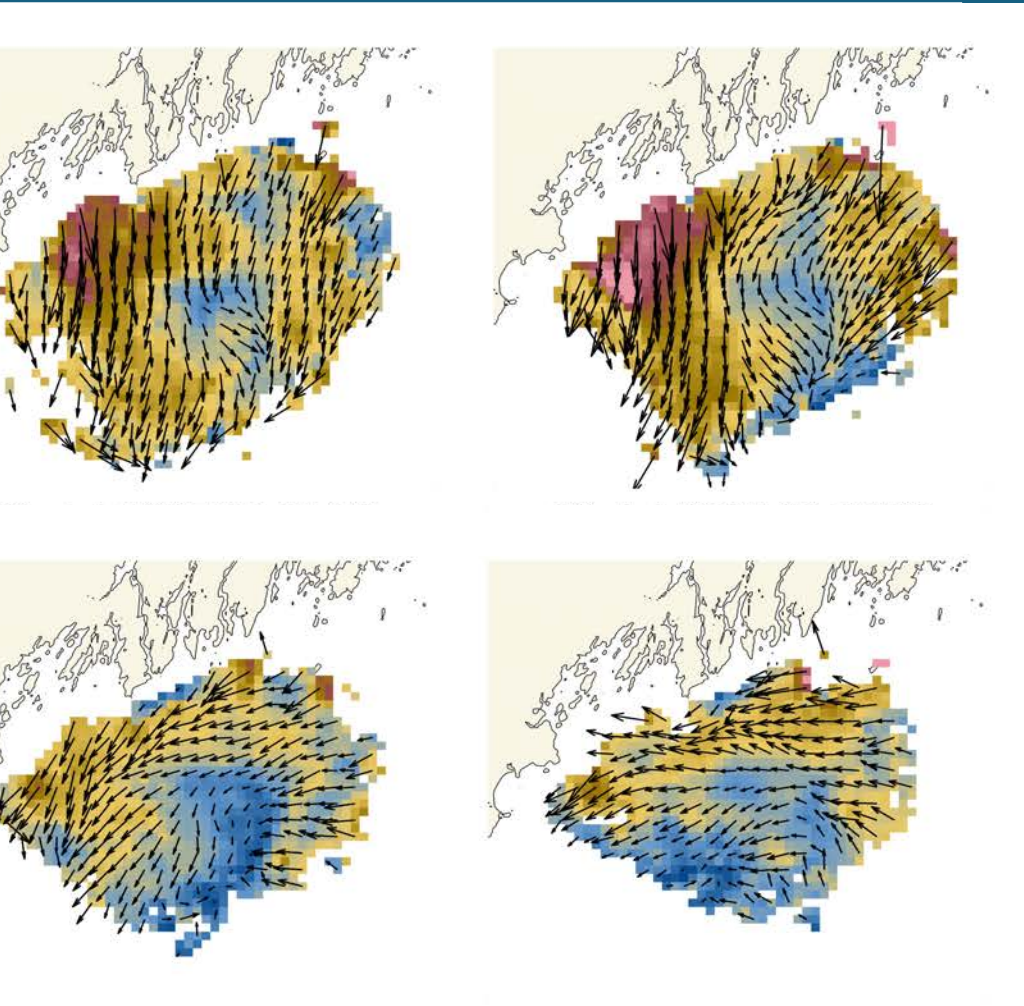
- Layout: Mapping complete coverage, benthic sampling across all strata
- Frequency: Mapping continuous during good weather months, one benthic sampling event per year
- Years of data collected: approximately 2
- Analysis plans: Seafloor characterization (temperature, pH, chlorophyll, dissolved oxygen, salinity, sediment grain size), benthic species identification, seafloor video

OCEANOGRAPHIC MONITORING-UNDERWATER GLIDERS



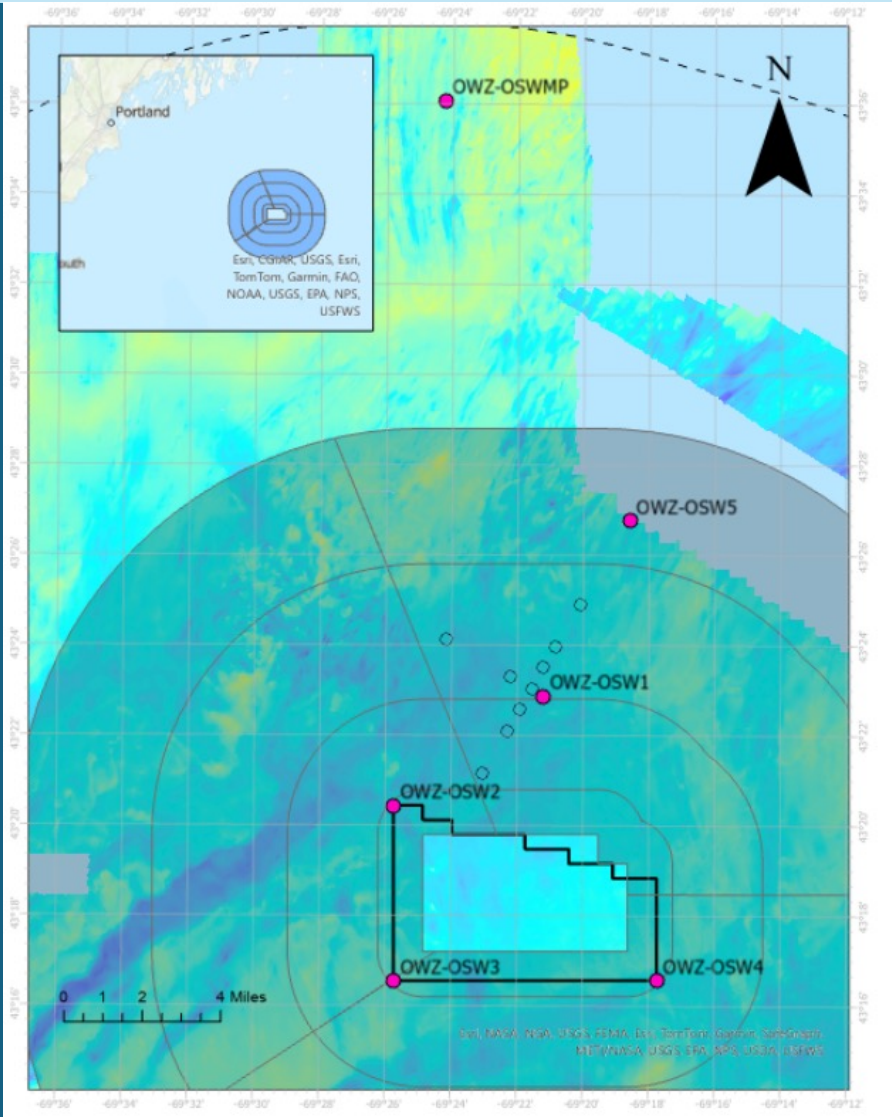
- Layout: Bowtie pattern throughout the research array
- Frequency: 3 deployments, discontinued
- Years of data collected: approximately 3 months
- Analysis plans: Water column temperature and salinity, spatial variation

OCEANOGRAPHIC MONITORING-RADAR NETWORK



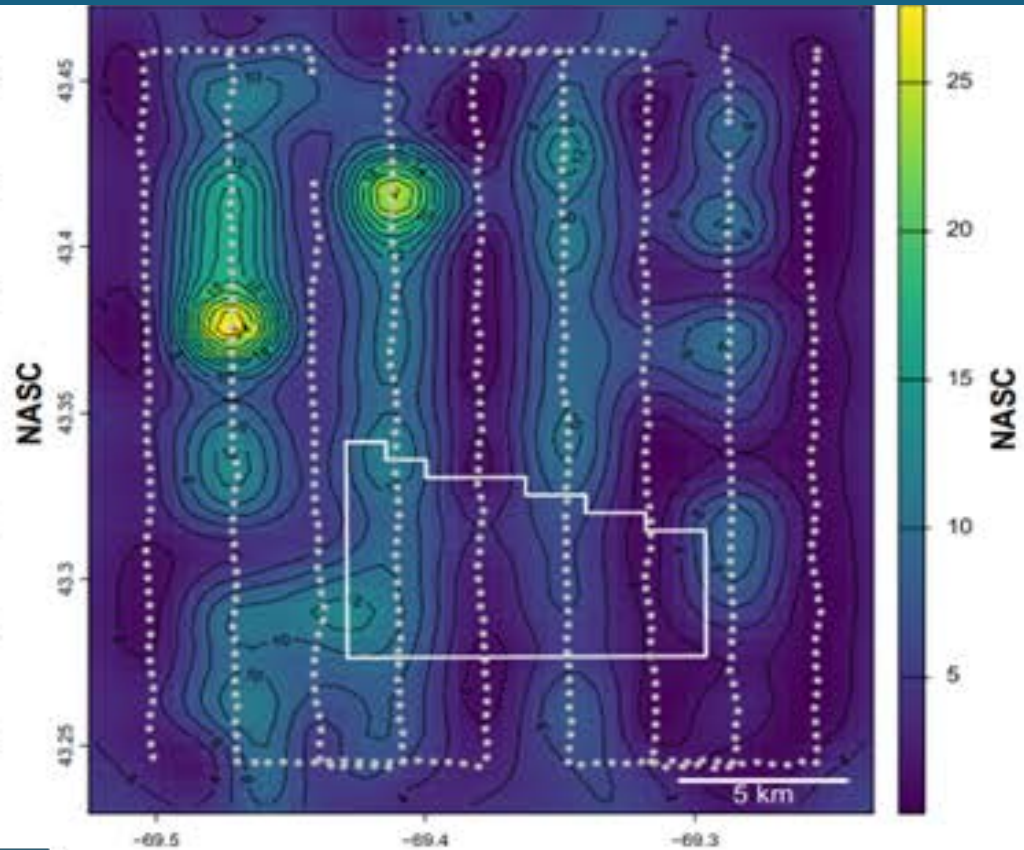
- Layout: Six radar stations distributed along the coast collect data from the research array inshore
- Frequency: Continuous
- Years of data collected: 1 (since full network was installed)
- Analysis plans: Surface water (upper meter) velocity and magnitude over time – between years, seasonality

PLANKTON SURVEY



- Layout: Modified BAG
- Frequency: Once per month (excluding December and January)
- Years of data collected: approximately 2.5 (sites varied due to changes between proposed and final lease location)
- Analysis plans: Abundance and distribution of zooplankton and ichthyoplankton, calanus staging, nutritional status, and comparison to historic GoME sites

ACTIVE ACOUSTIC SURVEY

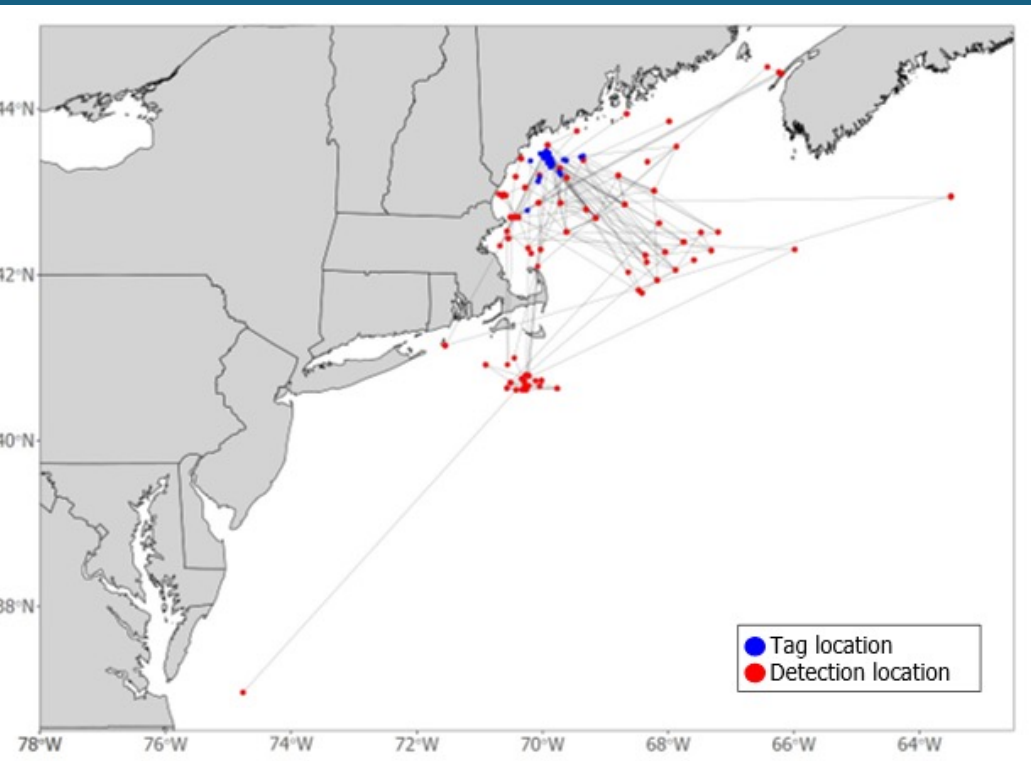


- Layout: North-South transects
- Frequency: Approximately every 6 weeks (excluding winter)
- Years of data collected: approximately 3.5 (layout of transects varied due to changes between proposed and final lease location)
- Analysis plans: Pelagic and demersal fish biomass, invertebrate biomass, depth of biological maximum, size-spectral analysis of pelagic fish community

This topographic map depicts the Three Dory Ridge area in the Adirondacks. The map is characterized by numerous contour lines indicating elevation, with labels such as 329, 359, 377, 395, 401, 407, 411, 417, 423, 429, 435, 441, 447, 453, 459, 465, 471, 477, 483, 489, 495, 501, 507, 513, 519, 525, 531, 537, 543, 549, 555, 561, 567, 573, 579, 585, 591, 597, 603, 609, 615, 621, 627, 633, 639, 645, 651, 657, 663, 669, 675, 681, 687, 693, 699, 705, 711, 717, 723, 729, 735, 741, 747, 753, 759, 765, 771, 777, 783, 789, 795, 801, 807, 813, 819, 825, 831, 837, 843, 849, 855, 861, 867, 873, 879, 885, 891, 897, 903, 909, 915, 921, 927, 933, 939, 945, 951, 957, 963, 969, 975, 981, 987, 993, 999, 1005, 1011, 1017, 1023, 1029, 1035, 1041, 1047, 1053, 1059, 1065, 1071, 1077, 1083, 1089, 1095, 1101, 1107, 1113, 1119, 1125, 1131, 1137, 1143, 1149, 1155, 1161, 1167, 1173, 1179, 1185, 1191, 1197, 1203, 1209, 1215, 1221, 1227, 1233, 1239, 1245, 1251, 1257, 1263, 1269, 1275, 1281, 1287, 1293, 1299, 1305, 1311, 1317, 1323, 1329, 1335, 1341, 1347, 1353, 1359, 1365, 1371, 1377, 1383, 1389, 1395, 1401, 1407, 1413, 1419, 1425, 1431, 1437, 1443, 1449, 1455, 1461, 1467, 1473, 1479, 1485, 1491, 1497, 1503, 1509, 1515, 1521, 1527, 1533, 1539, 1545, 1551, 1557, 1563, 1569, 1575, 1581, 1587, 1593, 1599, 1605, 1611, 1617, 1623, 1629, 1635, 1641, 1647, 1653, 1659, 1665, 1671, 1677, 1683, 1689, 1695, 1701, 1707, 1713, 1719, 1725, 1731, 1737, 1743, 1749, 1755, 1761, 1767, 1773, 1779, 1785, 1791, 1797, 1803, 1809, 1815, 1821, 1827, 1833, 1839, 1845, 1851, 1857, 1863, 1869, 1875, 1881, 1887, 1893, 1899, 1905, 1911, 1917, 1923, 1929, 1935, 1941, 1947, 1953, 1959, 1965, 1971, 1977, 1983, 1989, 1995, 2001, 2007, 2013, 2019, 2025, 2031, 2037, 2043, 2049, 2055, 2061, 2067, 2073, 2079, 2085, 2091, 2097, 2103, 2109, 2115, 2121, 2127, 2133, 2139, 2145, 2151, 2157, 2163, 2169, 2175, 2181, 2187, 2193, 2199, 2205, 2211, 2217, 2223, 2229, 2235, 2241, 2247, 2253, 2259, 2265, 2271, 2277, 2283, 2289, 2295, 2301, 2307, 2313, 2319, 2325, 2331, 2337, 2343, 2349, 2355, 2361, 2367, 2373, 2379, 2385, 2391, 2397, 2403, 2409, 2415, 2421, 2427, 2433, 2439, 2445, 2451, 2457, 2463, 2469, 2475, 2481, 2487, 2493, 2499, 2505, 2511, 2517, 2523, 2529, 2535, 2541, 2547, 2553, 2559, 2565, 2571, 2577, 2583, 2589, 2595, 2601, 2607, 2613, 2619, 2625, 2631, 2637, 2643, 2649, 2655, 2661, 2667, 2673, 2679, 2685, 2691, 2697, 2703, 2709, 2715, 2721, 2727, 2733, 2739, 2745, 2751, 2757, 2763, 2769, 2775, 2781, 2787, 2793, 2799, 2805, 2811, 2817, 2823, 2829, 2835, 2841, 2847, 2853, 2859, 2865, 2871, 2877, 2883, 2889, 2895, 2901, 2907, 2913, 2919, 2925, 2931, 2937, 2943, 2949, 2955, 2961, 2967, 2973, 2979, 2985, 2991, 2997, 3003, 3009, 3015, 3021, 3027, 3033, 3039, 3045, 3051, 3057, 3063, 3069, 3075, 3081, 3087, 3093, 3099, 3105, 3111, 3117, 3123, 3129, 3135, 3141, 3147, 3153, 3159, 3165, 3171, 3177, 3183, 3189, 3195, 3201, 3207, 3213, 3219, 3225, 3231, 3237, 3243, 3249, 3255, 3261, 3267, 3273, 3279, 3285, 3291, 3297, 3303, 3309, 3315, 3321, 3327, 3333, 3339, 3345, 3351, 3357, 3363, 3369, 3375, 3381, 3387, 3393, 3399, 3405, 3411, 3417, 3423, 3429, 3435, 3441, 3447, 3453, 3459, 3465, 3471, 3477, 3483, 3489, 3495, 3501, 3507, 3513, 3519, 3525, 3531, 3537, 3543, 3549, 3555, 3561, 3567, 3573, 3579, 3585, 3591, 3597, 3603, 3609, 3615, 3621, 3627, 3633, 3639, 3645, 3651, 3657, 3663, 3669, 3675, 3681, 3687, 3693, 3699, 3705, 3711, 3717, 3723, 3729, 3735, 3741, 3747, 3753, 3759, 3765, 3771, 3777, 3783, 3789, 3795, 3801, 3807, 3813, 3819, 3825, 3831, 3837, 3843, 3849, 3855, 3861, 3867, 3873, 3879, 3885, 3891, 3897, 3903, 3909, 3915, 3921, 3927, 3933, 3939, 3945, 3951, 3957, 3963, 3969, 3975, 3981, 3987, 3993, 3999, 4005, 4011, 4017, 4023, 4029, 4035, 4041, 4047, 4053, 4059, 4065, 4071, 4077, 4083, 4089, 4095, 4101, 4107, 4113, 4119, 4125, 4131, 4137, 4143, 4149, 4155, 4161, 4167, 4173, 4179, 4185, 4191, 4197, 4203, 4209, 4215, 4221, 4227, 4233, 4239, 4245, 4251, 4257, 4263, 4269, 4275, 4281, 4287, 4293, 4299, 4305, 4311, 4317, 4323, 4329, 4335, 4341, 4347, 4353, 4359, 4365, 4371, 4377, 4383, 4389, 4395, 4401, 4407, 4413, 4419, 4425, 4431, 4437, 4443, 4449, 4455, 4461, 4

