Welcome

New Jersey's Offshore Wind Environmental Resources Working Group

May 30, 2024

Agenda

1. Welcome
2. Updates
   - DEP
   - Board of Public Utilities
   - Research and Monitoring Initiative
3. Research Needs discussion
4. Closing

Let's work together

- Stay on topic.
- Comments are limited to 3 minutes.
- Members or alternates will be given the first opportunity for clarification questions and comments.
- One speaker per organization.

Comments or Questions:
https://dep.nj.gov/offshorewind/

Open Public Comment Periods:
https://dep.nj.gov/offshorewind/outreach/

Member List

Primary Member	Alternate Member	Affiliation
Scot Mackey		Garden State Seafood Association
Kevin Wark		Owner/Operator
Jeff Kaelin	Greg DiDomenico	Lund's Fisheries
Renee Reilly	Mike Pol	Responsible Offshore Science Alliance
Annie Hawkins	Lane Johnston	Responsible Offshore Development Alliance
Paul Eidman		Anglers for Offshore Wind/Jersey Coast Anglers Assn
John DePersenaire		
Shayna Steingard	Amber Hewett	National Wildlife Federation
David Mizrahi	Nellie Tsipoura	NJ Audubon
Tim Dillingham		American Littoral Society
Cindy Zipf	Erika Bosack	Clean Ocean Action
Stephen Lyman		Maritime Association of the Port of NY and NJ
Richard N. Herb		NJ Marine Fisheries Council
Warren Hollinger		Shellfish Council - Delaware Bay Shellfish Council
Peter Hughes		Mid-Atlantic Fishery Management Council - Atlantic Capes
Adam Nowalsky		Mid-Atlantic Fishery Management Council – RFA
Tom Dameron		Surfside Foods
Emily Shumchenia		Regional Wildlife Science Collaborative
Elizabeth Semple		The Nature Conservancy
Peter Straub		Stockton University
Doug Zemeckis		Rutgers University
Morgan Brunbauer	Kate McClellan-Press	NYSERDA

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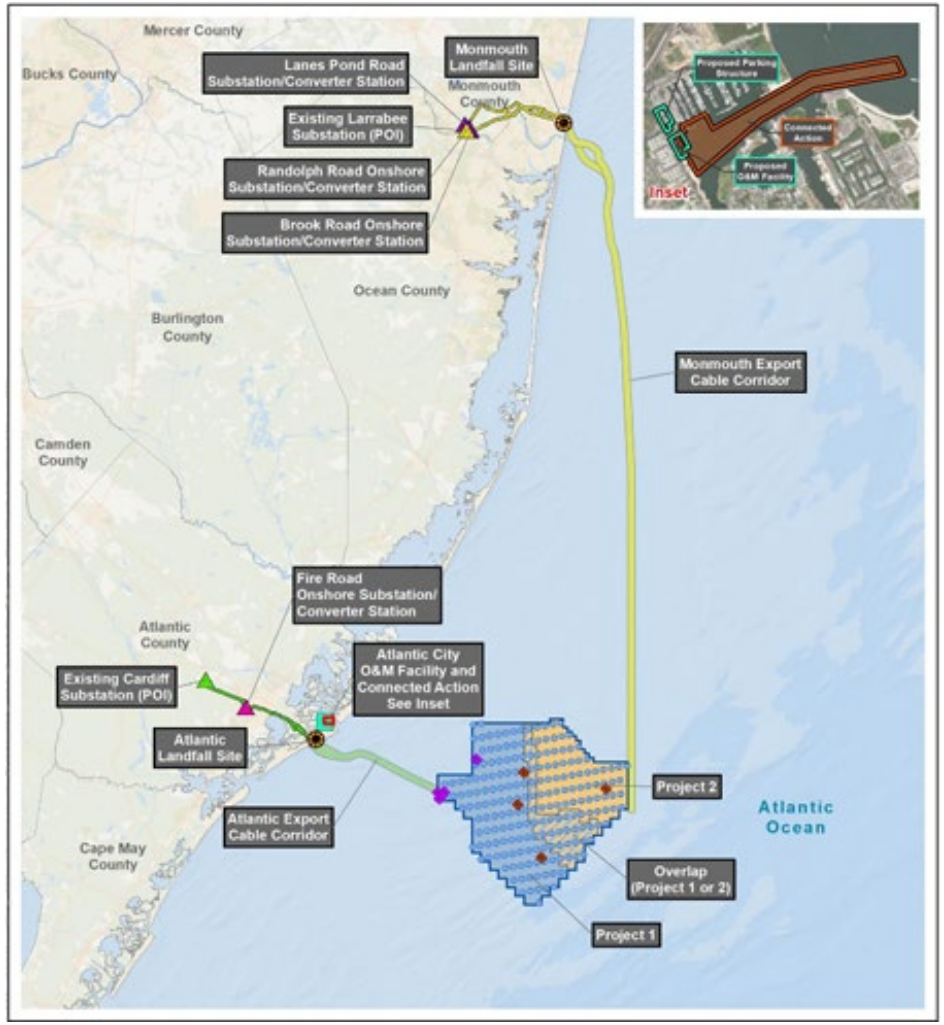
DEP Updates

