New England Fishery Management Council
Offshore Wind & Fisheries Research Session Summary Report

The following report summarizes the Offshore Wind & Fisheries Research session held during the January 2025 NEFMC meeting. This session featured seven focused presentations (slides available on the Council website here with audio recording here) offering in-depth insights on current offshore wind (OSW) and fisheries research. A poster session was held directly after the Council meeting to encourage in-depth discussions and maximize engagement among participants.

Oral Presentation Summaries

Presentation 1: Introduction, *Reilly, Pol, & Perez, Responsible Offshore Science Alliance (ROSA)*

The session opened with a presentation from ROSA staff outlining the current state of research on the interactions between OSW projects and fisheries, focused on the Fish and Fisheries Offshore Wind Research Database (FishFORWRD). Key points:

- ROSA's most recent update to FishFORWRD was completed in January 2025, and brought the total catalogued number of individual research projects in the region related to impacts of OSW development to **221.** The majority of these projects are focused on species distribution and habitat (driven largely by OSW developers' fisheries monitoring plans).
- In 2024, ROSA conducted a Gaps Analysis using FishFORWRD. One hundred and one Summarized Research Needs were identified that fall into 11 research categories. At least one current project is ongoing in each research category. The Gaps Analysis will be undergoing formal peer review in 2025.
- Funding opportunities from 8 different sources (including federal, regional, state, and others) are currently open for OSW fisheries research. ROSA's biannual Funder Coordination Forum provides coordination to ensure newly-funded topic areas will address critical research gaps in OSW fisheries research.
- ROSA has completed the first year of a collaborative project with the National Renewable Energy Laboratory and the University of Maine. The project's aim is to bring together engineers and fishermen to codesign floating wind turbine platforms, mooring lines, dynamic cables, and anchors.

Presentation 2: Five Years Of Demersal Trawl Surveys On Fisheries Resources In Vineyard Wind 1, *Rillahan, Hankowsky, & He, University of Massachusetts Dartmouth, School for Marine Science & Technology (SMAST)*

This presentation detailed the development of a trawl survey at Vineyard Wind 1 which was initiated in 2019 to monitor seasonal fish abundance, distribution, population structure, and community composition before and after OSW construction. Key points:

- The survey was designed to align with the Northeast Area Monitoring and Assessment Program (NEAMAP) protocols, ensuring compatibility with regional surveys.
- Over five years, 800 tows were completed during 15 seasonal surveys, revealing catches with clear seasonal distribution and abundance patterns, as well as inter-annual variability. A power analysis of the data indicates an 80% probability of detecting 25-40% changes in abundance for common species (e.g., spiny dogfish, little skate, scup, butterfish, silver hake, red hake, winter skate, Atlantic herring, longfin squid, and alewife).
- The methodology has already been applied to two other OSW farm areas (Revolution Wind and Sunrise Wind), with additional areas for monitoring to include New England Wind (2025), SouthCoast Wind (2026), and Vineyard Offshore (2026/2027).

Presentation 3: Physiological and fitness consequences of offshore windfarm construction on the abundant sea scallop, *Cones, Woods Hole Oceanographic Institute (WHOI)*

This presentation examined the behavioral, physiological, and antipredator responses of sea scallops (*Placopecten magellanicus*) to pile-driving, a key construction activity in OSW farm development. Key points:

- This dockside field study was conducted using a pilot pile-driving setup and monitored key responses of scallops, focusing on changes in valve behavior, oxygen levels near the gills, metabolic rate, and subsequent effects on swimming performance (a crucial antipredator behavior).
- Results demonstrated that pile-driving induced consistent reductions in valve angles and increased valve adductions, leading to decreased oxygen availability near the gills and a heightened metabolic rate. These physiological shifts culminated in reduced swimming performance, thereby likely compromising the scallops' ability to evade predators.
- The findings underscore the need to further assess and mitigate the impacts of OSW farm construction on marine bivalves (e.g., in situ measurements of pile driving during construction, where equipment used is many times larger than equipment used in this study).