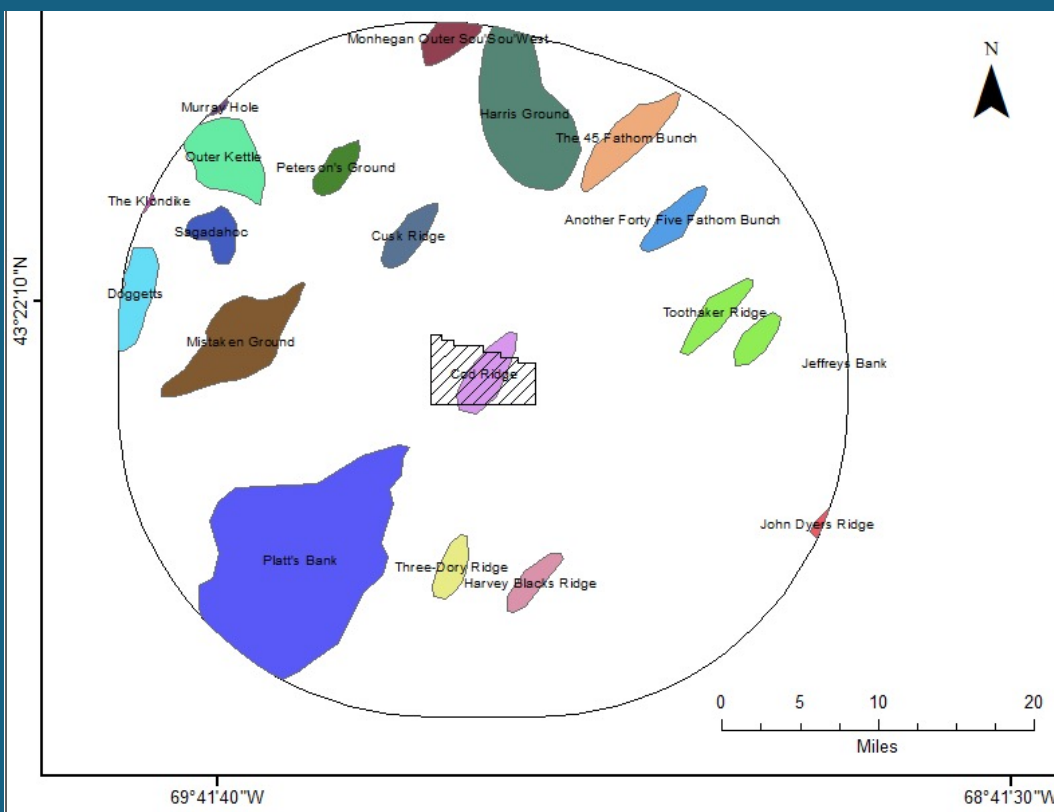
- Layout: BAG
- Frequency: Seasonal (4 times per year)
- Years of data collected: 1
- Analysis plans: Species abundance and distribution, size frequency distribution, seasonality, stomach content analysis

HIGHLY MIGRATORY SPECIES MONITORING



- Layout: Receivers deployed in rough grid, fish tagged in and around research array
- Frequency: Yearly from late spring to fall
- Years of data collected: approximately 3.5
- Analysis plans: Species presence, movement patterns, seasonality, genetic analysis, stable isotope analysis (feeding behavior)

LOCAL HISTORICAL AND ECOLOGICAL KNOWLEDGE



- Gathering information on how fishers have used the research array area (20-mile radius) over generations and how they relate to ocean spaces
- Wrapping up this summer

THANKS TO OUR COLLABORATORS



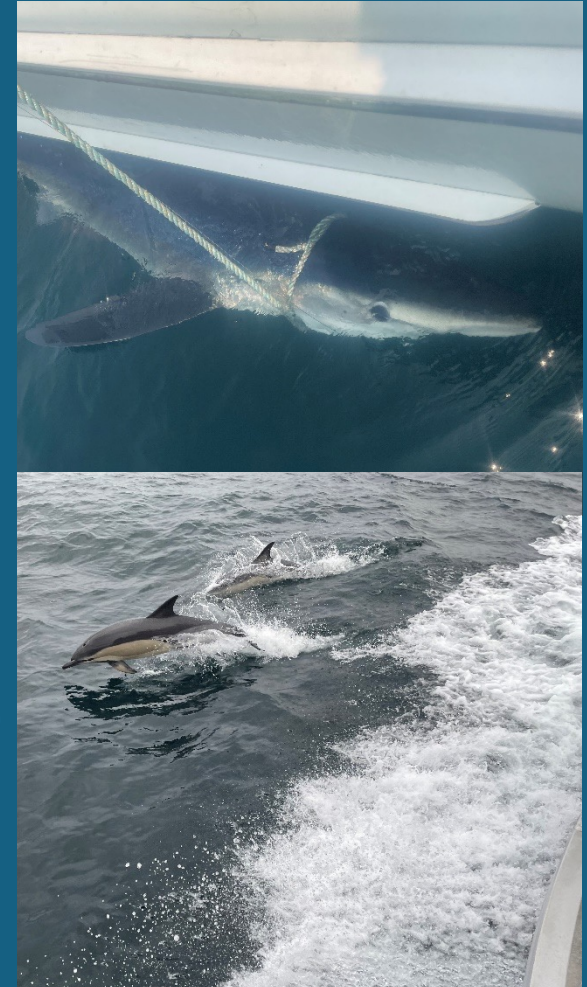


QUESTIONS?

CONTACT

CASEY YANOS

casey.yanos@maine.gov



1/4 Scale VoltturnUS+ Floating Research Wind Turbine Update and Stakeholder/Workforce Tours

Presentation made to the Maine Offshore Wind Research Consortium
June 3rd, 2026
Dr. Anthony Viselli, PE, Chief Engineer, UMaine anthony.Viselli@maine.edu

Outline

1. UMaine 1/4 Scale Floating Research Turbine Update
2. Environmental Monitoring
3. Research Projects and Opportunities Using the Asset
4. Workforce and Stakeholder Tours
5. Questions

VoltturnUS + Demo Project Overview

- UMaine won a national competition for floating foundations
- Only grid connected floating wind turbine in US,
- ¼ scale of 20MW unit temporarily deployed off Castine, Maine
- 30% smaller concrete foundation that creates local jobs
- Deployed for one year



VOLTTURNUS +

Construction and Deployment Engaged Maine Supply Chain Demonstrated Job Creation Potential

- Demonstrated all phases of construction and deployment
- Concrete foundation leads to increased local content
- UMaine was the general contractor for the project
- 31 construction partners with 23 based in Maine
- 85+ jobs
- Major Phases:
 - Concrete casting yard preparation
 - Concrete production
 - Post-tensioning
 - Outfitting
 - Launch
 - Tow-out
 - Turbine Integration
 - Mooring hook-up
 - Cable Lay
 - Operations and maintenance



VoltturnUS+ Hull Serial Construction Moving Formwork

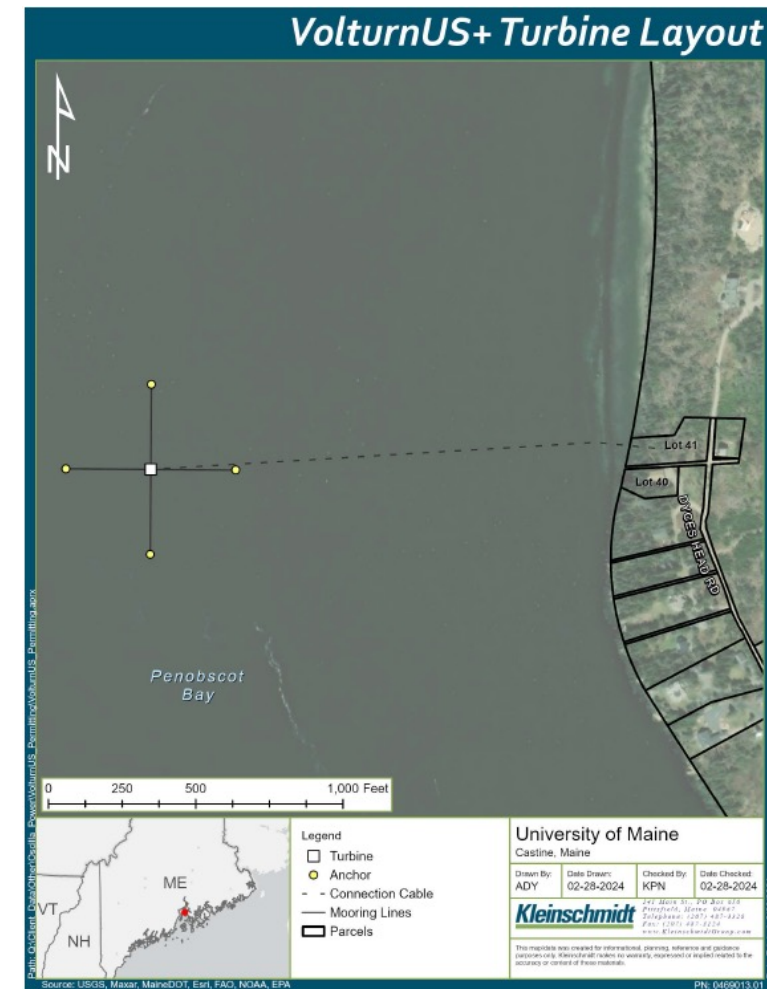
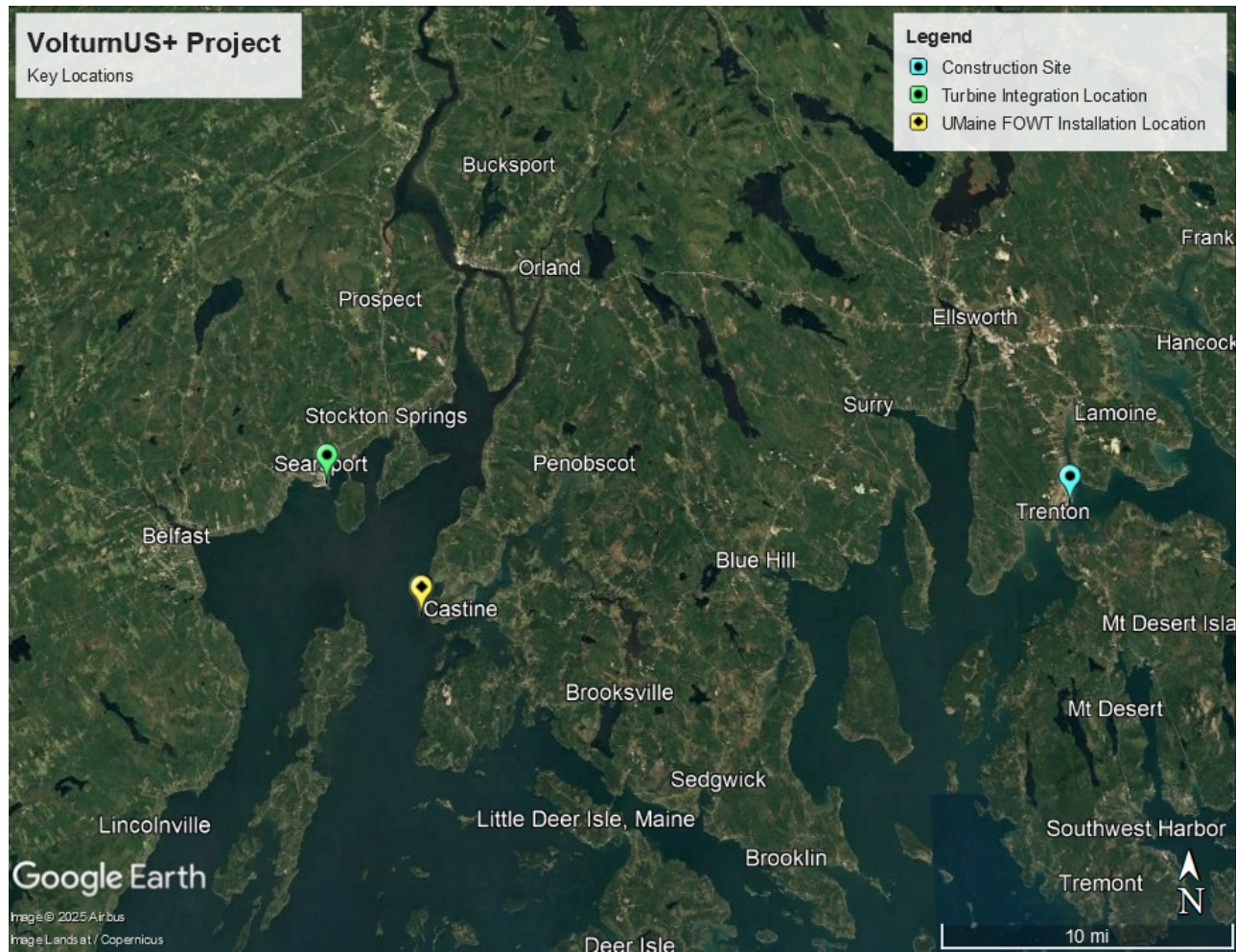


60 nautical mile tow

- Led by Maine Maritime Academy and Penobscot Bay Tractor Tug
- Speed ~2 knots
- Lead vessel and assist vessel.
- Hs 1m, 15 knot winds, 1 knot currents
- Towed from construction site to turbine integration facility
- Validation of towing methods



Turbine Integrated in Searsport and then Deployed off Castine Maine



Hook-up to 4 prelaid nylon/ chain moorings



Turbine Commissioned



VoltturnUS+ 1/4 Scale Design Parameters

System	Units	Value
Rated Capacity	kW	225
Rotor Radius	m	13.5
Hub Height from SWL	m	19.6
Tower Length	m	16.6
RNA Mass	t	10.8
Tower Mass	t	6.8
Hull Structural Mass	t	330
Total Ballast Mass	t	125
Turbine Classification	-	IIIA



Sample Data from the past winter: 3/17, 7:10am: Turbine Generating Near Peak Power

1. 50-yr operating conditions
2. Waves: Up to 41ft (12m) at full-scale
3. Wind 30mph (16m/s) with gust up 50+ mph (28m/s)
4. Current 2knotts (1m/s)
5. Less than 4 degrees of pitch
6. Less than 0.3g acceleration at nacelle



Sample Data

3/17, View from Tower Looking Down and South



Sample Data:

3/17 10:49am: Turbine Later in Day with Waves up to 20ft (6.3m) at Full-scale



ABS/ DNV NTQ Processes In Progress

- Standard process for implementation of new offshore technologies
- Goal is to advance the foundation and damper technology to commercial certifiable level using data and operational experiences from demonstration