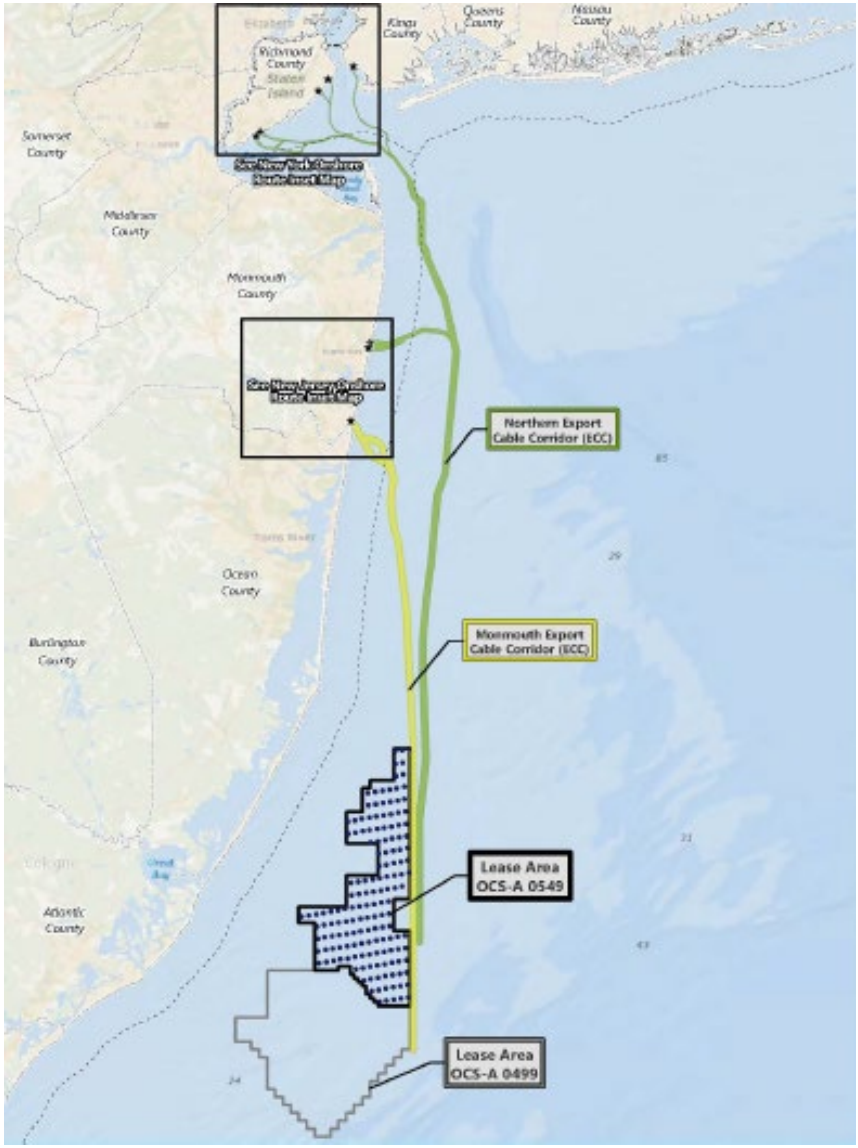
Atlantic Shores South

- Lease Area OCS-A 0499
- Land Resource Protection permits for Project 1, Project 2, and O&M Facility currently under review.
- Fact finding meetings held:
  - May 14th (virtual)
  - May 28th (in-person)
  - May 29th (virtual)
- Comments will be accepted 15 days following the last meeting.
- May 23rd BOEM announced availability of the Final Environmental Impact Statement (FEIS).
- ROD expected July 1, 2024
- COP decision expected September 30, 2024.



Atlantic Shores North

- Atlantic Shores North: Lease Area OCS-A 0549
- Notice of Intent to prepare an Environmental Impact Statement (EIS) published March 18, 2024.
- April 22nd ASOW North submitted Coastal Zone Management consistency certification. Stay Agreement executed. Decision due February 2026 unless further extended.
- DEIS expected June 2025



