Stewardship through Research: New Jersey's Marine Resources and Offshore Wind Development

May 31, 2023
Colleen Brust, Research Scientist
Marine Resources Administration
New Jersey’s Offshore Wind Goals

- The state’s offshore wind target is 11 GW by 2040
- Three projects in development with a third solicitation open now.
- Siting was well planned with research beginning pre-2007.
- Busy continental shelf with multiple users.
- Goal is offshore wind development with minimal impacts to marine resources.
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**Identify Resources of Concern:**
What resources are near the project areas?

- NJ Ecological Baseline Studies
- High-value marine habitats (see CZM Special Areas, Cold Pool)
- Mid-Atlantic Data Portal
- Federally & state-managed fisheries
- Literature review
- Stakeholders
Identify Resources of Concern:
What are the effects of offshore wind?

• Goal is offshore wind development with minimal impacts to marine resources.

Build a library

• Peer-reviewed publications –
• Grey literature
• Scientific meetings
• Tethys
• BOEM RODEO studies
• etc.
Identifying Resources of Concern: Which resources are most vulnerable to effects?

- Resources that are threatened, endangered, or protected
- Resources sensitive to a particular effect
- Habitats likely to be significantly altered
- High value species, habitats, fisheries

Goal is offshore wind development with minimal impacts to marine resources.

Report Authors:
Josh Kohut, Ph.D., Professor
Joseph Brodie, Ph.D., Director of Atmospheric Research Center for Ocean Observing Leadership
Rutgers, The State University of New Jersey
71 Dudley Road, New Brunswick, NJ 08901
• Goal is offshore wind development with minimal impacts to marine resources.

*Protecting Resources of Concern:*

What are the most critical information gaps?

- Literature review
- Scientific meetings
- RWSC Committees/Science Plans
- Other regional coordination
- Stakeholdering of priorities
Goals of Research and Monitoring

...hypothesis-driven scientific study that improves our understanding of populations and ecosystems, and/or our ability to measure or manage these systems.

- Identify impacts on resources if they occur
- Quantify impacts on resources if they occur
- Replace data loss for potentially-impacted surveys
New Jersey’s Offshore Wind Research & Monitoring Initiative (RMI)

- Initial funding through NJ’s 2nd Offshore Wind Solicitation
- $10K/MW for research and monitoring on wildlife and fisheries
- Research priorities developed in house and stakeholdered
- Projects developed in collaborations with subject matter experts
- Project funding awarded through contracts with state universities, NJ Sea Grant Consortium members, and through RFPs
Initial Research Priorities

- Data standardization, processing, analysis, housing, and QA/QC
- Impacts on seafloor, light conditions, and ocean stratification
- Potential effects on recreational fisheries
- Potential effects on mobile bottom gear fisheries
- Identify & evaluate valuable bottom habitats and species
- Baseline population-level distribution information for birds and bats
- Sea turtle movement, distributions, and habitat use
- Effects of OSW on various life stages of fish & invertebrates
- Evaluate relative threat of mortality/injury to whales from vessel strike
- Baseline estimates of marine mammals
- Adapt DEP trawl survey
Surveys and Experiments for Monitoring Surfclams at Offshore Wind Projects

Daphne Munroe
Monitoring the Socioeconomic Impacts of Offshore Wind Development on the Recreational Fisheries Economy

Pankaj Lal

- Addresses need for recreational fisheries-based baseline data
- Estimate and track nature and size of OSW’s potential effects on recreational fishing
- Estimating sector specific and regional level multipliers and regional impact
- Modeling sector specific and regional-level intersectoral impact.
- Capture the proportional amount of change in recreational fishing economic activity.
Acoustic telemetry for protected, prohibited, and commercially/recreationally important fish species
Keith Dunton, Jason Adolf, Jeff Kneebone

- Tag priority species
- Install and maintain network of acoustic receivers
- Spatial/temporal migratory movements, residencies, relative abundance, and shifts in behavior of animals
- Commercial and Recreational fishing partnership
- Multi-species approach
Assessing the impacts of offshore wind development with marine eDNA: an innovative, non-extractive approach for monitoring protected, prohibited, and commercially/recreationally important species