Rules For

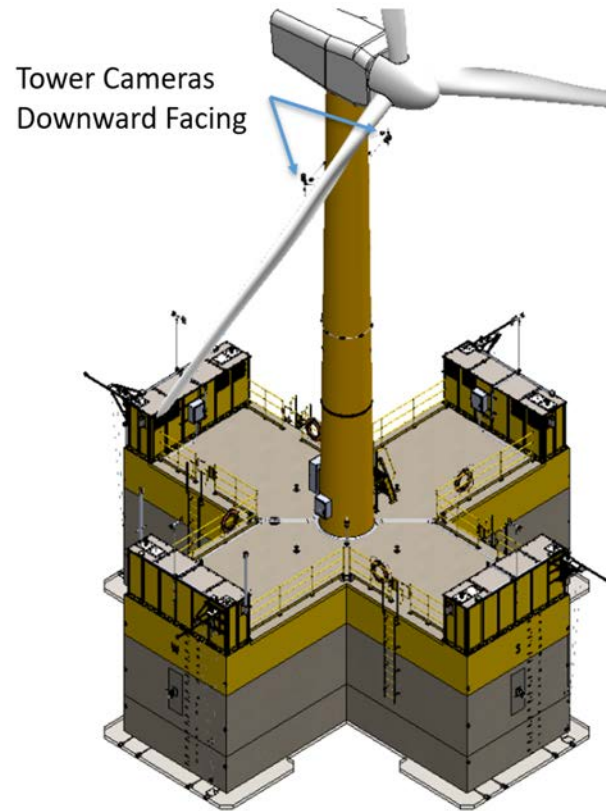
Alternative Arrangements, Novel Concepts
and New Technologies

Part 1D



Environmental Data Collection: Camera Equipment for Bird Monitoring

2x PNM-12082RVD downward-facing cameras on the turbine tower

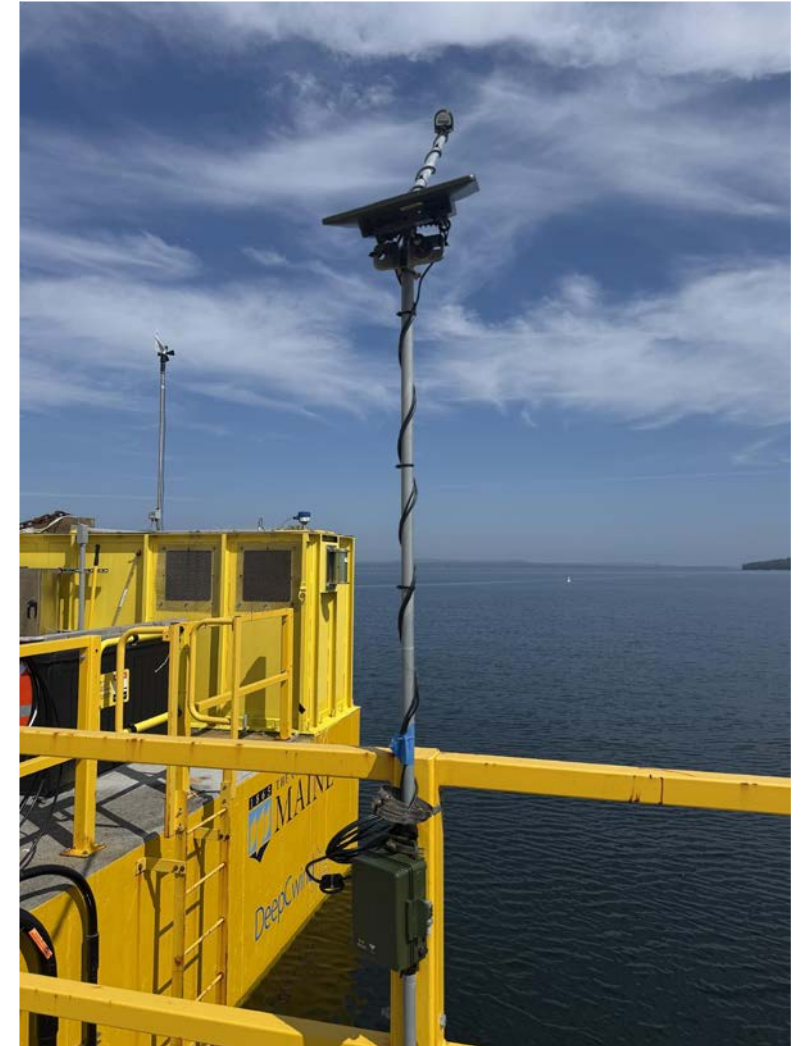


1x XNP-C9310R camera on shore (1.5km away) arranged to see the full field of view of the hull from a distance, featuring a resolution of 4K UHD at 30 frames per second and 31x optical zoom.



Environmental Data Collection: Bat Detection Equipment

- 2x acoustic Song Meter bat detectors to monitor bat activity and species presence around the project.
- The SM4BAT is specifically engineered to capture high-quality ultrasonic bat calls utilizing an SMM-U2 low-noise microphone and stores data on SD cards.
- The Biodiversity Research Institute is collaborating on collecting the data.



Biodiversity Research Institute

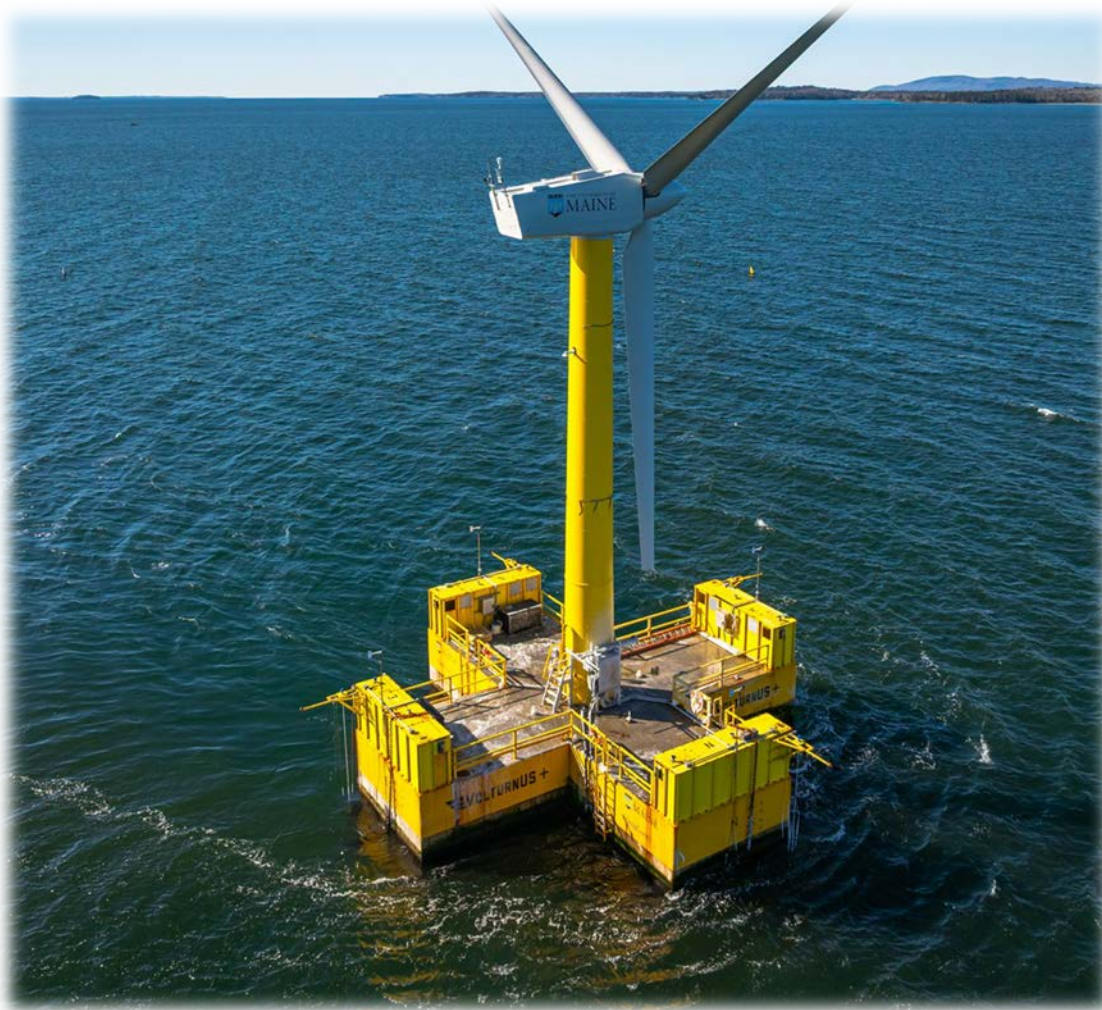


Opportunities for other ocean economy research and demonstration

- The only floating turbine in the USA
- State of Maine is funding three research projects to utilize the platform as an offshore laboratory.
 - Underwater inspections
 - Floating platform influence on sediment transport
 - Bird and bat monitoring techniques
- UMaine is actively completing and exploring deployment of other offshore technologies and conducting research during the deployment.
- Contact Anthony.Viselli@maine.edu for more information if this is of interest.



Announcement: Workforce and Stakeholder Tours



- Planning two tours in August and September to educate key stakeholders and provide experiences for Maine workforce
- Tours will be approximately 2.5 hours long
- Leave from Maine Maritime Academy Castine by vessel
- Open to consortium members and members of their organizations.
- Other attendees are welcome but will be reviewed on a case-by-case basis
- Not a public event
- Official announcement with dates forthcoming

Thank you!
Question and Answer

The logo features a stylized white icon of three horizontal bars of increasing length, resembling a wing or a stylized 'V', followed by the word 'VOLTURNUS' in a bold, white, sans-serif font, and a large white plus sign at the end.

VOLTURNUS +

Dr. Anthony Viselli, PE, Chief Engineer
Anthony.viselli@maine.edu, +1 207 974- 7007



Maine BlueTech Innovation: Offshore Wind Monitoring and Testing

Geo SubSea & Lobster Robotics

Research Consortium Advisory Board Meeting: June 03, 2026



Welcome & Introductions



Introductions from Geo SubSea & Lobster Robotics



Jeff Gardner
Program Director



Stephan Rutten
Project Director



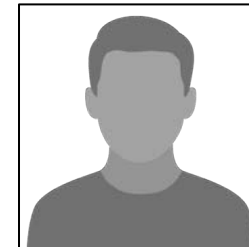
Trisha Souder
Project Manager
Compliance & Reporting Lead



Bas van Vliet
Field Engineer



Sandi Scripa
Benthic Data Expert



Matei Galesanu
Remote Support



Brett Young
Project Scientist/GIS Specialist



Geo SubSea Company Background

Established in 2015, bridging private developers and government agencies in offshore and maritime sectors

Industry-recognized for highest-quality survey and advisory services

Broad marine science expertise: biology, environmental science, oceanography, geology, and geophysics

Proven, efficient, and highly collaborative team

Naturally suited to managing large, complex marine scientific data acquisition projects

Staff involved in the OSW industry since its inception in the US

Lobster Robotics (LR) Company Background

Founded in 2021, LR is a Dutch deep-tech company developing disruptive technology via autonomous UUV solutions

Seeks to explore the most challenging environment on the planet – deep sea

Unique pressure-tolerant electronics design enables their UUVs to be easily adapted for deep-sea applications

LR is one of ten graduates of NATO's innovation accelerator out of 1,300 applicants



This Project & Why It Matters

Offshore wind leases in the Gulf of Maine will be developed using floating turbine designs due to deeper water.

This research study will demonstrate the ability to:

- Evaluate impacts to benthic habitats by offshore wind mooring anchors
- Document the biofouling present on mooring cables close to the seabed and any exposed anchors

Success goal: Demonstrate repeatable, georeferenced habitat mapping and species identification which is scalable for future Gulf of Maine works.



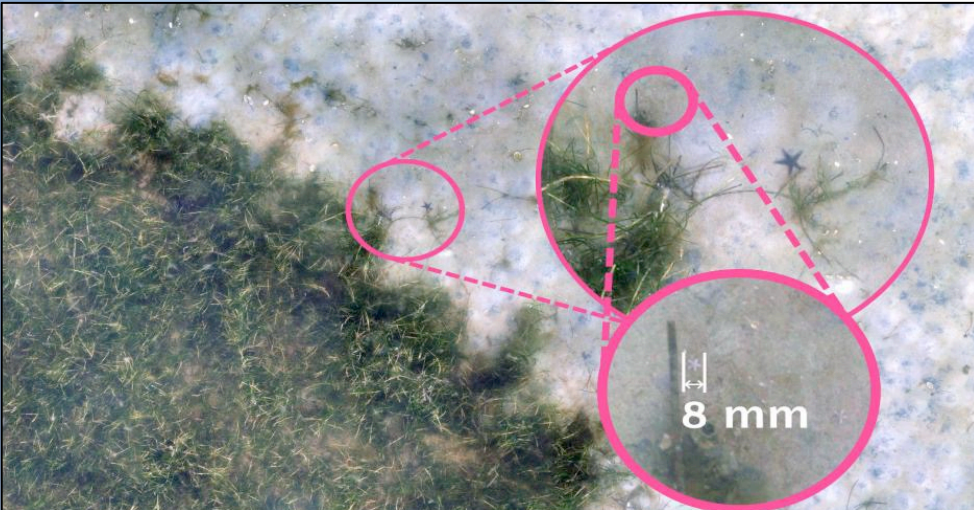
Scout 3 UUV



The Scout 3 UUV will be used to collect ultra high-resolution georeferenced imagery, which will be stitched together to make photomosaics of the seafloor

With the development of floating offshore wind, UUVs will largely take the place of ROVs for collecting seafloor imagery.

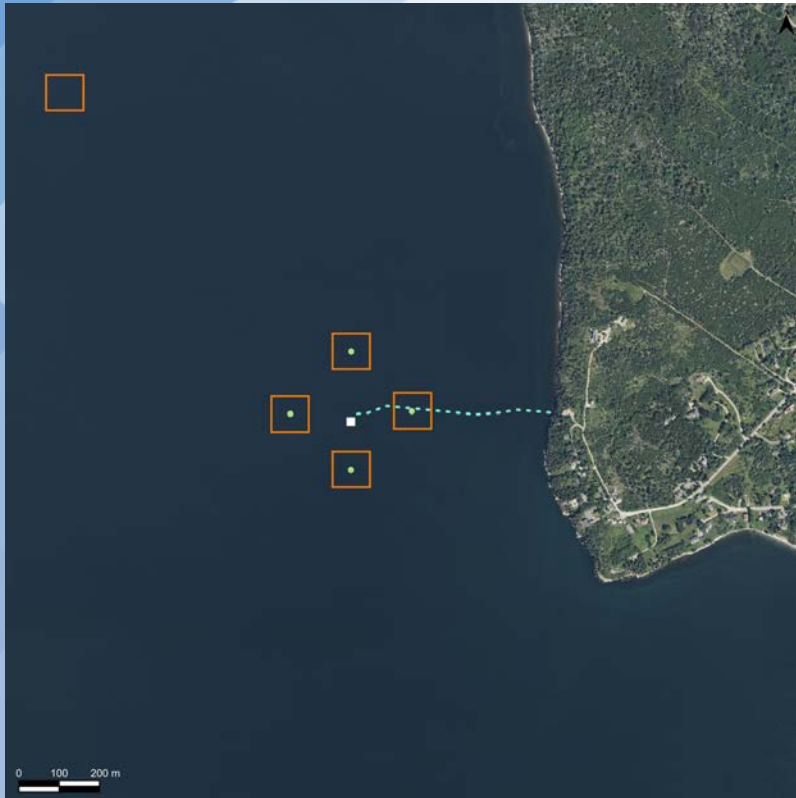
Advantage: Ability to layer imagery from the same location over time to observe and assess habitat evolution and recovery following seafloor disturbance.



Survey Options

Option A (Original Proposal)

100 m² survey area around each anchor point, plus one or more 100 m² control area(s) 500 to 1,000 m away in similar habitat



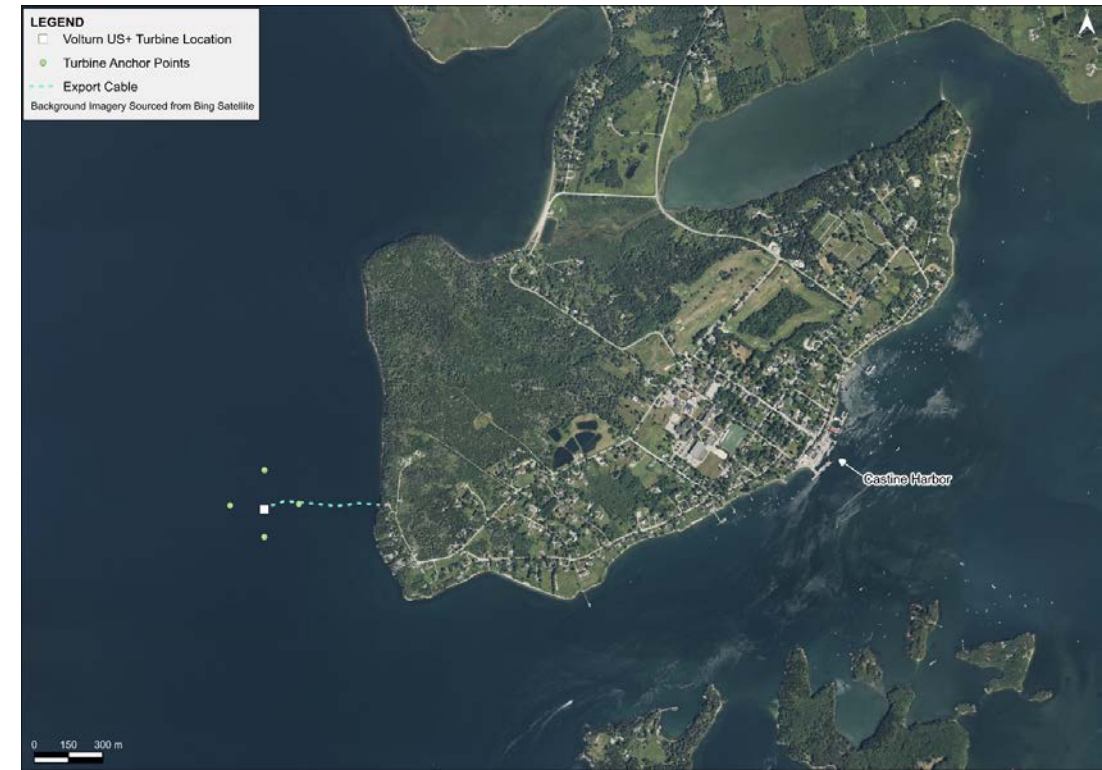
Option B (Goal if Time Available)

Full coverage under the turbine and around anchor points plus one or more 100 m² control areas 500 to 1,000 m away in similar habitat



Survey Logistics

- Proactive coordination with UMaine regarding survey plan, timing, and anchor point locations.
- Scout 3 UUV to be shipped to the US in July
 - Working with a broker to ensure everything makes it through customs smoothly
- Lobster Robotics field crew to join in the US once Scout 3 has arrived at the GSS office
- Geo SubSea providing small coastal vessel for this effort, to be brought up from our CT office via trailer
- Castine Harbor to act as the base of operations
- Survey will be completed as daytime ops only
- 3 days of field work available as part of the budget. Goal is to collect as much data as possible in that time frame



Data Analysis & Interpretation

- Create georeferenced photomosaic
- Note and evaluate any physical seafloor impacts
- Map habitats observed following CMECS guidelines
- Identify fauna present around anchor points
 - Compare community structure, diversity, and abundance to control areas
- Create a Marine Data Transfer Site (MDTS) specifically for this study data. Access for State and UMaine.
- Coordination with RWSC to share data publicly on the Seafloor Data Repository.