BPU Updates

BPU Offshore Wind Update

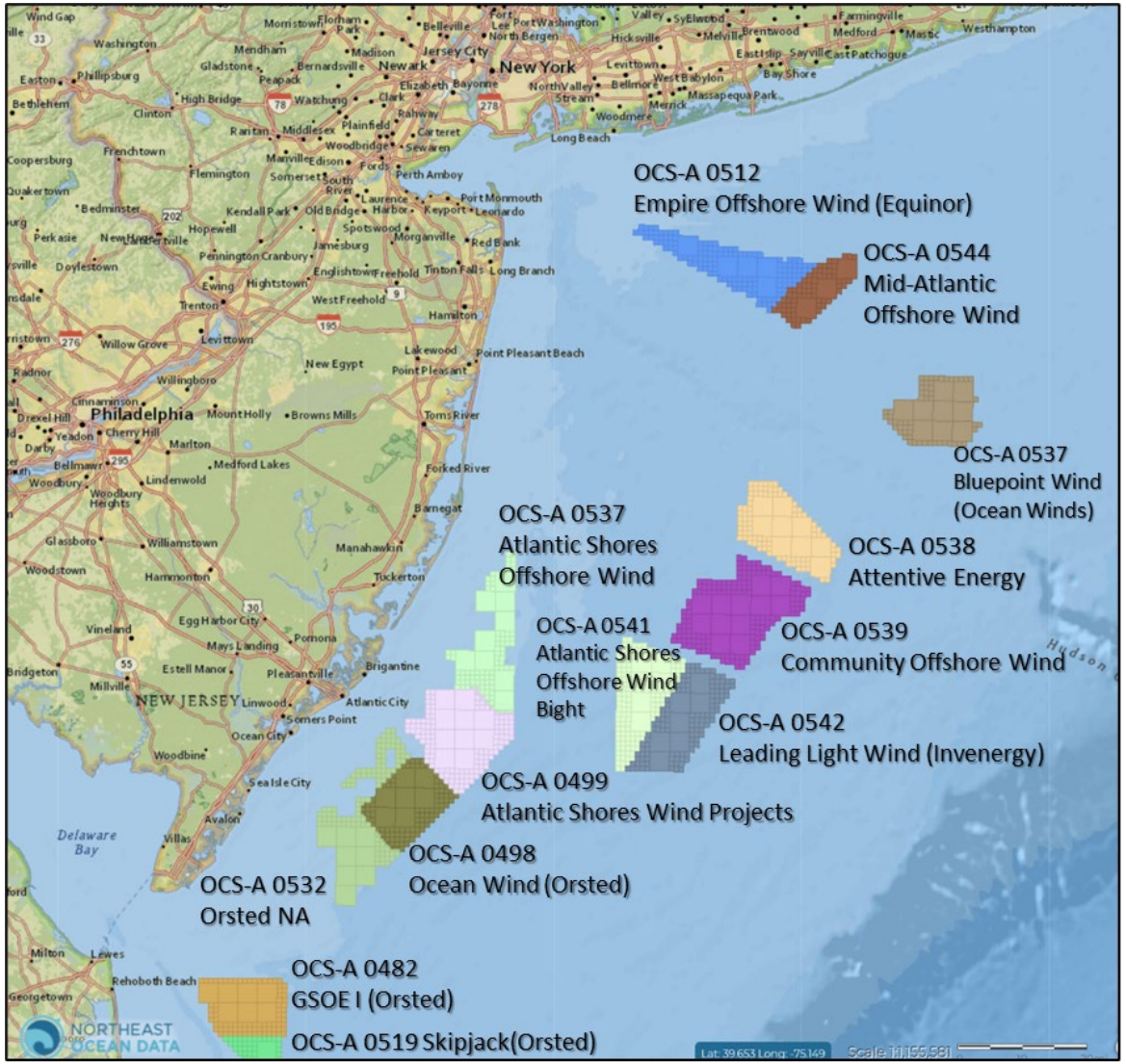
May 30, 2024

Agenda

- Overview of recent offshore wind solicitation
- Overview of current/future solicitations
  - Transmission
  - Offshore Wind Generation
- Update on Offshore Wind Strategic Plan

Solicitation Three Update

- In Q1 2024 New Jersey awarded 3,742 MW of offshore wind capacity to two projects:
  - Leading Light Wind
    - 2,400 MW in two 1200 MW phases
    - COD 2031 and 2032 respectively
  - Attentive Energy Two
    - 1,342 MW
    - COD 2031

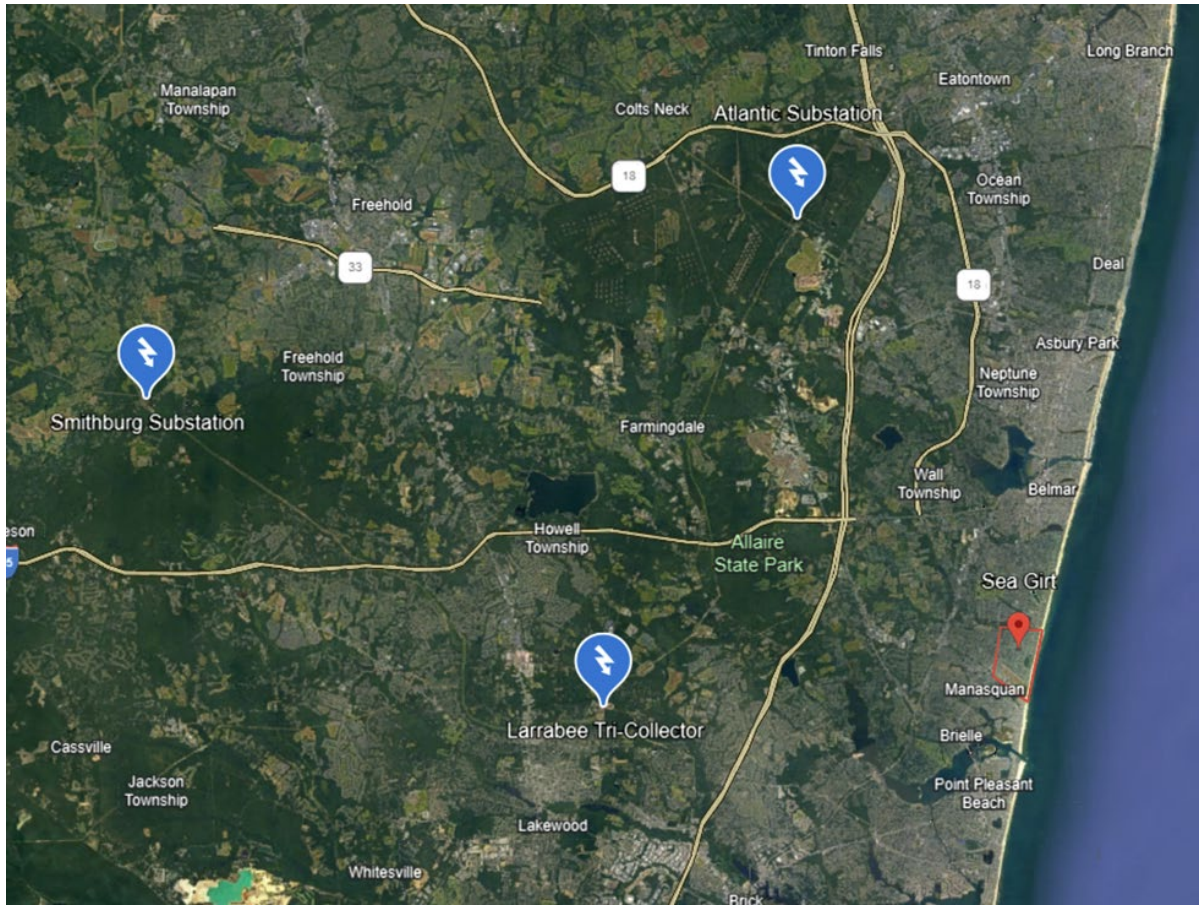


S3 - Env and Fisheries

- Over $60 million for environmental and fisheries initiatives combined
- Attentive
  - $30 million investment in the environment and fisheries programs inc. $15 million for RMI
  - No net loss of biodiversity and commercial fishing revenue
  - Net positive impact for surfclams and sea bass
- Leading Light Wind
  - $7.5 million Strategic Environmental Initiatives Fund
  - $2 million Fisheries Accelerator Fund