Presentation 4: Evaluating the effects of offshore wind development on fisheries biodiversity using environmental DNA and acoustic telemetry, *O'Donnell, Gloucester Marine Genomics Institute (GMGI), et al.*

This presentation detailed a biodiversity monitoring study conducted in Southern New England lease areas designed to assess the impacts of OSW development on regional fisheries and ecosystems. Key points:

- With the rapid expansion of OSW development across U.S. coasts, especially in Southern New England where construction timelines are advanced, establishing baseline biodiversity data before, during, and after construction is critical to understanding environmental impacts.
- From May to November 2023, a vertebrate eDNA metabarcoding survey was implemented at 40 sites across three Southern New England lease areas. At each site, both bottom and surface water samples were collected and filtered. DNA was extracted then amplified with custom primers to identify all vertebrates.
- The study provides insights into the distribution and biodiversity of fisheries species, demonstrating that eDNA can be a powerful tool to understand environmental impacts associated with OSW projects, especially when combined with data from other monitoring methods, such as acoustic telemetry.

Presentation 5: Overview of Commercial Fisheries Research Foundation Wind Farm Related Initiatives, *Bethoney, Commercial Fisheries Research Center (CFRF)*

This presentation provided an overview of ongoing fisheries research and monitoring efforts related to OSW development, highlighting collaborative approaches, survey methodologies, and how to access project results and reports. Key points:

- Involving local fishermen in monitoring efforts helps ensure transparency, data sharing, and stakeholder-driven research. Challenges such as interactions with protected species and safety concerns were noted, along with the development of a suite of ongoing fisheries surveys.
- Multiple survey types were discussed, including: beam trawl, fish pot, gillnet, and lobster/crab monitoring. Results from these surveys indicate seasonal species variations, habitat shifts, and are being used for early assessments of post-construction effects. Ongoing work in lobster acoustic monitoring and tagging studies to assess movement patterns and potential impacts from wind farm operations were also noted.
- Mechanical jigging trials are being evaluated as an alternative fishing method within wind farms and along potential cable corridors to help enable increased fishing access. With support from Vineyard Wind, the Whelk Research Fleet was established to fill relevant scientific data gaps (e.g., whelk shell height and width frequencies in specific areas).

Future efforts will focus on expanding collaborative monitoring programs and refining methodologies to enhance fisheries resilience in the OSW development landscape.

Presentation 6: Advancing Fisheries Monitoring in Offshore Wind Development, *Gervelis, INSPIRE Environmental*

This presentation focused on the challenges and innovations in fisheries monitoring associated with OSW developers' fisheries monitoring plans. Key points:

- Traditional survey methods (trawls, traps, gillnets) can lead to increased removals of target species and interactions with protected species. A growing need for non-extractive methods that minimize these ecological impacts are needed for all phases of OSW development.
- Tradeoffs between extractive and non-extractive survey techniques were discussed, including protected species exposure, the volume of resource extraction for monitoring, and ability to obtain biological data. Data comparability/compatibility with standard fisheries datasets, as well as current limitations of non-extractive methods were also highlighted.
- The presentation shared initial findings, data sharing experiences, and key lessons learned from the diverse survey designs currently being implemented. For Baited Remote Underwater Video systems, a total of 192 video camera recordings were collected over three surveys in 2023, 19 different types of teleosts, elasmobranchs, and cephalopods were identified. Paired eDNA sampling identified 39 different teleosts and elasmobranchs (cephalopod DNA was not evaluated). Together, these two tools provide a more complete picture of taxa present in a given area.