Project and Technology Notes

- Contingency planning has been integrated into the schedule.... Shipping or customs delays, local logistics.
- Coordination done with local authorities concerning vessel operations.... Harbormaster, UMaine.
- Demonstration of the technology is planned for the first day at the dock if time permits, for interested parties.
- Currently upgrading another model of the Lobster Robotics UUV for deep water environmental monitoring in up to 3,000 m water depths.
- These autonomous solutions are planned for a wide range of commercial and R&D programs in the future (versatile geophysical and environmental payloads).



Anticipated Schedule & Closing

- Field program anticipated end of July or early August
- Project completion by the end of 2026



GEO SUBSEA LLC
Marine Science Consulting



Turbulence, Stratification, and Mixing Around a Floating Offshore Wind Turbine: A Field Study

Maine Offshore Wind Research Consortium: Advisory Board Meeting

Team Members:

Dr. Amrit Verma

Assistant Professor

Department of Mechanical Engineering

University of Maine, USA

Dr. Damian C. Brady

Agatha B. Darling Professor of
Oceanography,
University of Maine, USA

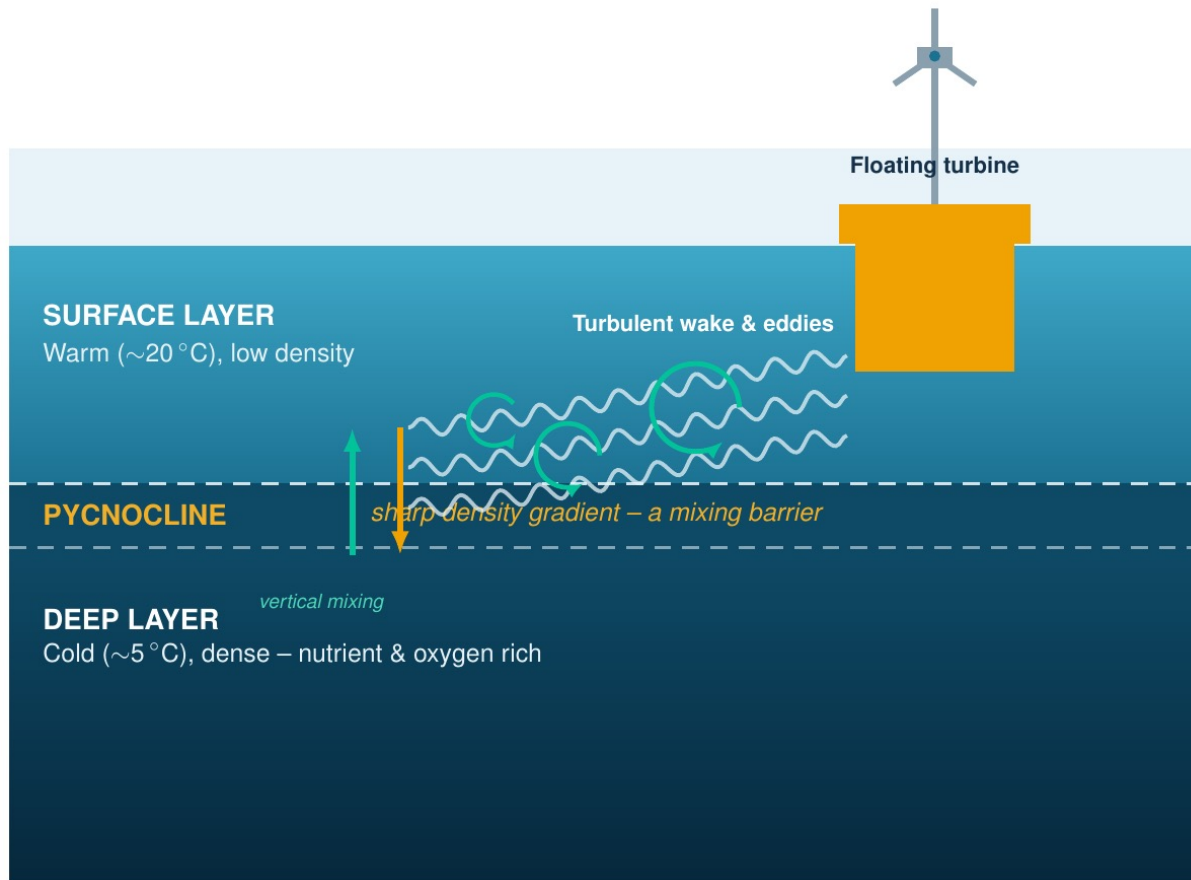
Isaac Sewell,

PhD Student, Department of
Mechanical Engineering
University of Maine, USA

Dr. Everett Rzeszowski,
Postdoctoral Researcher,
University of Maine, USA

Motivation

Interaction between Stratified Ocean and Offshore Structure



- ❖ **Ocean stratification** is the natural tendency of seawater to organize itself into distinct layers.
- ❖ **Warm, fresh surface water floats on top of cold, salty deep water**, and these layers strongly resist mixing with each other.
- ❖ **Submerged columns and pontoons** of floating structures obstruct the flow, shedding turbulent wakes through the water column.
- ❖ Where it reaches the pycnocline, **it can drive the vertical mixing** — reshaping the distributions of nutrients, and create ecological hotspots.

Site of interest: OSW Plans sits in the Western Maine Coastal Current (WMCC), one of Maine's most energetic, seasonally stratified coastal regimes.

Objective

Quantify How VoltturnUS+ Alters Local Ocean Flow

Three complementary measurement methods to study effect on velocity, turbulence, and mixing.



ADCP & CTD

Measure baseline currents, stratification, as well as effects due to the platform.



Thermal-IR Drone

Surface temperature mosaics that map the wake from above.



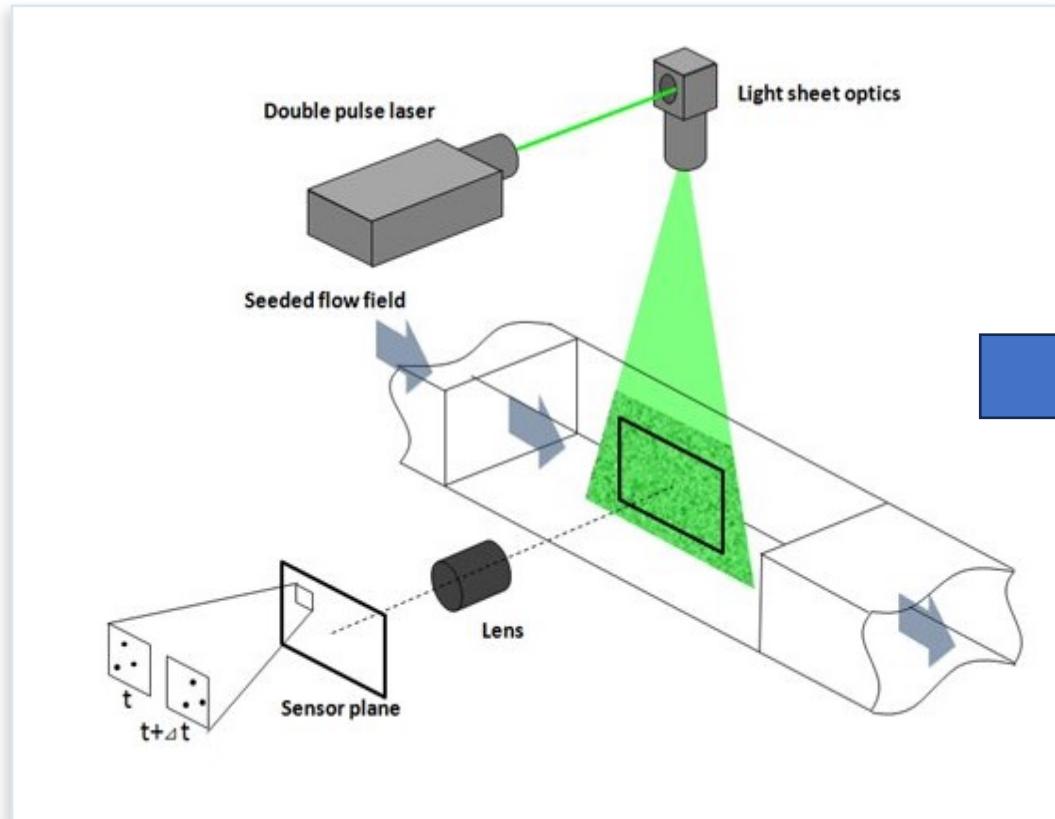
NEW BLUETECH

In-Situ Particle Image Velocimetry (PIV)

Spatially-resolved velocity fields across depth —
the novel BlueTech sensor.

In-Situ Particle Image Velocimetry (PIV)

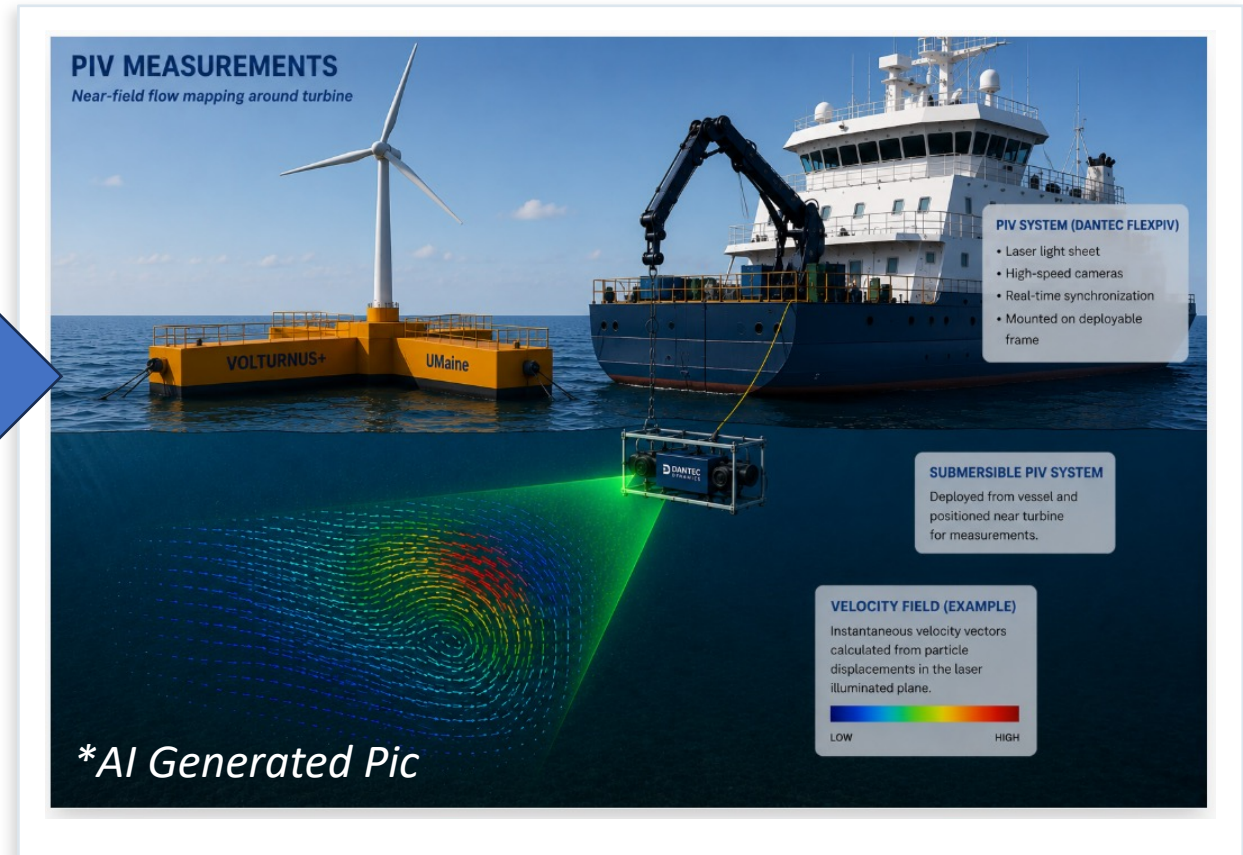
How PIV works



Seed the flow with tracer particles, **illuminate** a thin plane with a laser sheet, **image** the particle motion with a camera, then **compute** the full velocity field.

Non-intrusive · full-field · the gold-standard flow-measurement method.

Adapting it for open water

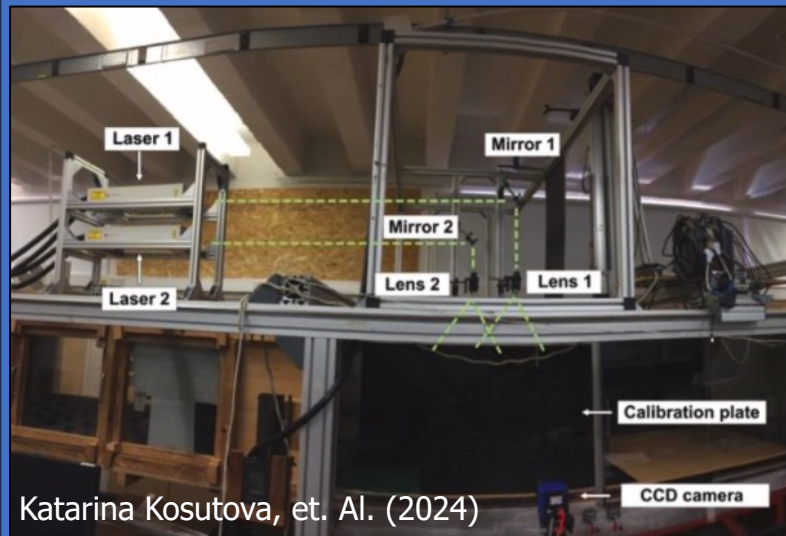
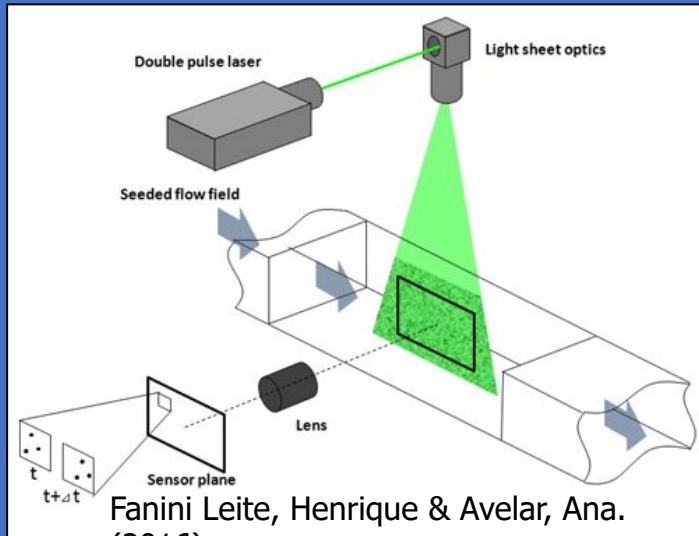


A ruggedized, waterproof PIV rig is deployed off the side of a vessel beside VoltturnUS+ — bench-tested in a tank first, then taken into the Gulf of Maine.