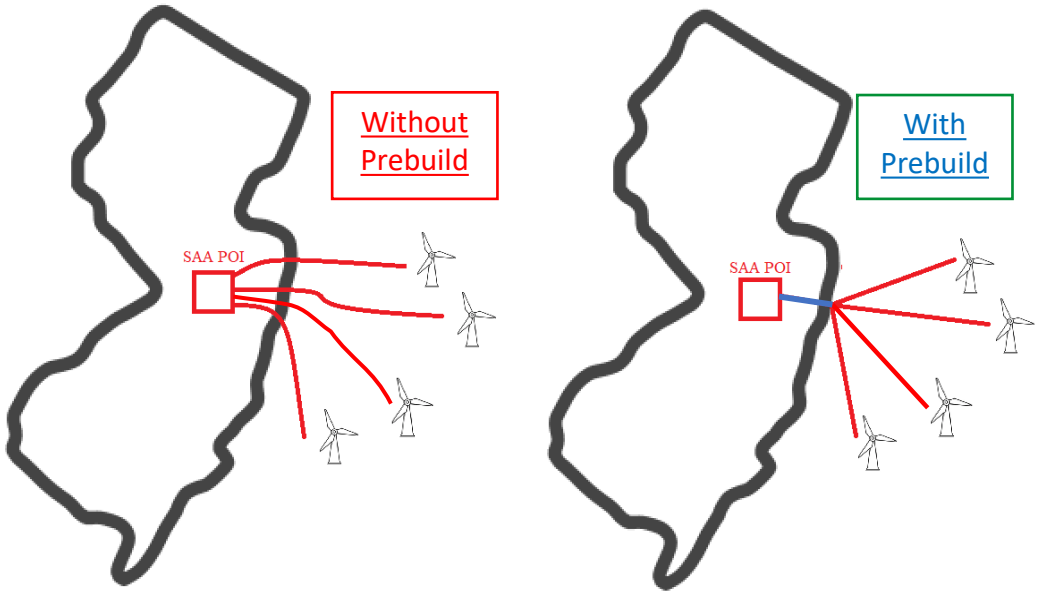
State Agreement Approach (SAA)

- Awarded by BPU in 2022
- JCPL
  - Upgrading three substations and transmission lines
- Mid-Atlantic Offshore Development
  - Constructing new Point of Interconnection: Larrabee Collector Station, on parcel of land next to existing substation
- Construction scheduled for 2026



Prebuild Infrastructure (PBI)

- The Prebuild solicitation was opened in November, 2023. Applications were received in April 2024
- Four applicants submitted bids
- A detailed Environmental Protection Plan is required of applicants
- Applications are currently being reviewed by the BPU with input from relevant sister agencies
- The Board is on schedule to act on the applications in Q3 2024



Solicitations Four and Five

Solicitation Four

- Solicitation was opened in April 2024
- Seeks 1.2 to 4 gigawatts of offshore wind capacity
- Detailed Environmental and Fisheries Protection Plans are required of applicants
- $10,000/ MW RMI fee required
- Applications are due July 10, 2024
- The Board expects to act on the applications in Q4 2024

Solicitation Five

- S5 is scheduled to open Q2 2025
  - Will keep NJ on pace for 11 gigawatt goal by 2040

Second OSW Strategic Plan

- In September 2023, the BPU in collaboration with DEP and EDA commenced and effort to update the Offshore Wind Strategic Plan
- Focus areas:
  - environmental resources
  - commercial and recreational fisheries
  - supply chain and workforce development
  - ports and harbors
  - energy markets and transmission
- Significant opportunities for stakeholder input will exist, beginning in September 2024
- Final version anticipated in summer 2025

Second Offshore Wind Strategic Plan

Environmental Protection & Advanced Research Analysis

1. A Cable Constraints Desktop Study
2. A Mitigation Opportunities Analysis
3. A Relative Impacts Analysis
4. An Assessment of the Research and Monitoring Initiative.

Research and Monitoring Initiative Updates

New Jersey's Offshore Wind Research and Monitoring Initiative

Activities and Research Progress

May 30, 2024

Caitlin McGarigal (DEP-DSR), Colleen Brust (DEP-MRA), Heather Genievich (DEP-DSR)… *and many more*








New Jersey Offshore Wind Research and Monitoring Initiative

Vision Statement

The RMI addresses the need for regional research and monitoring of marine and coastal resources during offshore wind development, construction, operation, and decommissioning.

NJ is national leading in OSW and building a comprehensive marine research program

Coordinate and collaborate with academia, government, non-government, fishing industry, & wind developers