Presentation 7: Using precise fishery data and fleet definitions to estimate economic exposure of the summer flounder fishery and multispecies Fishery Management Plan to offshore wind farms, *Marjadi, NOAA Northeast Fisheries Science Center (NEFSC) & SMAST, et al.*

The final presentation examined how fishing behavior and fleet definition influence the accuracy of spatial data used to assess economic exposure from OSW development. Key points:

- The study compared fine-scale, precise fishing footprints from over 2,200 Northeast Fisheries Science Center Study Fleet trips to coarser footprints derived from Vessel Trip Reports (VTR), which rely on a single reported location per trip, but are more broadly available.
- Complete overlap of Study Fleet and derived VTR fishing footprints was found when unrestricted coarse VTR footprints were used within 37 wind energy areas in the Northeast US. Unrestricted footprints overestimated economic exposure/revenue (for all trips), but underestimated mean per-trip revenue across fleet definitions. For multispecies fisheries, using the total revenue from all species allowed for understanding

overall economic exposure. Importantly, restricting the derived VTR fishing footprints yielded the most accurate estimates, a key difference from previous studies on targeted squid fisheries.

- The importance of tailoring economic exposure assessments to specific fisheries and fleet behaviors was underscored by these findings. Refining footprint methodologies will improve the accuracy of impact assessments and support better-informed OSW siting and fisheries management decisions.

Poster Session Summaries

Following the oral presentations, a two-hour poster session was held during the Council's Public Outreach and OSW Developer's Port Hours. Poster presenters were encouraged to stand by their posters and field questions from attendees. The seven posters collectively highlight the diverse methodologies being applied to understand and mitigate OSW impacts on fisheries, emphasizing collaboration, data standardization, and long-term ecological monitoring. Poster presentations are on the Council website here and included:

Poster 1: Connectivity, Movement, and Distribution of Fish in Offshore Wind Farm Areas, *Frey (SMAST), et al.*
This study used acoustic telemetry and optical imaging to assess how wind turbines influence fish behavior and habitat use at the Block Island Wind Farm. Key points:

- Species Connectivity: Black sea bass showed movement between turbines, while summer flounder remained near hard-bottom habitats.
- Vertical Habitat Use: Fish distribution varied with depth, indicating potential reef effects from turbine structures.
- Ongoing Monitoring: Imaging surveys continue to document fish abundance and spatial distribution around turbines to determine long-term ecological impacts.

Poster 2: Evaluating Control Areas for Fisheries Impact Assessments, *Hankowsky (SMAST), et al.*
This research examined whether designated control areas for OSW impact assessments in Southern New England accurately represent development sites. Key points:

- Community Comparisons: Analysis showed that most control areas are adequately similar to their respective wind lease sites in species composition.
- Statistical Power: Expanding control areas and increasing sampling effort could improve the ability to detect changes in fish populations as a result of offshore wind development.
- Future Work: Researchers plan to develop spatial models to refine monitoring strategies and optimize control site selection.

Poster 3: Offshore Wind Fisheries Monitoring Coordination in the New York Bight, *Lucey (RWE) on behalf of the American Clean Power New York Bight Fisheries Working Group*
The New York Bight Fisheries Working Group explored strategies for improving fisheries monitoring coordination across multiple OSW projects. Highlights included:

- Standardized Surveys: A unified approach could enhance data comparability and scientific rigor across projects on a regional scale.
- Challenges: Differences in leaseholder timelines and permitting requirements pose obstacles to a regional monitoring framework.
- Next Steps: Continued collaboration with BOEM, NOAA, and industry stakeholders to refine monitoring protocols.

Poster 4: Developing a Multi-Method Fishery-Independent Survey for Wind Energy Areas, *Morson (NEFSC), et al.*
This NOAA-led initiative is testing alternative survey methods to assess fish populations in wind energy areas. Key components:

- Industry Collaboration: Working with commercial and for-hire vessels to pilot standardized hook-and-line surveys.
- Technology Integration: Use of stereo cameras, electronic jigging machines, and biological sampling to collect robust fisheries data.
- Future Plans: Refining methodologies based on 2024 pilot survey results to establish a long-term monitoring program.