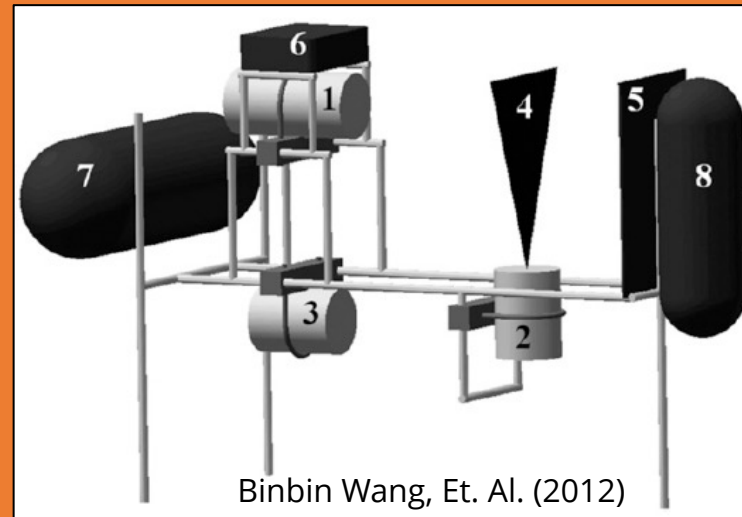
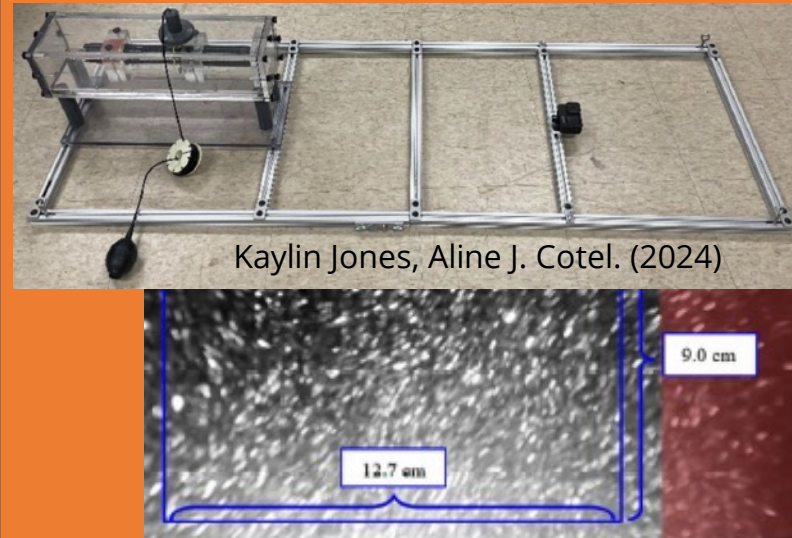
Leite, H.F., Avelar, A.C., De Abreu, L.I. and Schuch, D., 2016. POD and spectral analysis of a wall-mounted square cylinder wake. In *Proceedings of*.

Examples of PIV Usage

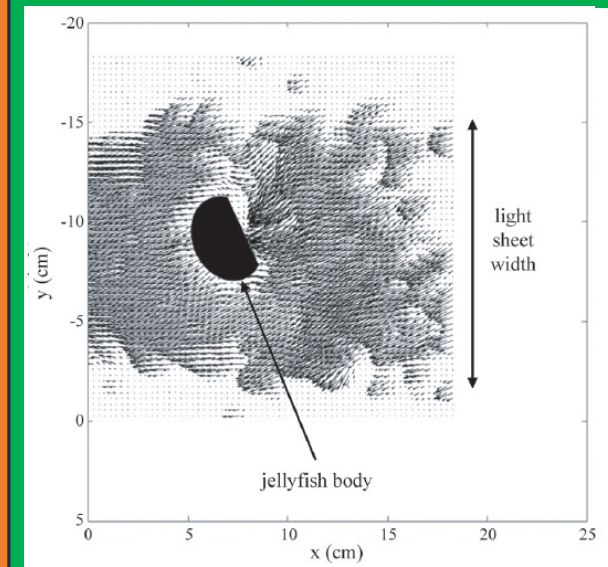
In Lab



In-Situ



Suspended



Project Status

Ongoing

ADCP & CTD

- Deployed and collecting data near VoltturnUS+

Ongoing

In-Situ PIV

- Flex PIV system arrived May 26.
- Dantec rep on-site June 15 for advanced setup & software.
- Test pump + optics arriving

Ongoing

Thermal-IR Drone

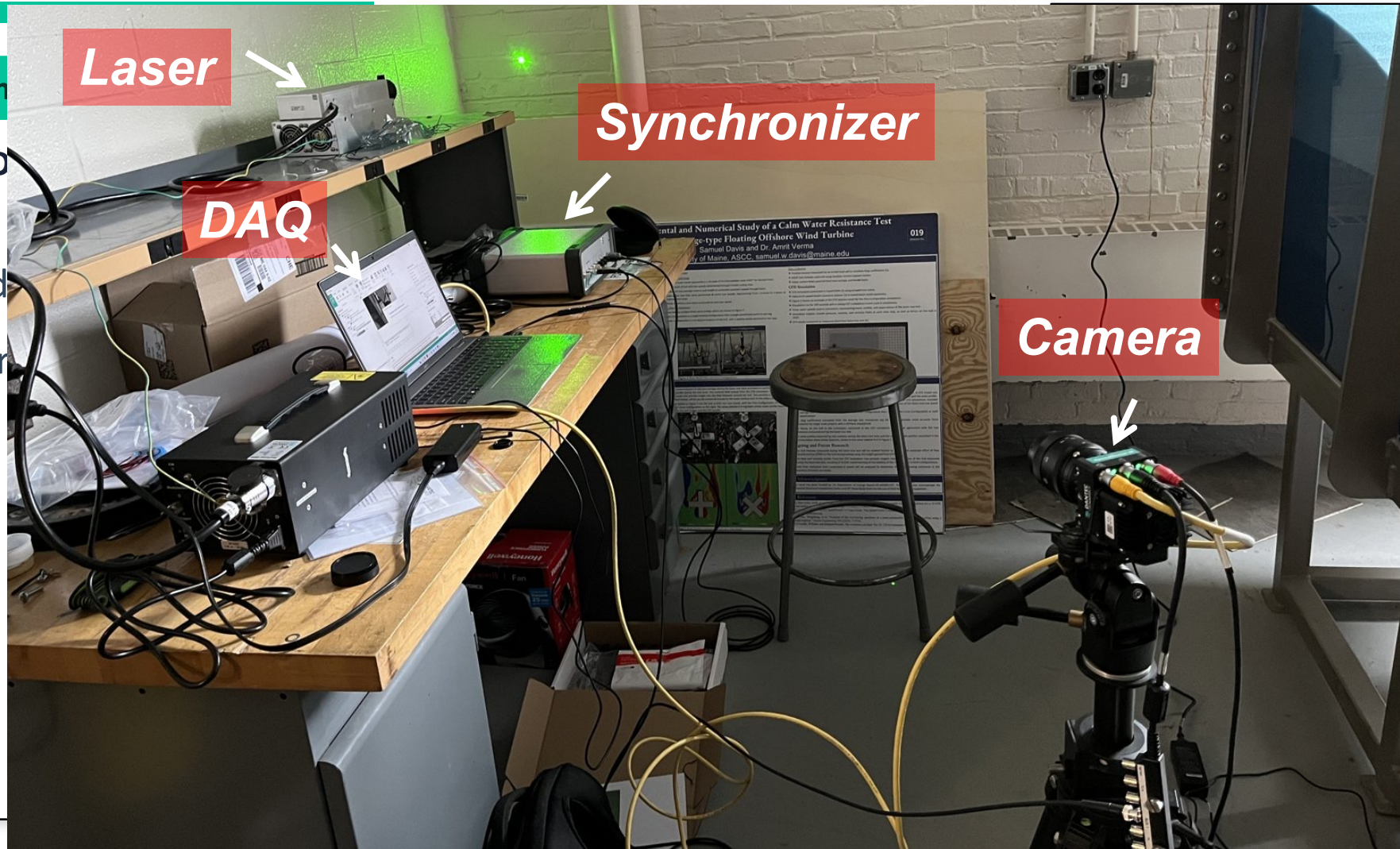
- Planned operator could not mount the infrared camera.
- Pursuing an alternative vendor

Project Status

Ongoing

ADCP & CTD

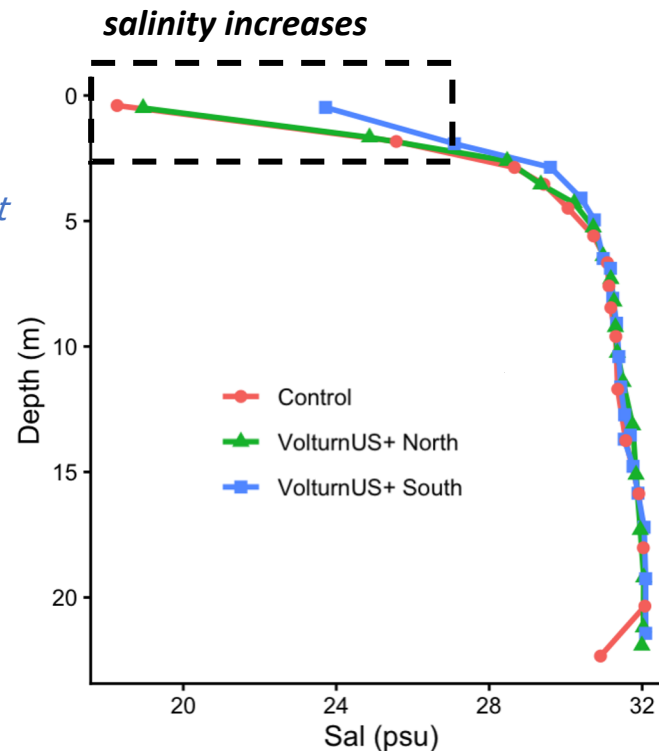
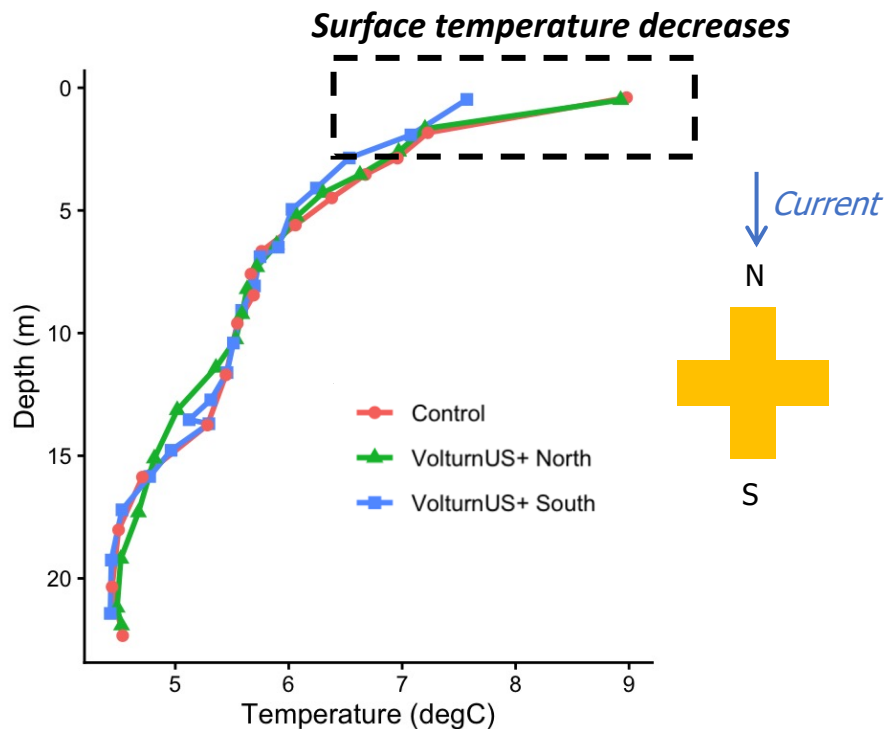
- Deployed
- data near



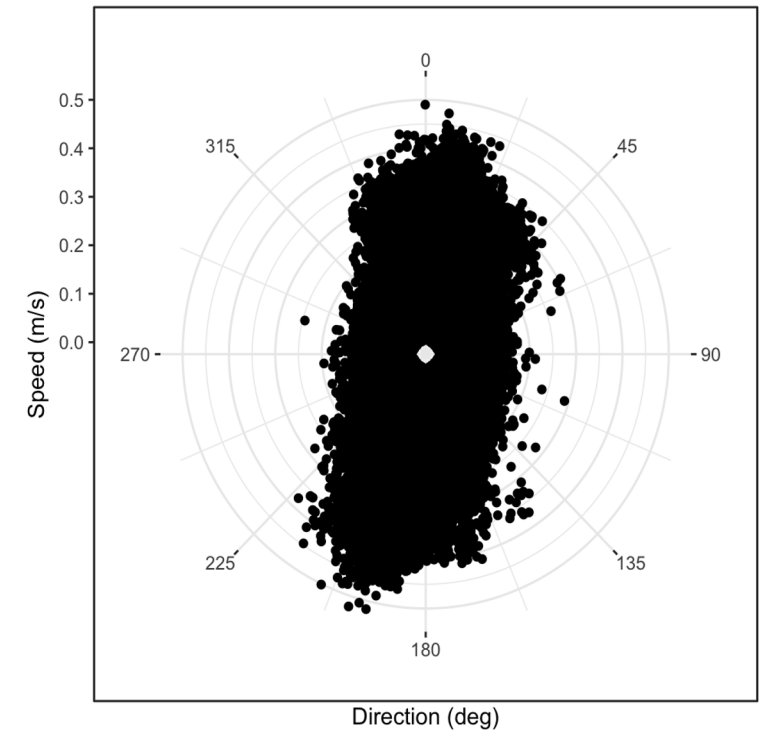
or could not
red camera.
rnative

Preliminary Results

- **Initial CTD casts were conducted May 8, 2026:** Surface temperature decreases, surface salinity increases downstream (south) of the platform indicative of enhanced mixing.
- **ADCP deployed at control site January 22-Present.** Surface current patterns predominantly N-S and tidal. Current speeds 0.1-0.75 m/s



Baseline Surface Current Rose



Questions

Using novel technologies to monitor bird and bat behavior at offshore wind turbines



Nate Fuller
Jay McEntee
Brogan Morton
Anthony Viselli
Richard Perry
Wing Goodale



Offshore Wind
Consortium
Meeting

June 3, 2026

Background

- Wildlife interactions with wind infrastructure can lead to mortality
- Effective and reasonable monitoring strategies are needed to better characterize risk and develop minimization approaches

Current methods include:

Passive acoustics



Videography



Boat surveys



Questions

- How can we use multiple monitoring systems to leverage their strengths and limit weaknesses?
- What changes in physical characteristics, deployment parameters, or software settings will optimize wildlife monitoring offshore?
- Bonus: Are we able to better characterize annual wildlife migratory pulses via an optimized monitoring approach?



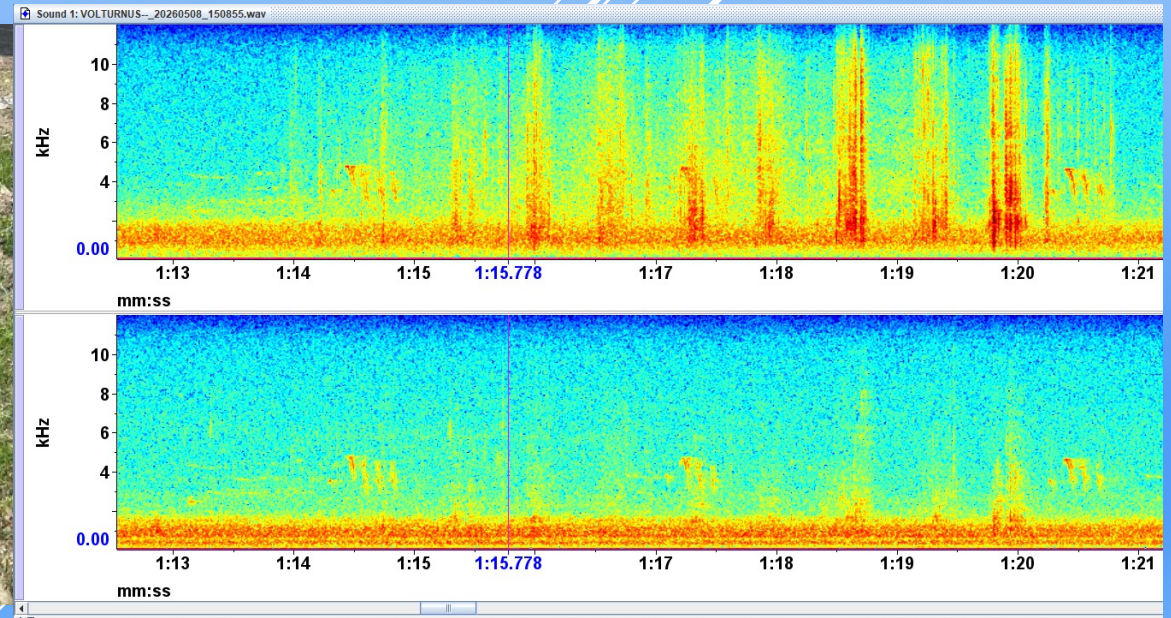
Approach

- Compare bat acoustic monitoring hardware applications to evaluate robustness and efficacy
- Optimize deployment and networking requirements specific to VoltturnUS+ platform
- Compare the efficacy of an omnidirectional vs directional microphone in detecting nocturnal avian migrants
- Use stereo thermography in tandem with acoustic monitoring to evaluate microphone sensitivity and determine animal flight characteristics
- Test the robustness of sensor packaging and modifications in a challenging environment



Current Status and Next Steps

- Deployment and troubleshooting – Waiting for weather and maintenance window
- Site-specific needs/logistics – Developing attachment designs and working through networking requirements with partners
- Develop fusion approach – Work with partners on 3D flight parameter output and develop technique to combine with acoustic outputs
- Wait for migration!