Jason Adolf, Keith Dunton, Shannon O’Leary

- Paired eDNA sampling with
  - NJ DEP-MRA Ocean Trawl surveys
  - NJ DEP-MRA Artificial reef surveys
  - Acoustics telemetry arrays (Dunton and Adolf RMI)
- Pilot citizen fisheries scientist program (eDNA)
- Long term dataset analyses for regional reference
Request for Proposals:  
Expansion of New Jersey's Motus Wildlife Tracking System to Inform Baseline Avian and Bat Population Movements Near Offshore Wind Energy Areas

- Component 1 – Coastal Plain land-based Motus station deployment
- Component 2 – Offshore Motus station deployment on buoys
Offshore wind farm contributions to a regional environmental and ecological monitoring system to address multi-user needs

Josh Kohut, Mike Crowley, Doug Zemeckis, Tony MacDonald, Tom Herrington, Rebecca Green, Chris Hein, and Kris Ohleth

• **Task 1** - Provide recommended language on monitoring requirements/guidance to be included in the third NJ OREC solicitation *(Completed)*

• **Task 2** - Develop a Conceptual Plan for individual wind energy area contribution to a Regionally-Based Environmental and Ecological Monitoring System *(Will begin summer 2023)*
An autonomous-based oceanographic and ecological baseline to inform offshore wind development over the continental shelf off the coast of New Jersey, northeast U.S.

Grace Saba, Josh Kohut and Mark Baumgartner

• 4 seasonal deployments (2 years)
  Temperature
  Salinity
  Density
  pH
  Dissolved oxygen
  Chl Fluorescence
  CDOM
  Optical backscatter

  Active acoustics - fish
  (38, 120, 200 kHz)
  Active Acoustics - zooplankton
  (120, 200, 455, 769 kHz)
  Passive acoustics – mammals
  Fish Telemetry

• Conduct research and develop data products:
  e.g., overlap between oceanographic features & distribution of fishes and marine mammals, between marine mammal predators & their prey
Harbor seal satellite tagging and health assessment in Great Bay, NJ: local and regional implications

Jacalyn Toth Sullivan (Stockton University, NJ), Robert A. DiGiovanni, Jr. (Atlantic Marine Conservation Society, NY)

What are movement patterns of harbor seals along the NJ coast / regionally? Harbor seal distribution / movements / dive behavior over time? Differences in harbor seal health patterns latitudinally in the NW Atlantic?

• Tag overwintering harbor seals
• Maximize utility of seal interactions: health assessment effort, life history data recorded (molt stage, length, weight, girth, sex), collect biological samples (blood, nasal/rectal cultures, scat)
• Data pooled with collaborating tag/health assessment studies
Updated supplementary spatial density models are needed for wind energy areas to manage potential conflicts with marine mammals and sea turtles.

Development of a NYB PAM network with the potential for real-time sensors to inform best-practices and mitigation.

Baseline, abundance and distribution, movement and behavior, ecological drivers.

2019 Framework for Studying Effects of OSW on Marine Mammals

Estimate habitat use, distribution, and abundance; identify dynamic environmental variables driving these patterns; use multiple data collection and analytical approaches.

2020 NYSERDA State of the Science MM Workgroup

2021 NY Bight PAM Workshops

PAM layouts and methods

2022 NOAA/BOEM PAM Guidance

2023 NYSERDA E-TWG Synthesis of Regional Research Recommendations
Latest scientific recommendations for wind and whales

Recommendations for Use of Passive Acoustic Listening Systems in Offshore Wind Energy Development Monitoring and Mitigation Programs

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Near real-time passive acoustic monitoring off New Jersey to mitigate the effects of offshore wind development on baleen whales

Mark Baumgartner

robots4whales.whoi.edu

Woods Hole Oceanographic Institution

DMON

Moored buoy

Whale detection buoy

Martha’s Vineyard buoy

Atlantic City buoy

Ocean City buoy

Norfolk buoy

Cape Hatteras buoy

Savannah buoy
Request for Proposals:
Archival passive acoustic monitoring (PAM) to inform distribution and abundance of large whales in the NY/NJ Bight
**Research Priorities**

*Be adaptive* throughout the Initiative to reflect that different or expanded research and monitoring needs may arise to accommodate both unforeseen circumstances and new scientific information as future offshore wind projects are developed.

**Periodic Review of Priorities**

As priorities are addressed with MRI projects

As new science becomes available

- Regional Wildlife Science Collaborative for Offshore Wind
- Synthesis of the Science
- State of the Science