Poster 5: Surfclam Populations and Offshore Wind Development, *Munroe & Borsetti (Rutgers)*
Rutgers researchers examined the potential impacts of wind energy projects on the Atlantic surfclam fishery. Findings included:

- Fishery Displacement: Model simulations predict revenue losses of $1–$5M annually for surfclam fishing vessels and up to $17M for surfclam processors across all Atlantic wind energy areas.
- Survey Initiatives: Collaborative surveys with surfclam industry partners are collecting population and habitat data to assess OSW interactions.
- Mitigation Strategies: Researchers are exploring habitat enhancement projects to offset lost fishing opportunities, such as stock enhancement.

Poster 6: Fish Distribution Around Wind Turbines Using Underwater Video, *Rillahan (SMAST), et al.*
A study at Block Island Wind Farm used video cameras to analyze fish movements and habitat use near turbines. Key results:

- Species-Specific Patterns: Black sea bass and scup showed strong turbine affinity, while skates and spiny dogfish were more dispersed.

- Seasonal Variability: The reef effect was more localized in summer (<100m from turbines) and less defined in fall.

- Analytical Approaches: AI models and statistical analyses are being applied to refine detection and estimation of fish abundance and distribution.

Poster 7: Baseline Monitoring at Maine's Floating Offshore Wind Research Array, *(Yanos, Maine Department of Marine Resources (ME DMR)*
This project is establishing pre-construction ecological conditions at the Maine Research Array (MeRA) using multiple survey methods:

- Biological Sampling: Acoustic surveys, zooplankton monitoring, and bottom trawl surveys are documenting marine community structure.

- Spatial Gradients: Surveys extend outward from the turbine area to evaluate environmental impacts at different distances.

- Long-Term Assessment: Monitoring will continue before, during, and after construction of the Maine Research Array to inform floating OSW development in deep waters.

Session Outcomes and Feedback

- Presentations were solicited and chosen by ROSA for relevance to Council members and to describe a broad array of research results. Attendees noted that the presentations and posters provided a clear and comprehensive picture of the current research landscape. The public seating area at the council meeting was full throughout the duration of the session, demonstrating interest in this topic across sectors and the public.

- Discussions with ROSA staff during the poster session on data governance and the adoption of FAIR (Findable, Accessible, Interoperable, and Reusable) data principles resonated strongly with participants, many of whom stressed the importance of standardized data protocols to support more informed decision-making.

- After the sessions, Council members and members of the public (including other fishing industry, OSW developer, regulatory, and non-governmental organization representatives) expressed to ROSA staff that they valued the cross-sector dialogue, which not only deepened their understanding of the challenges, but highlighted potential avenues for collaborative research and resource sharing. This event also benefited those council members and members of the public who are not normally exposed to offshore wind fisheries research. Exposure to this area of work increases awareness of what is being done to assess potential OSW development impacts and inform decision-making.

Participant Feedback

Extended Q&A
Several participants recommended that any similar events held in the future by ROSA or others ought to allocate additional time for question-and-answer sessions to address complex topics more thoroughly.

Interactive Workshops
There was substantial interest expressed during the poster session for follow-up workshops and/or breakout sessions to facilitate deeper dives into specific research themes and case studies.

Expanded Case Studies
Attendees suggested incorporating more detailed case studies as part of any follow-up workshops or breakout sessions that ROSA or others may host. Such case studies would illustrate the practical applications of research findings in policy and management contexts.

As a result of the feedback received, ROSA plans to incorporate a standing ”Research Highlight” agenda item to their quarterly Advisory Council meetings, to address complex topics, facilitate deeper dives into specific research themes, and amplify the results of more detailed case studies with practical applications.

Conclusion

The Offshore Wind and Fisheries Research session advanced our shared understanding of several critical issues related to OSW development and fisheries. ROSA remains committed to fostering a collaborative environment that bridges science, policy, and industry for the benefit of our region’s sustainable future. We look forward to incorporating the insights and recommendations from this session into our ongoing and future initiatives.