New Jersey Offshore Wind Research and Monitoring Initiative

Regional Coordination

RWSC
Regional Wildlife Science Collaborative for Offshore Wind

ROSA

NYSERDA

New York State Department of Environmental Conservation

NOAA

Atlantic States Marine Fisheries Commission

Woods Hole Oceanographic Institution 1930

The National Academies of Sciences Engineering Medicine

U.S. Fish & Wildlife Service

Mid-Atlantic Committee on the Ocean

Coastal States Organization CSO

United States Environmental Protection Agency

BOEM
Bureau of Ocean Energy Management

State of New Hampshire Fish and Game

Coastal Resources Management Council CRMC

National Offshore Wind Research & Development Consortium

Maryland Department of Natural Resources

Virginia DWR

MARCO Mid-Atlantic Regional Council on the Ocean

DEM Rhode Island

NCDENR

Department of Environmental Protection State of Maine

Virginia Marine Resources Commission

Delaware Department of Natural Resources and Environmental Control

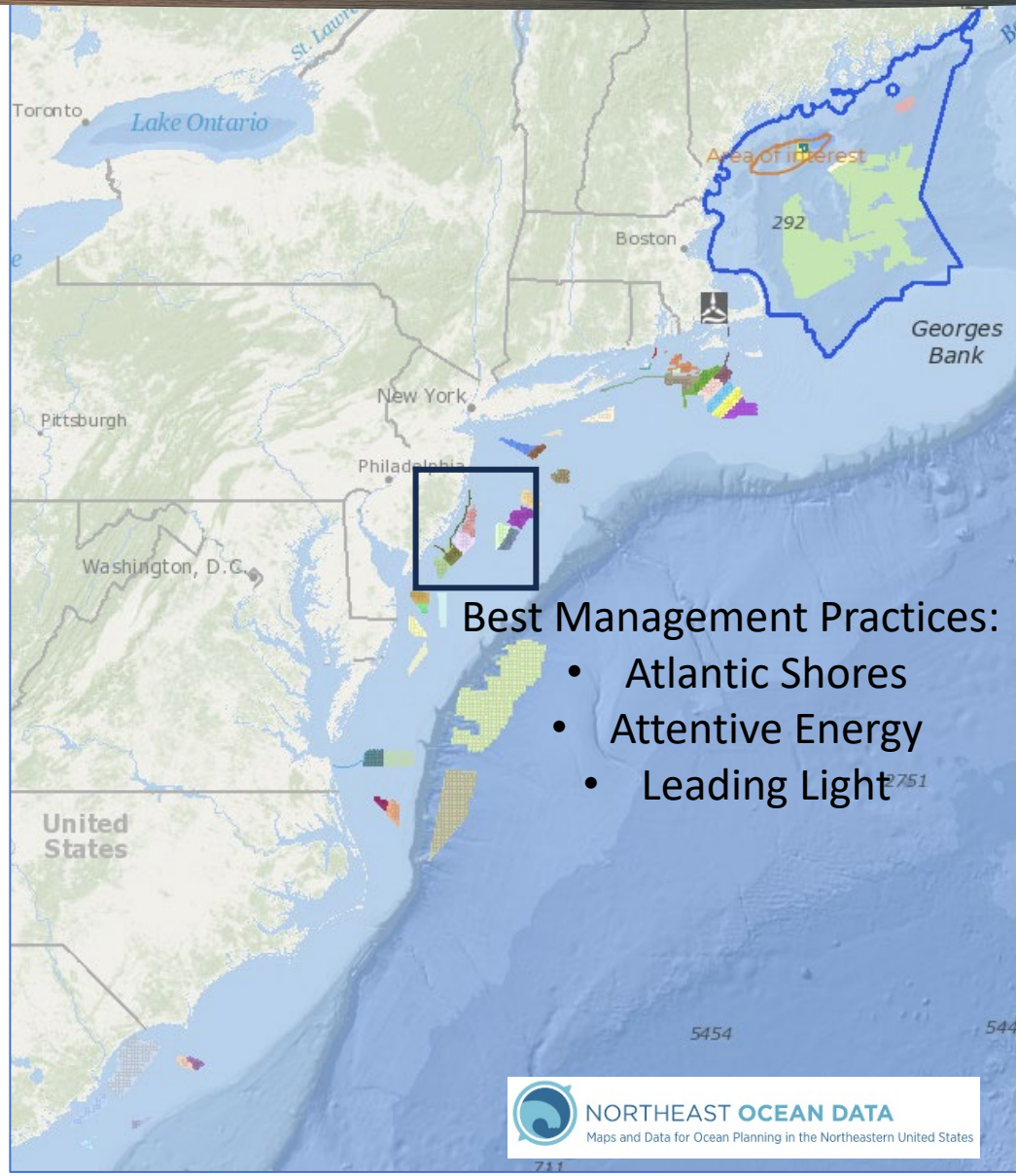
Massachusetts Office of Coastal Zone Management

New England Fishery Management Council

Connecticut Department of Environmental Protection

Commonwealth of Massachusetts Division of Marine Fisheries

Mid-Atlantic Fishery Management Council

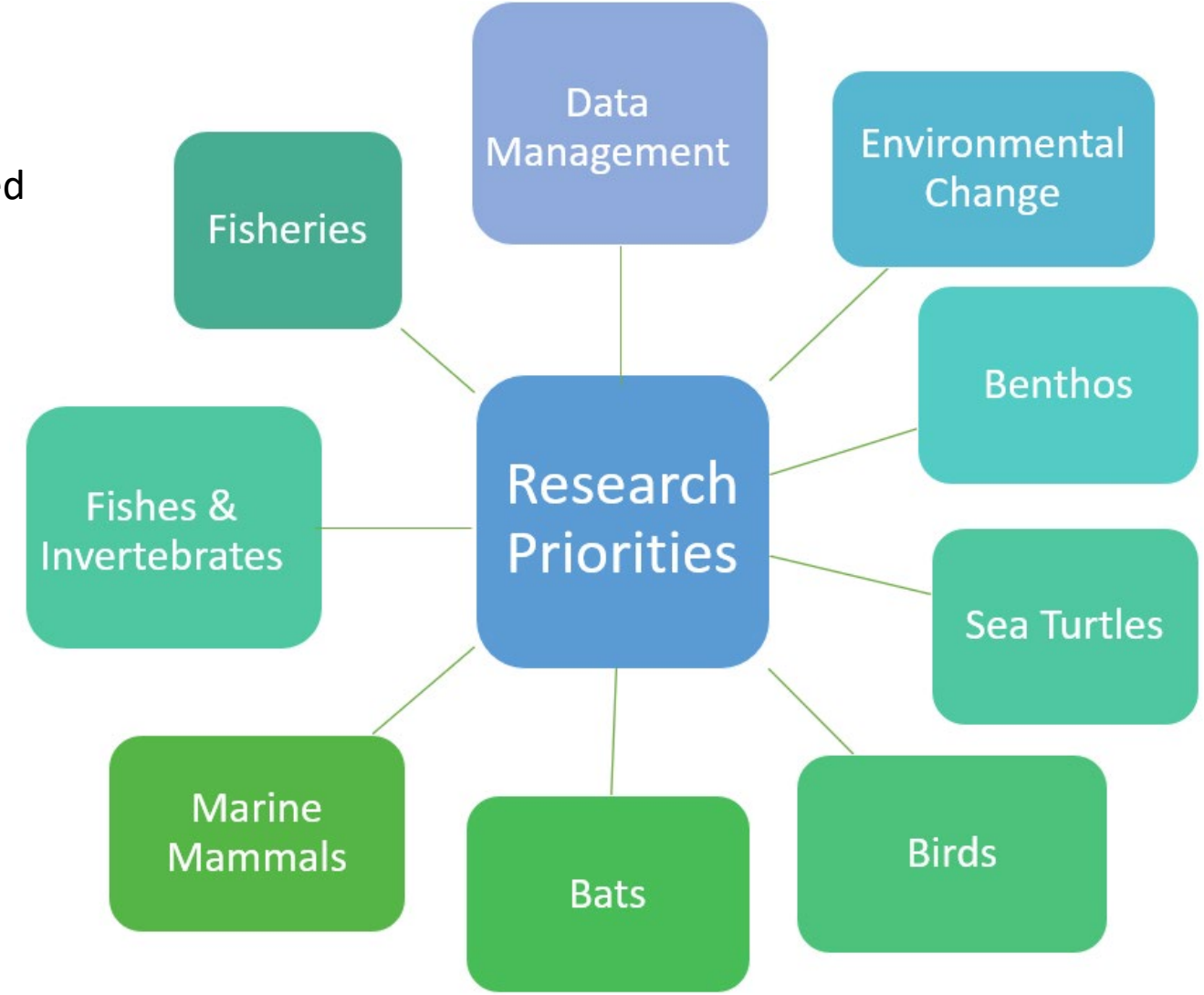


Best Management Practices:

- Atlantic Shores
- Attentive Energy
- Leading Light

New Jersey Offshore Wind Research and Monitoring Initiative

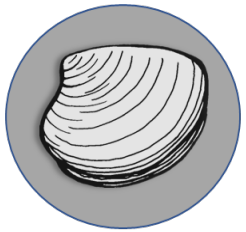
In 2021 identified 14 short-term, highest-need research priorities



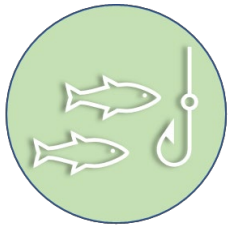
In early 2024 began the stakeholdering process to update the research needs

New Jersey's Offshore Wind Research and Monitoring Initiative

>$13.5 Million Awarded to Current Projects



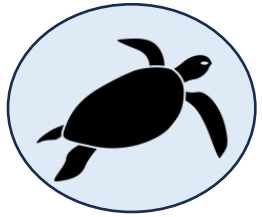
Novel Surfclam Dredge & Carbonate Chemistry



Socioeconomics of Rec. Fisheries

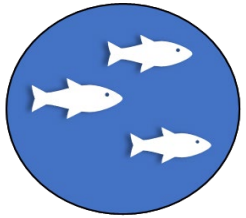
Fish Community Assessment Using eDNA

Motus Network Expansion for Birds & Bats



Turtle tagging & Biological Assessment

Ocean Gliders for Environmental Monitoring



Acoustic Fish Telemetry

Harbor Seal Tracking & Health Assessment

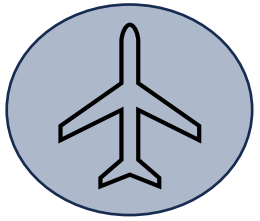
Whale Satellite Tagging

Surfclam Fishery Enhancement

OSW Structures as Monitoring Platforms

Near Real-Time Passive Acoustic Monitoring

Impacts of Turbine Foundations on the Cold Pool



Cetacean Aerial Survey

Institutional Support

RWSC

Regional Wildlife Science Collaborative for Offshore Wind

ROSA

Responsible Offshore Science Alliance

New Jersey Offshore Wind Research and Monitoring Initiative

Novel Surfclam Dredge & Carbonate Chemistry

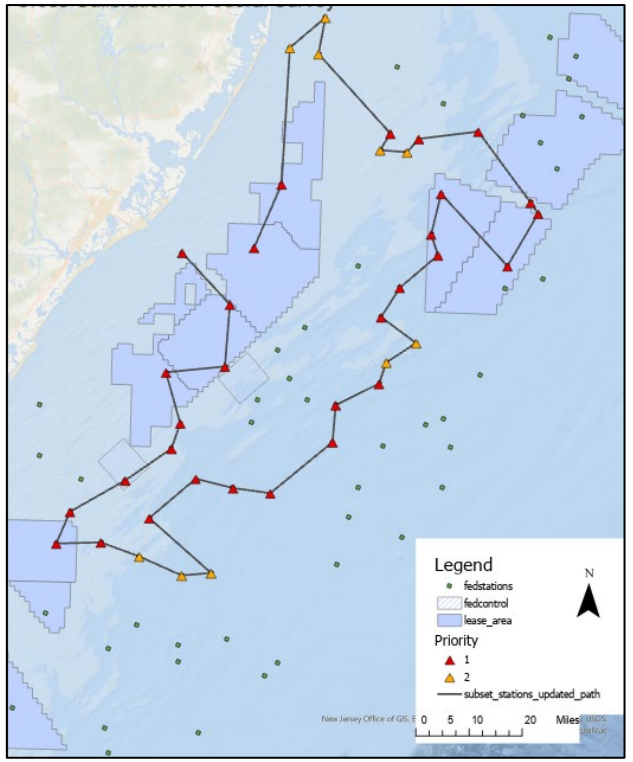
Daphne Munroe (Rutgers University), Tom Dameron (Surfside Seafood), Daniel Hennen (NOAA)