Thank you!

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jay.mcentee@briwildlife.org





Break



Expert Workshops Debrief

How Did We Get Here?

Outcomes of Round 3 Prioritization (2025)

RFP in draft form

Host expert workshops to refine data gaps + scopes of work

Project ID 15 – Terrestrial endangered species bird tracking study in the Gulf of Maine

Budget:	\$330-\$450k (depending on length of time)	2 - Objectives: - Plan and conduct a tracking study to examine how specific bird species (from the Endangered Species Act) move through the Gulf of Maine. - Understand the ecological baseline in the Gulf of Maine for specific bird species and how offshore wind development could impact this, with mitigation techniques to communicate to SNCBs for future	4 - Output: - Data outlining the movement of birds through the Gulf of Maine - Public report summarizing the learnings of bird movements and any mitigation - Journal paper?
Duration:	3 years (would there be meaningful results for a shorter period of time?)		
Research area:	Impact on ecosystems		
		5 - Expected Benefits:	

Project ID 24: Potential environmental effects from offshore wind electrical infrastructure

Budget:	(\$70k-100k)	2 - Objectives: <u>Phase 1</u> Conduct a desk-based study to investigate the characteristics and spatial distribution of EMF emitted by subsea cables in offshore wind farms, focusing on EMF propagation vertically and horizontally through the	4 - Output: - Short digestible report summarising key findings from the desktop research; - Outreach (i.e. workshops, presentations, stakeholder engagement)
Duration:	12 months		
Research area:	Impact on ecosystems		

Project ID 35 – Desk-based review of scour risks from moorings and anchors on the benthic environment

Budget:	\$100k	2 - Objectives: - Identify the types of anchor and mooring systems most suitable for seabed characteristics in GoM - Review existing literature to understand the likely scour impact from these anchors and associated components,	4 - Output: - Impact assessment for 1 GW FLW wind farm in GoM - Report with literature review findings and recommendations for mitigation strategies
Duration:	5 months		
Research area:	Impact on ecosystems		

Project ID 21: Forecasting marine species distributions in the GoM

Budget:	\$250-\$350k	2 - Objectives: Synthesis existing work that has focused on modeling forecasted species and habitat change in the Gulf of Maine, and identify data gaps in relation to the interface with offshore wind. <i>Update, adapt or develop a model (likely VAST)</i>	4 - Output: <u>Phase 1:</u> - Workshop - Literature report synthesising existing work - Identification of priority species for additional modelling work <u>Phase 2:</u> <i>Dynamic model that is open source or adaptable by other</i>
Duration:	12-18 months		
Research area:	Impact on ecosystems		

Project ID 25 – Filling gaps to improve accuracy of baseline ecosystem models in the GOM

Budget	Total: 100K-400K depending on scope of proposal	2 - Objectives: Improve model(s) used to represent atmospheric, hydrodynamic, and/or biogeochemical processes in the GOM	4 - Output: - Report quantifying model improvements, documentation of code updates for replicability in future - Reproducible, open-source model configuration
			5 - Expected Benefits: Model improvements will directly enhance the reliability and utility

Planning the Workshops & Next Steps

- The PM team engaged Luke Feinberg and RWSC to help plan and facilitate the two workshops
- Each planning team met with key experts and stakeholders to shape the agendas
- Between the two workshops, held on April 28 and April 30 at the Roux Institute, nearly 60 experts participated
- The goal of each workshop was to develop recommendations to the Advisory Board to consider for further funding
- The goal for today is to learn about the workshops' outcomes and discuss which, if any, projects to move forward
- After this meeting, the PM team will send out a summary based on your notes and conversation as we work with the Steering Committee to recommend next steps





OVERVIEW & RESULTS A WORKSHOP ON FORECASTING GROUNDFISH SPECIES IN THE GULF OF MAINE IN CONSIDERATION OF CHANGING OCEAN USES

Maine Offshore Wind Research Consortium

Advisory Board Meeting

June 3, 2026

MEETING PURPOSE & PROBLEM STATEMENT

PURPOSE:

Develop a **recommendation** to the **Consortium Advisory Board** that will inform a **Request for Proposals** regarding groundfish distribution forecasting in consideration of floating offshore wind energy in the Gulf of Maine.

PROBLEM STATEMENT:

Development of Offshore Wind energy facilities in the Gulf of Maine has the potential to displace existing groundfish through changes in benthic habitat and fishing patterns. What data and model capabilities are needed to forecast groundfish distribution in the vicinity of offshore wind facilities in the Gulf of Maine?



ATTENDEES

Representatives from:

- Fisheries Management
- Fishermen
- NOAA
- MassCEC
- GMRI
- UMaine
- Educational Institutions

Advisory Board member participation:

- Terry Alexander
- Ben Martens
- Daniel Salerno
- Graham Sherwood
- Becca Peters



AGENDA REVIEW

Opening Remarks, Agenda Review & Introductions

- Changing Ocean Uses in the Gulf of Maine

What We Have – a synthesis of existing capabilities

- Current Modeling Landscape
- Looking Back
- Looking Forward

What We Need

- Setting the Framework
- Variables for Forecasting
- Barriers for Effective Forecasting

Closing and Next Steps

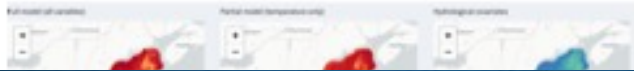
- Synthesis
- Advisory Board Recommendation

Siting the Gulf of Maine Leases: GROUNDFISH CONSIDERATIONS



Current state of marine species distribution modeling in the Gulf of Maine

Vince Saba NOAA NEFSC/GFDL



Hindcasting spatial density and habitat associations of Atlantic cod

Building Understanding and Intuition When Predicting Species Distributions

April 2026 Gulf of Maine Groundfish Modeling Workshop

PRESENTATIONS: SETTING THE CONTEXT

- History of the region's offshore wind planning

Zach Jylkka, *Senior Program Manager, Massachusetts Clean Energy Center*

- Modeling status quo

Vince Saba, Ph.D., *Fisheries Biologist, National Oceanic and Atmospheric Association*

- Hindcasting

Katie Lankowicz, Ph.D., *Postdoctoral Research Associate, Gulf of Maine Research Institute (GMRI)*

- Forecasting

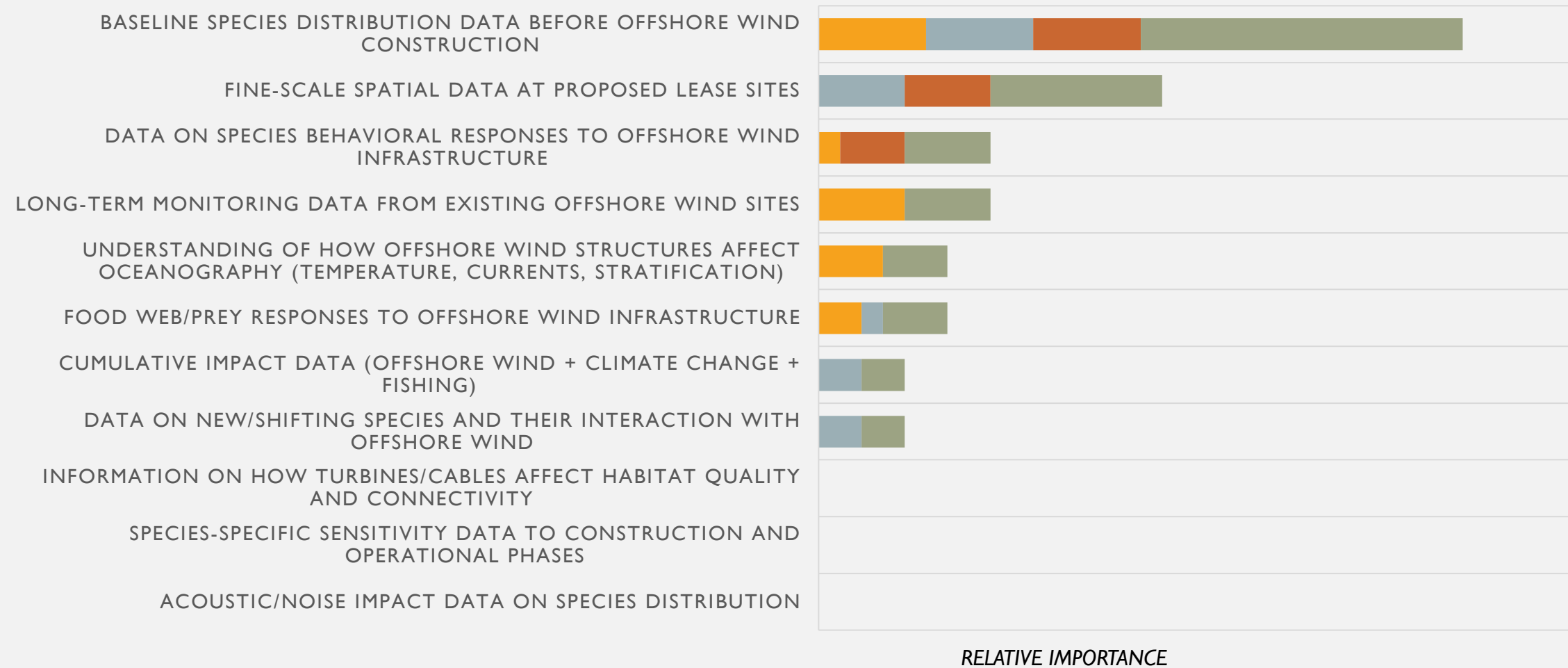
Andrew Allyn, Ph.D., *Senior Research Manager, GMRI*

WHAT DO WE NEED? - FORMAT

1. **Rank the relative importance** of a series of **data variables/barriers** to groundfish forecasting considering floating offshore wind.
2. Of the top ranked items, **drill down** to define potential *Project Ideas*.
3. Rank *Project Ideas*.



DATA VARIABLES RANKING



Ranking results from first breakout session - Each variable's importance relative to its influence in forecasting groundfish distributions in consideration of floating offshore wind energy was discussed in break-out groups and ranked. Each color represents a different break-out group, and each group was able to rank a different number of variables within the time given.

PROJECT IDEA 1: ASSESSING AVAILABILITY OF HIGH-QUALITY BASELINE DATA

- *Objective:* The more consistent baseline data is, the more valuable it becomes. The goal of this effort is **to define “high –quality” baseline data and document what is necessary to collect and maintain during and after construction so that we can conduct appropriate monitoring and analysis in the future.**
- *Discussion:* This project would examine what information is required by the regulations, what information is most useful for modeling, and what we need to continue to collect and what should be replaced. Additionally, it would reconcile the differences between inshore/ offshore survey abilities.

BASELINE SPECIES DISTRIBUTION DATA BEFORE OFFSHORE WIND
CONSTRUCTION

Cost: \$200k-\$600k

Duration: >12m

PROJECT IDEA 2: BASELINE DATA AND FISHERMEN'S ECOLOGICAL KNOWLEDGE (FEK)

- *Objective:* FEK is a critical component of our baseline that is neither adequately documented nor included in models. This effort would include a **desktop analysis inventorying current baseline data and interviews**. The data from these efforts would be coordinated and collected in a way to be included in current modeling infrastructure.
- *Discussion:* Modelers should be incorporated in the interview protocol design and results review ensure the information gathered can be included in the models. Interview fatigue was also discussed, as well as the fact that the number of groundfishermen has significantly declined over the past decades, limiting access to FEK. The value of FEK from 10+ years ago was debated, stating that it perhaps is less relevant to forecasting, however, this older information could be used to improve hindcasting which tangentially would improve forecasting.

BASELINE SPECIES DISTRIBUTION DATA BEFORE OFFSHORE WIND
CONSTRUCTION

Cost: \$200k-\$600k

Duration: >12m

PROJECT IDEA 3: BASELINE DATA COLLECTION AND CONSIDERATION OF SEASONAL DISTRIBUTION AND MOVEMENT

- *Objective:* Utilizing new technologies (telemetry & other) to standardize sampling methods that could produce comparable data sets for species pre-, during, and post-construction.
- *Discussion:* The ability to get fine-scale and shorter resolution data was discussed as a potential barrier to this project's implementation.

BASELINE SPECIES DISTRIBUTION DATA BEFORE OFFSHORE WIND
CONSTRUCTION

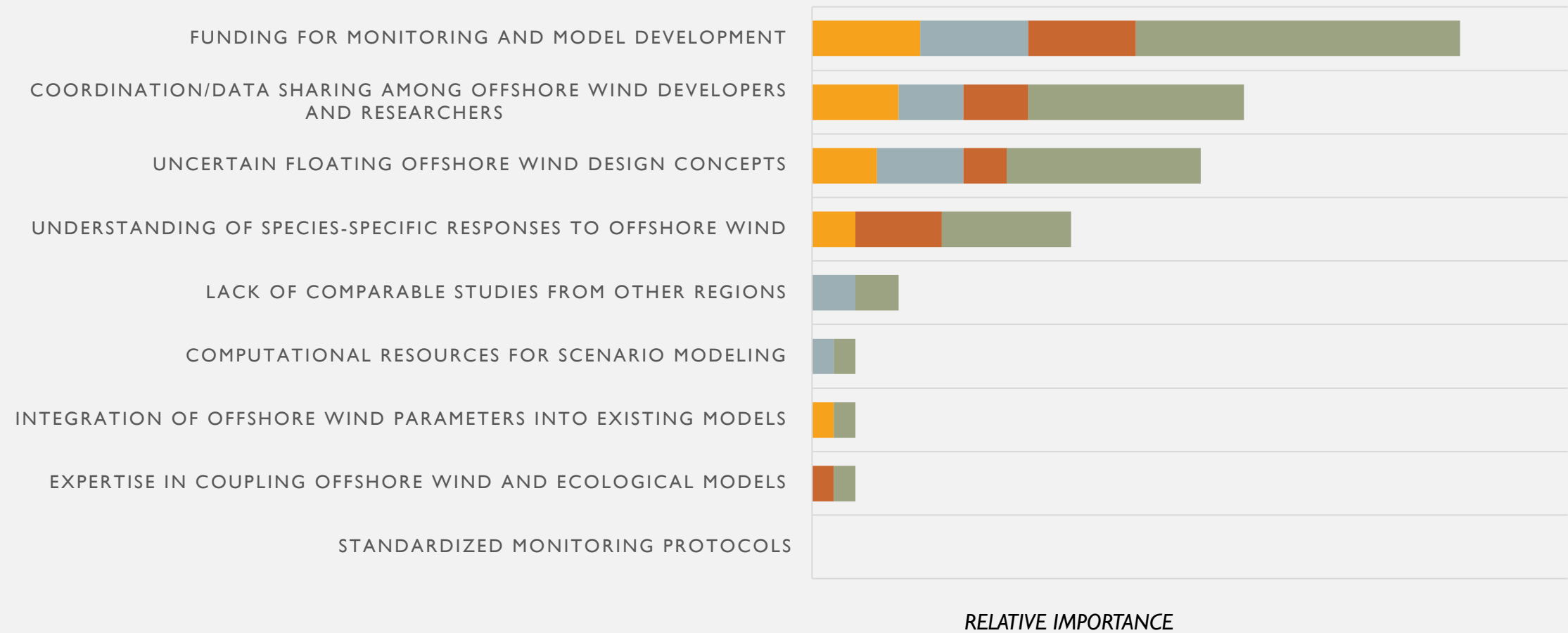
Cost: \$200k-\$600k

Duration: >12m

PROJECT IDEA 4: FOOD-WEB ECOLOGY OF WIND STRUCTURES

- *Objective:* Understand what marine life (biofoul) could grow on floating offshore wind structures in the Gulf of Maine and examine how this new ecology may affect the food web locally and cumulatively.
- *Discussion:* Due to time restrictions, this project was not discussed by the larger group in detail.

RELATIVE IMPORTANCE OF BARRIERS TO FORECASTING



Ranked Relative Importance of Barriers of Forecasting - Each barriers importance relative to its influence in forecasting groundfish distributions in consideration of floating offshore wind energy was discussed in break-out groups and ranked. Each color represents a different break-out group.

PROJECT IDEA 5: REVIEW OF DEVELOPER DATA COLLECTION AGREEMENTS

- *Objective:* **A literature review of existing data sharing and collection agreements between developers and other parties** that could inform future agreements with particular focus on the methods and timing of shared data.
- *Discussion:* Due to time restrictions, this project was not discussed by the larger group in detail.

COORDINATION/DATA SHARING AMONG OFFSHORE WIND DEVELOPERS
AND RESEARCHERS

Cost: <\$200k

Duration: <6m

PROJECT IDEA 6: DATA SHARING AND COORDINATION BEST PRACTICES

- *Objective:* This project would **establish standards** for the collection of baseline information, such as methods and data output, **that would be designed to fit into modeling structures**. Additionally, an inventory and evaluation of existing data would be conducted to identify what information is best for modeling.
- *Discussion:* The ability to get a full picture may be a barrier to implementation.

COORDINATION/DATA SHARING AMONG OFFSHORE WIND DEVELOPERS
AND RESEARCHERS

Cost: <\$200k

Duration: 6m-12m

PROJECT IDEA 7: POLICY OPPORTUNITIES TO IMPROVE DATA SHARING

- *Objective:* Desktop review of past federal and state policy used to encourage/require data sharing and identification of future opportunities for the region. Power purchase agreements (PPAs) and public utility commissions were discussed.
- *Discussion:* Due to time restrictions, this project was not discussed by the larger group in detail.