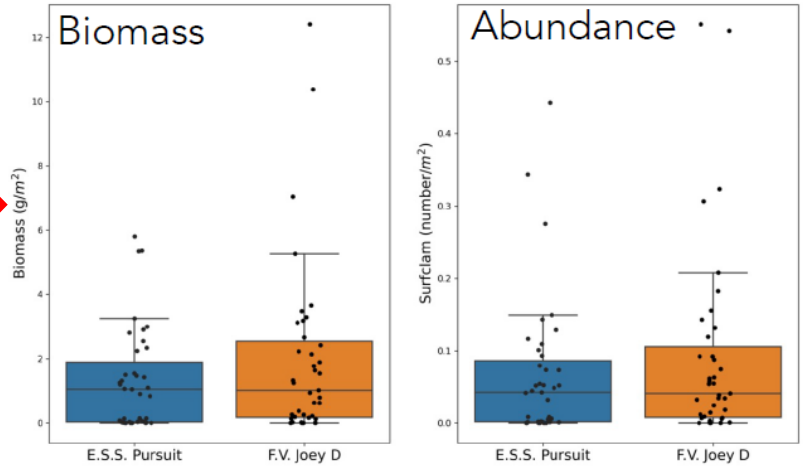
Obj 1: Construct experimental dredge

RMI Dredge on the Joey D

Dredge engineering/design was completed with SCeMFiS funding

Obj 2: Cross-calibrate federal survey





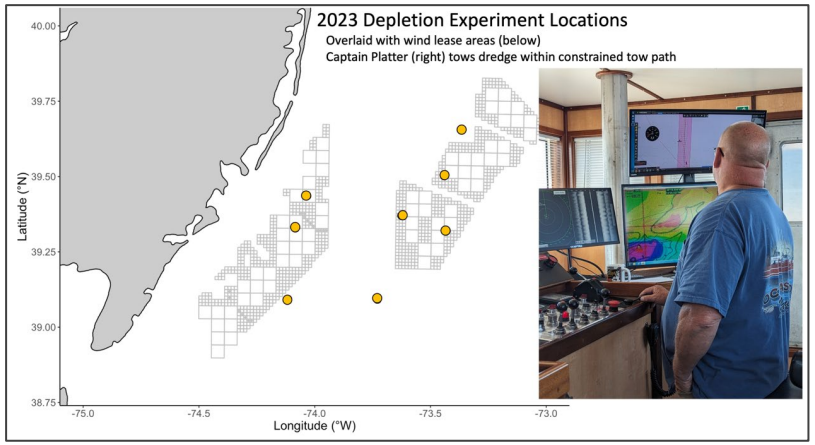
Preliminary Data

New Jersey Offshore Wind Research and Monitoring Initiative

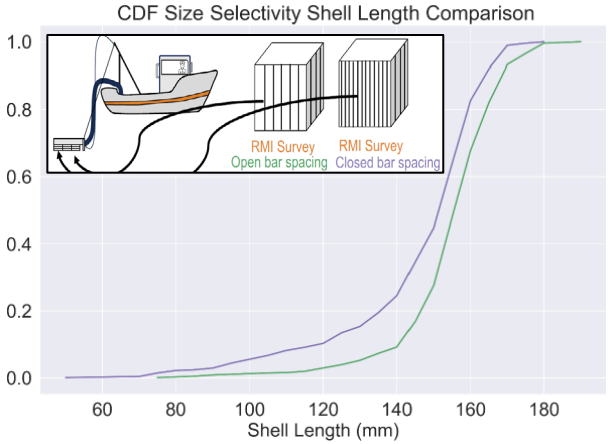
Novel Surfclam Dredge & Carbonate Chemistry

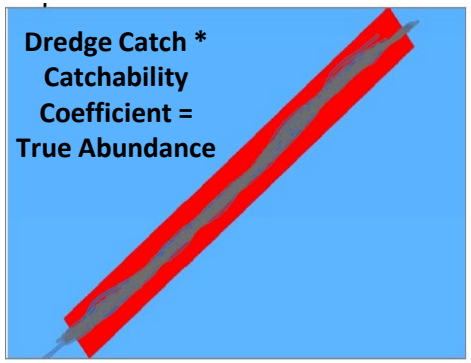
Daphne Munroe (Rutgers University), Tom Dameron (Surfside Seafood), Daniel Hennen (NOAA)

Obj 3: Gear Selectivity and Efficiency Assessment



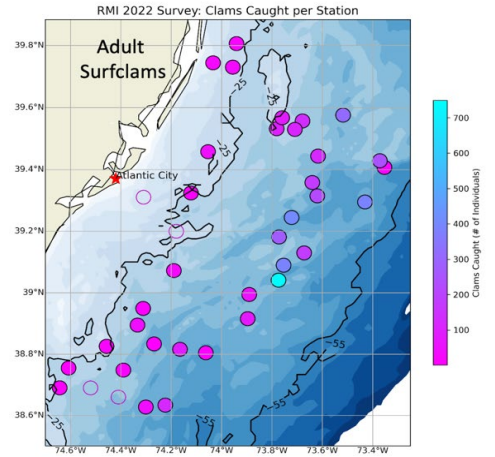
Preliminary Data

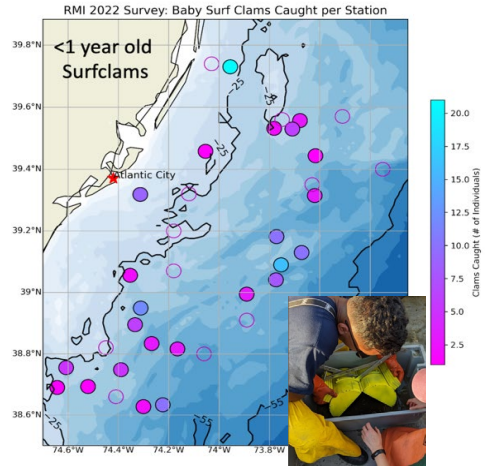


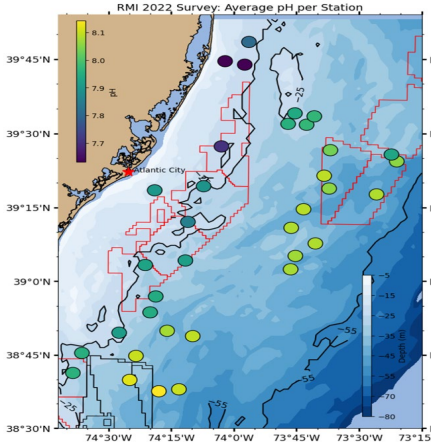


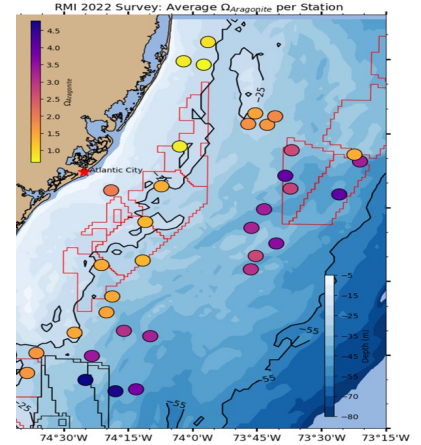
RMI dredge efficiency = 0.65
NOAA dredge efficiency = 0.67