COORDINATION/DATA SHARING AMONG OFFSHORE WIND DEVELOPERS
AND RESEARCHERS

Cost: <\$200k

Duration: <6m

PROJECT IDEA 8: SPECIES SPECIFIC RESPONSES TO FLOATING WIND ENERGY FACILITIES

- *Objective:* This **behavioral impact study** would observe and develop standards to document species specific interactions with Floating Offshore Wind. A second phase would review current knowledge of species-specific interactions and **identify which species are most important to inform forecasting.**
- *Discussion:* Much of the data collected around groundfish focuses on current or historically commercially important species. **However, those species may not be the most important in determining groundfish distributions** in consideration of offshore wind. Species specific responses to the development of OSW over time.

PROJECT IDEA 9: ANALYSIS OF SUBSTRUCTURE INFLUENCE

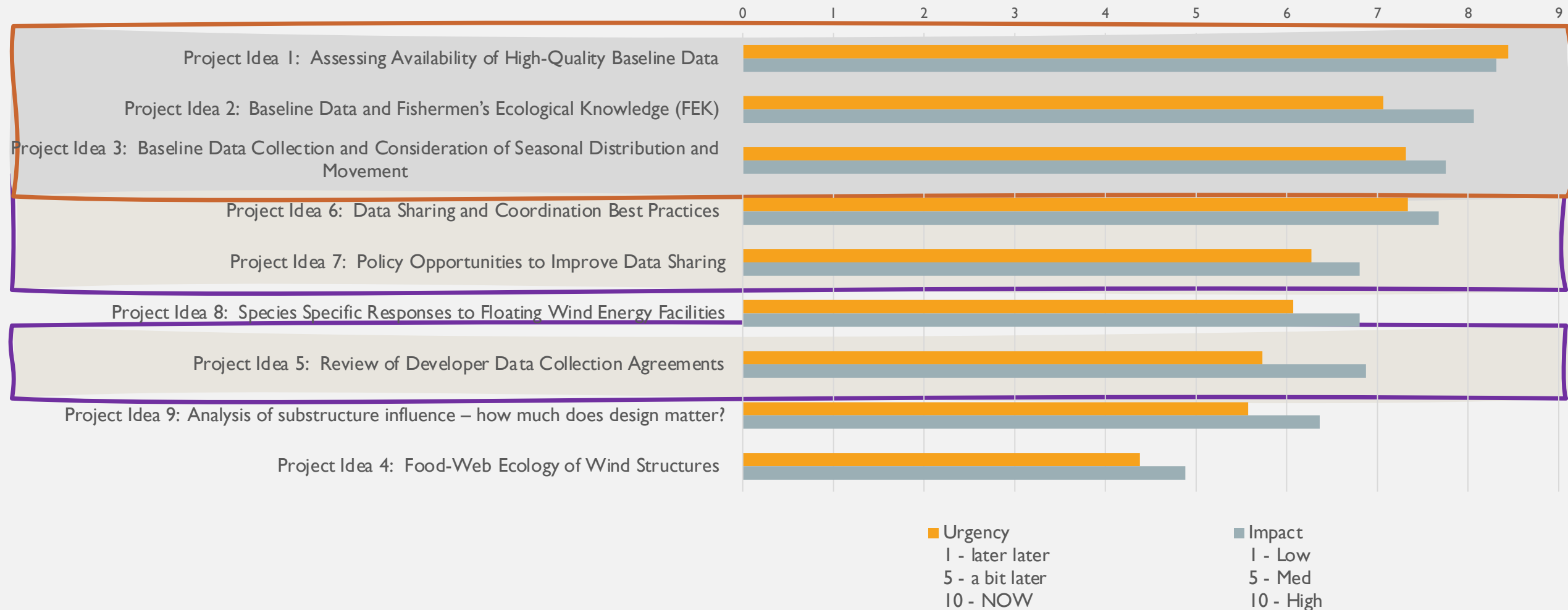
- *Objective:* Most of the design choices for floating offshore wind farms focus on engineering tradeoffs and cost. This analysis would focus on **evaluating floating offshore wind design concepts to determine their relative impact on ecological and oceanographic factors.**
- *Discussion:* Due to time restrictions, this project was not discussed by the larger group in detail.

UNCERTAIN FLOATING OFFSHORE WIND DESIGN CONCEPTS

Cost: Not Determined

Duration: Not Determined

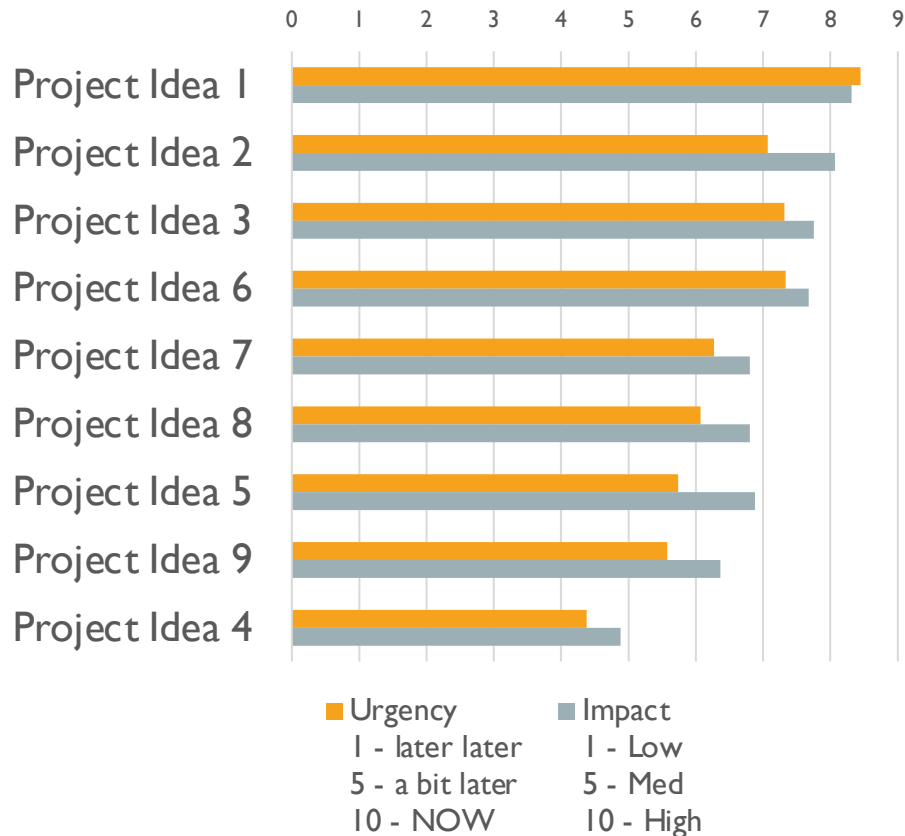
Project Idea Relative Urgency and Impact



Project Idea Relative Urgency and Impact - Each project was ranked by participants in terms of its urgency and impact to the forecasting of groundfish distributions in consideration of floating offshore wind energy. Low numbers reflect less urgency and impact while high numbers indicate high urgency and impact.

KEY WORKSHOP TAKEAWAYS

Project Idea Relative Urgency and Impact



1. Assessing and improving **baseline data** availability emerged as the highest-priority project because it is viewed as both the most urgent and most impactful need for advancing groundfish forecasting.
2. Workshop results showed that **urgency and impact were strongly linked**, with no projects identified as highly impactful but low urgency, or vice versa.
3. The data-sharing project ideas addressed similar challenges and could potentially be **combined into a single coordinated effort** to maximize impact and efficiency.
4. The Food-Web Ecology of Wind Structures project **ranked lowest** in both urgency and impact, suggesting it may be a lower near-term priority compared to other concepts.



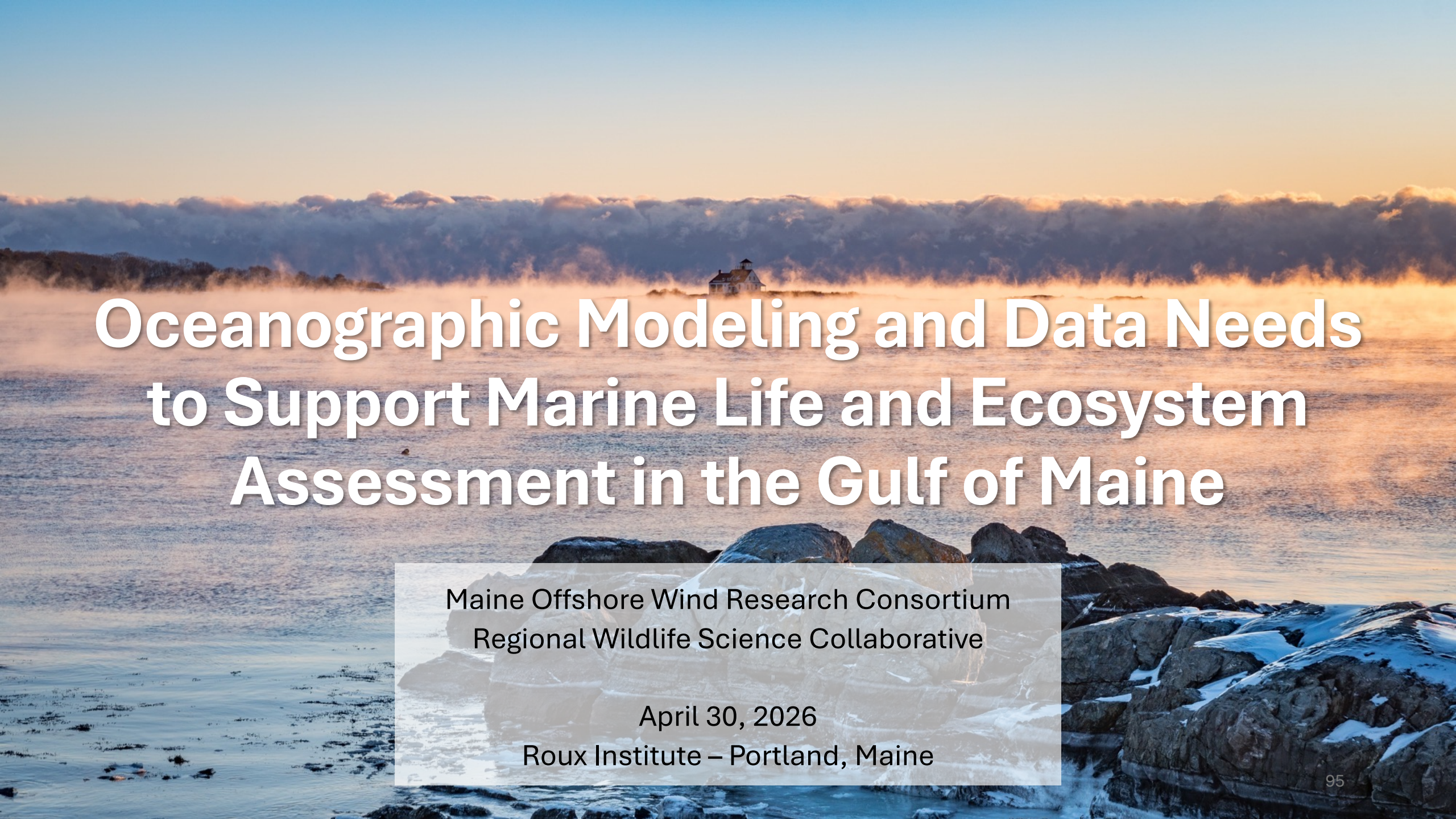
QUESTIONS?



Gulf of Maine oceanographic modeling workshop outputs

Presentation to Maine Offshore Wind
Research Consortium Advisory Board

June 3, 2026



Oceanographic Modeling and Data Needs to Support Marine Life and Ecosystem Assessment in the Gulf of Maine

Maine Offshore Wind Research Consortium
Regional Wildlife Science Collaborative

April 30, 2026

Roux Institute – Portland, Maine

Workshop partnership

- RWSC, NOAA Fisheries, Vineyard Wind funding modeling and observation studies of fixed-bottom OSW in southern New England
- MassCEC RFP included “Modeling Gulf of Maine Ocean Processes”
- Maine Offshore Wind Research Consortium priority topic related to oceanographic/environmental modeling in Gulf of Maine, floating offshore wind

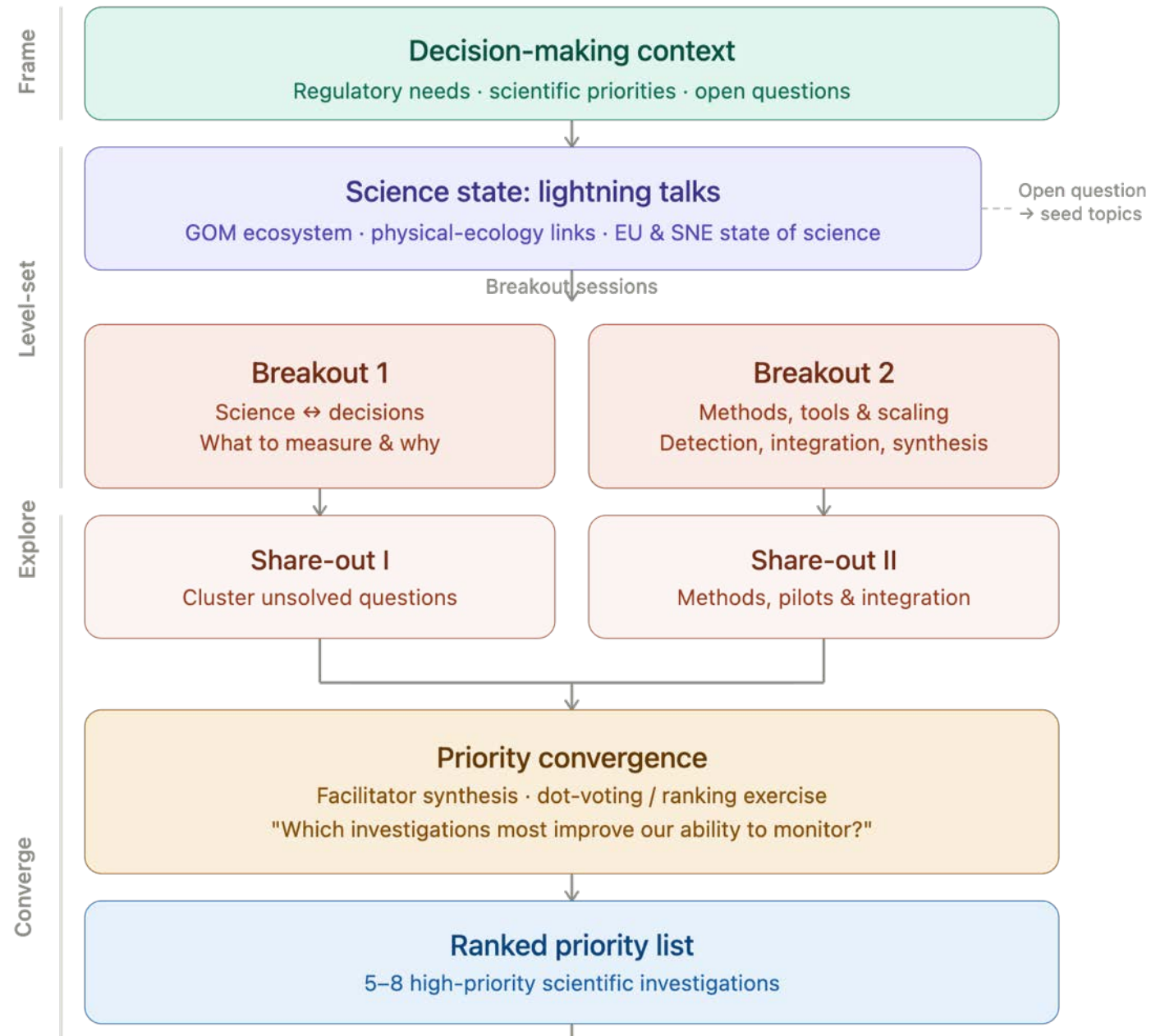
All entities above participate in RWSC

RWSC oceanography workshop at NYSERDA State of the Science

|-----VIRTUAL GROUPS-----|

Julia	Emily	Katy	Meghan	Nikelene	Jordan
Joe Brodie, AKRF	Ke Chen, WHOI	Rubao Ji, WHOI	Greg Britten, WHOI	Taylor Shropshire, Fathom Science	Todd Callaghan, MassCZM
Cameron Thompson, NERACOOS	Camille Ross, UMaine	Andrew Allyn, GMRI	Cath Mitchell, Bigelow	Kate Press, NYSERDA	Mile Pol, ROSA
Casey Yanos, Maine DMR	Zach Jylkka, MassCEC	Hollie Emery, MassCZM	Tom Shyka, NERACOOS	Grace Saba, Rutgers	Josh Kohut, Rutgers
Chris Orphanides, NOAA Fisheries	Damian Brady, UMaine	Laura Ganley, New England Aquarium	Greg Gerbi, UMaine	Travis Miles, Rutgers	Laura Nazzaro, Rutgers
Nils Christensen, Hereon Helholtz	Yang Yu, WHOI	Glen Gawarkiewicz, WHOI	Brad Schondelmeier, MassDMF	Izzy Moore, Rutgers	Nickitas Georgas, TetraTech
Ben Hayward, UMaine	Erin LaBrecque, Marine Mammal Commission	Nick Sisson, NOAA Fisheries	Aubrey Jane, BOEM	Max Zavell, UMass SMAST	Sasha Kramer
				Linus Stoltz, Commercial Fisheries Research Foundation	

Workshop flow



The decision-making context

How will floating offshore wind in the Gulf of Maine impact (or not) hydrodynamics/oceanography and what effects could that have on the ecosystem?

Knowing more about this topic will help decision-makers with:

- Specific mitigation actions:
 - Design projects with lower potential impacts (e.g., types of infrastructure, spacing)
 - Avoid or pause construction during certain times of year or when certain oceanographic conditions exist
- Specific monitoring activities
 - Detect adverse effects should they occur
 - Attribute any observed changes to a cause/driver

Science Lightning Talks

ONE open question that keeps you up at night regarding oceanographic impacts of floating OSW in the Gulf of Maine and in the North Atlantic?

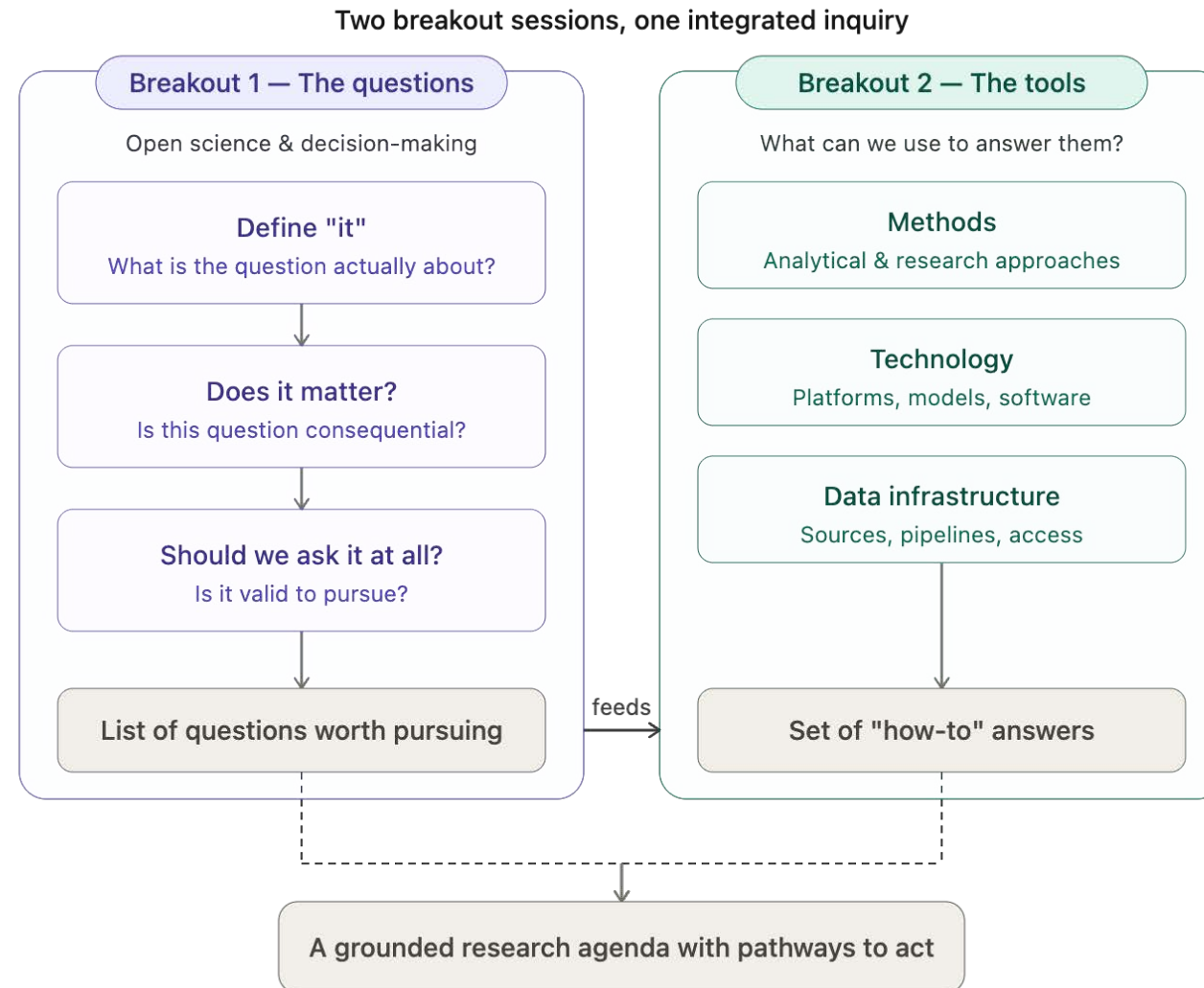
1. Lessons from Europe - Nils Christiansen, Helmholtz-Zentrum Hereon
2. Lessons from Southern New England – Greg Britten, WHOI
3. Gulf of Maine Oceanography – Rubao Ji, WHOI
4. Physical oceanographic linkages to higher trophic levels – Erin LaBrecque, Marine Mammal Commission

Science Lightning Talks

Priority open questions:

1. How will floating offshore wind interact with boundary currents? Will “impact signal” exist outside of expected variability?
2. How can we capture the range of background states with observational and computational limitations? A highly dynamic region...
3. What is the “weakest link” in the Gulf of Maine system - i.e., which process or connection is most vulnerable to OSW-induced perturbation of natural variability?
4. Will floating offshore wind alter aggregation, persistence, or accessibility of prey patches – in ways we don’t yet resolve at predator-relevant scales?

Breakout group rationale



List of questions worth pursuing from Breakout 1

Model tuning

- What is the range of natural variability vs. impact signal in Gulf of Maine?
- How well do past observed data match model hindcasts?
- Is the finest scale model we have fine enough to use in a nested model framework?
- Are there predator-relevant parameters that could improve the models?
- Uniqueness of floating infrastructure not yet captured in models – how to estimate measurements to characterize floating infrastructure to start plugging into models?

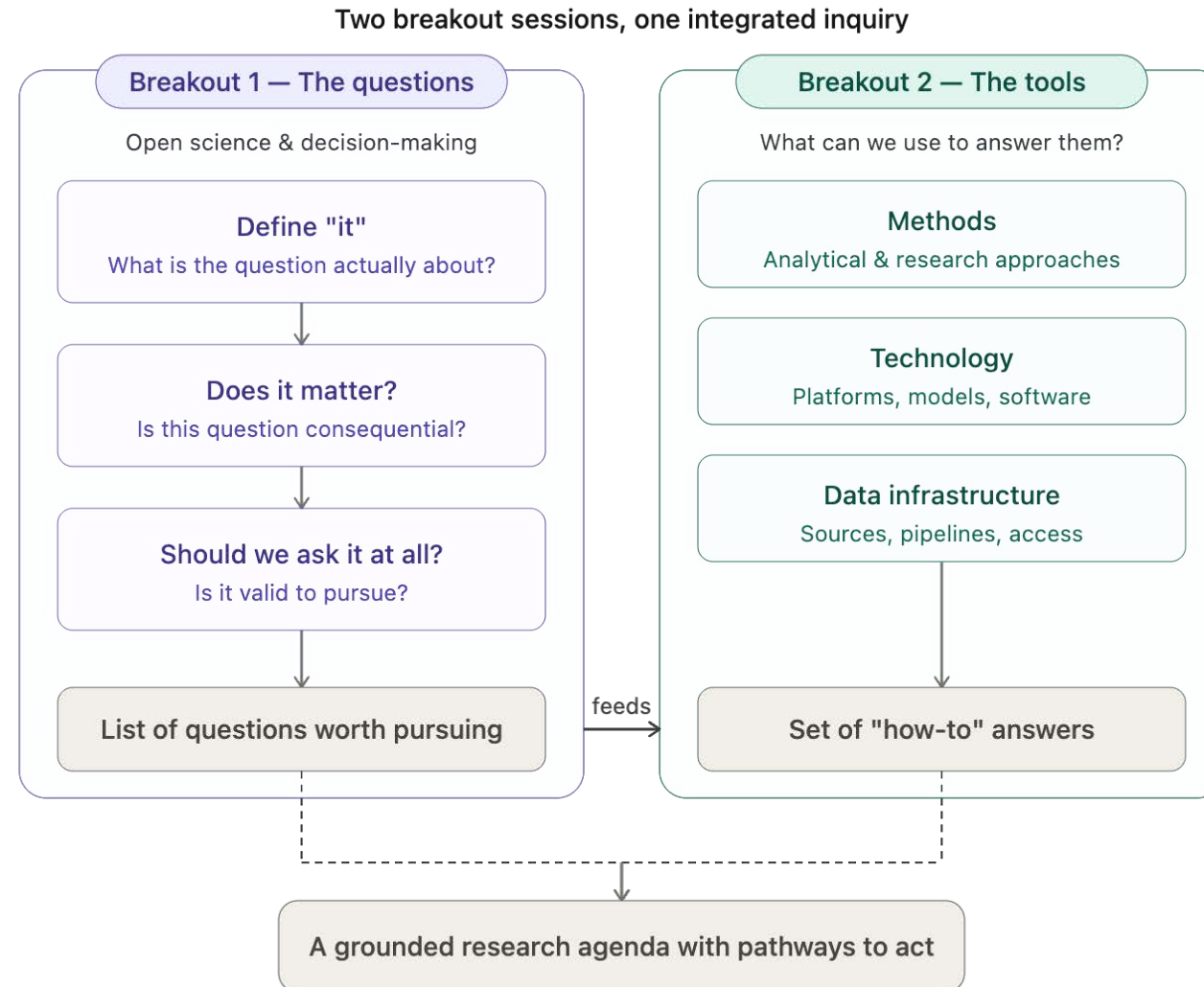
Biology

- Do zooplankton differ in and outside of lease areas?
- What physical and biological factors drive zooplankton aggregation?
- What are the biologically relevant thresholds in physical and biological variables?

Data readiness

- (not a question) New data collection efforts must match methods/tools/types from previous campaigns (seems like we have a good idea about where new data collection is needed)
- (not a question) Need to identify places where higher resolution data are needed

Breakout group rationale



Answerable questions from Breakout 2



- 1 What's the range of natural variability in oceanographic parameters?
- 2 Are hindcast/forecast models tuned to predator relevant parameters?
- 3 Should we develop turbine scale model and data (biological and physical)?
- 4 How to better characterize physical and biological drivers of plankton and megafauna aggregations?

Elements to include in an RFP

Recognition that achieving the full vision of such a project will require a coordinated sequence of investments, coordinated through RWSC

Seek projects that **nest models at multiple scales** (i.e., existing regional scale, and further develop fine/project scale models) of **oceanographic, hydrodynamic, and atmospheric processes linked to biogeochemical and biological processes** in the Gulf of Maine.

Use outputs of the modeling effort to **design a monitoring plan** that spans and connects the existing regional scale monitoring (e.g., EcoMon, AZMP, NERACOOS observing stations) with new proposed floating offshore wind lease area scale monitoring. Lease area scale monitoring could be collaboratively funded and conducted in the future by federal agencies, states, and offshore wind companies, and coordinated via RWSC. The monitoring plan should **resolve processes and parameters needed to refine the fine scale modeling and characterize any turbine-scale effects**.

Elements to include in an RFP

Recognition that achieving the full vision of such a project will require a coordinated sequence of investments, coordinated through RWSC

modeling study

+

monitoring plan

Elements to include in an RFP

Core concepts – pieces that we know the Advisory Board discussed previously and may prioritize in an RFP

Optional concepts – additional elements that will provide “so what” ecological context; could be relatively easily added to a scope that includes the core concepts

- Include BOTH in the RFP and let researchers propose to you which optional concept(s) they can include within the budget cap you provide
- Should any optional concepts be moved to core concepts?

Modeling study

Core concepts:

- Use existing physical and biological data in the Gulf of Maine, including remote sensing, for regional scale model validation/assimilation
- Quantify/estimate ecosystem variability prior to floating offshore wind development (i.e., develop a baseline) that can be used to compare with ecosystem variability after development takes place
- Leverage computational fluid dynamics modeling to resolve the processes uniquely influenced by floating offshore wind infrastructure (e.g., sub-surface current interactions with mooring systems and floating hulls, wind wake effects on surface mixing) that have not been defined by existing modeling of fixed infrastructure in southern New England
- Elucidate physical and biological drivers of plankton and megafauna aggregation
- Include parameters for projected floating offshore wind infrastructure that is most likely to be proposed and permitted (e.g., semi-submersible, or other)

Modeling study

Optional concepts:

- Incorporate predator-relevant variables including aggregation, persistence and gradients relative to feeding thresholds
- Assess the utility of remote sensing data to provide fine scale model inputs related to plankton patchiness and/or to validate regional and fine scale model outputs
- Potentially leverage the floating offshore wind test turbine in Castine, Maine to collect data to inform fine scale model inputs and validate outputs

Monitoring plan

Core concepts:

- The footprint of influence of floating offshore wind structures on ocean and atmosphere (i.e., how far outside the project footprint/lease area are effects felt?)
- Changes to local vertical mixing induced by offshore wind structures
- Physical processes that induce zooplankton patch formation, persistence and gradients.

Optional concepts:

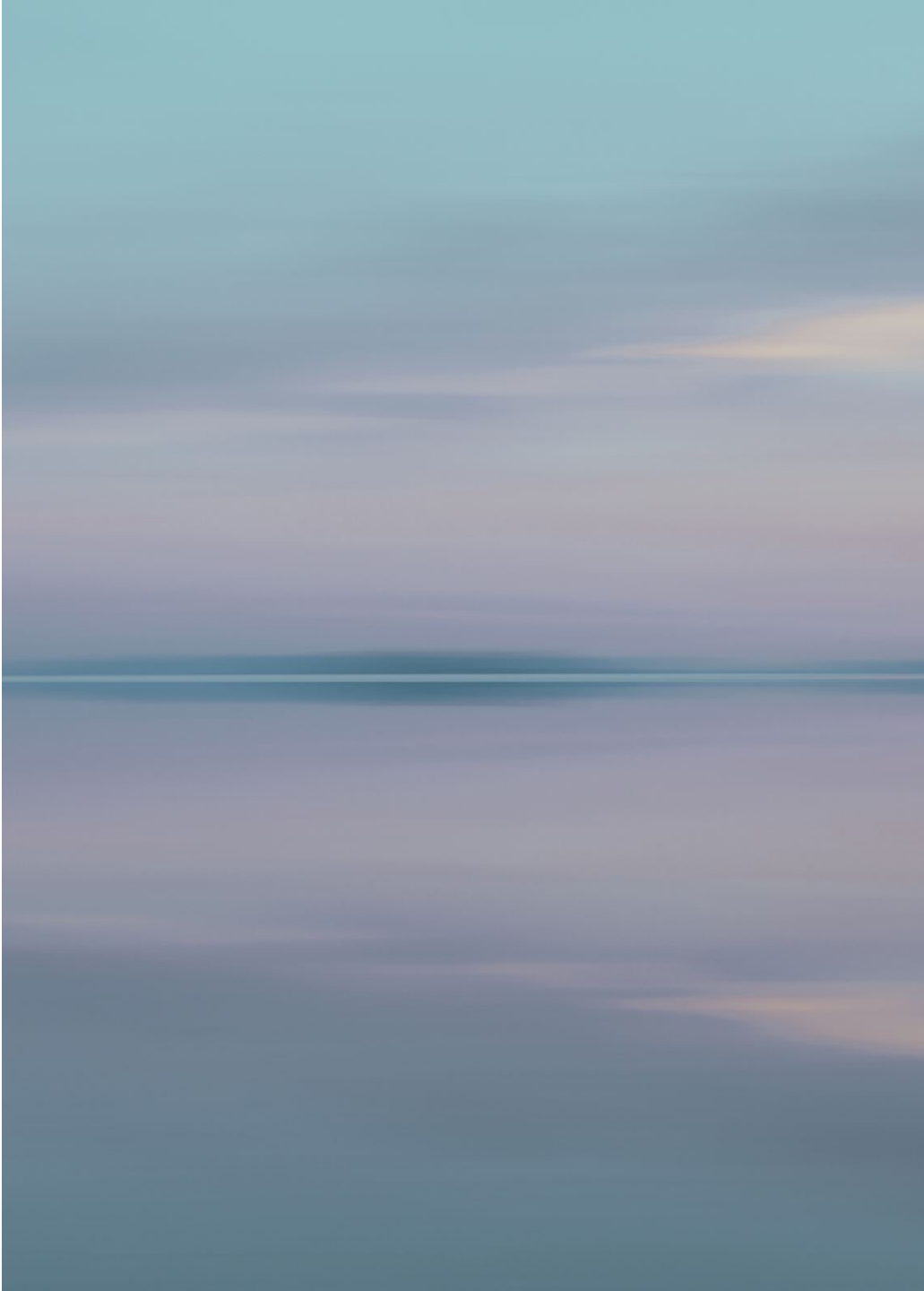
- Proxies for zooplankton abundance and aggregation
- Zooplankton abundance, community composition, and aggregation inside and outside lease areas
- Vertical distribution of zooplankton
- Physical processes that induce zooplankton patch formation
- Whale behavior and prey selection

Reminder: the decision-making context

How will floating offshore wind in the Gulf of Maine impact (or not) hydrodynamics/oceanography and what effects could that have on the ecosystem?

Knowing more about this topic will help decision-makers with:

- Specific mitigation actions:
 - Design projects with lower potential impacts (e.g., types of infrastructure, spacing)
 - Avoid or pause construction during certain times of year or when certain oceanographic conditions exist
- Specific monitoring activities
 - Detect adverse effects should they occur
 - Attribute any observed changes to a cause/driver



Workshop Outcomes Discussion



Wrap Up and Next Steps



Contact

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