Obj 4: Population Assessment & Ocean Acidification







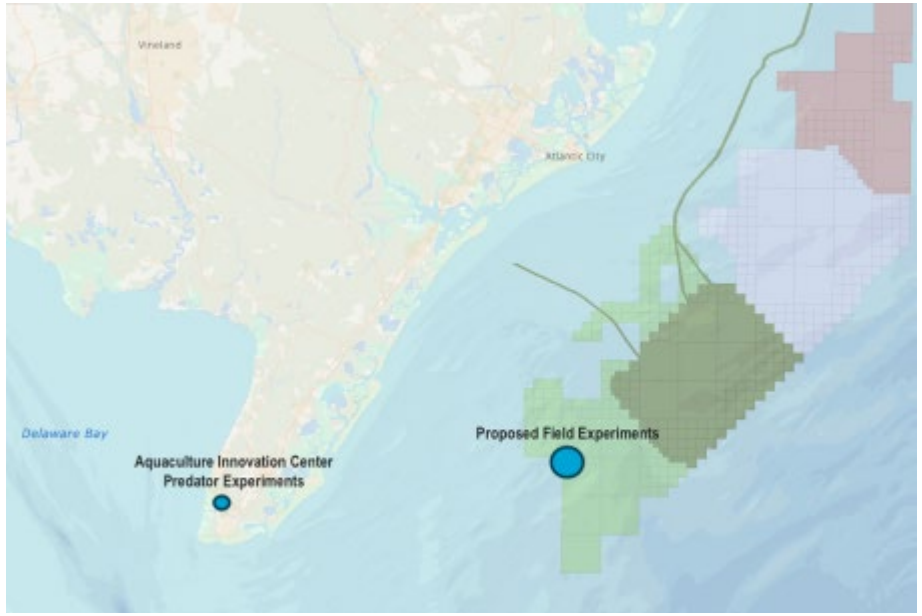


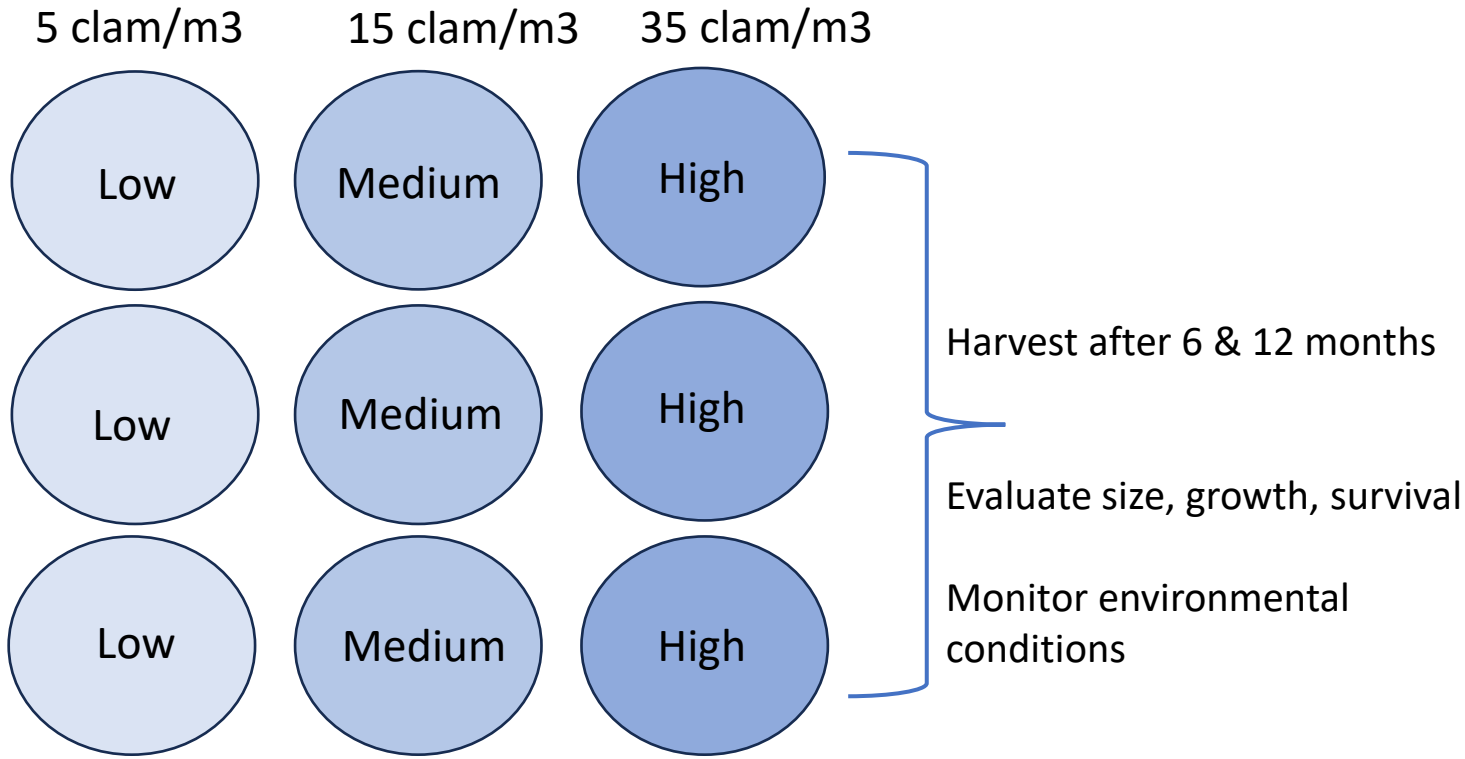
New Jersey Offshore Wind Research and Monitoring Initiative

Surfclam Fishery Enhancement

Daphne Munroe, Laura Steeves & Sarah Borsetti (Rutgers University), Tom Dameron (Surfside Seafood), Rusty Cassway & Ross Baxter (Research Vessel Explorer)

Objective 1: understand burial success, growth and survival of clams planted at varying densities





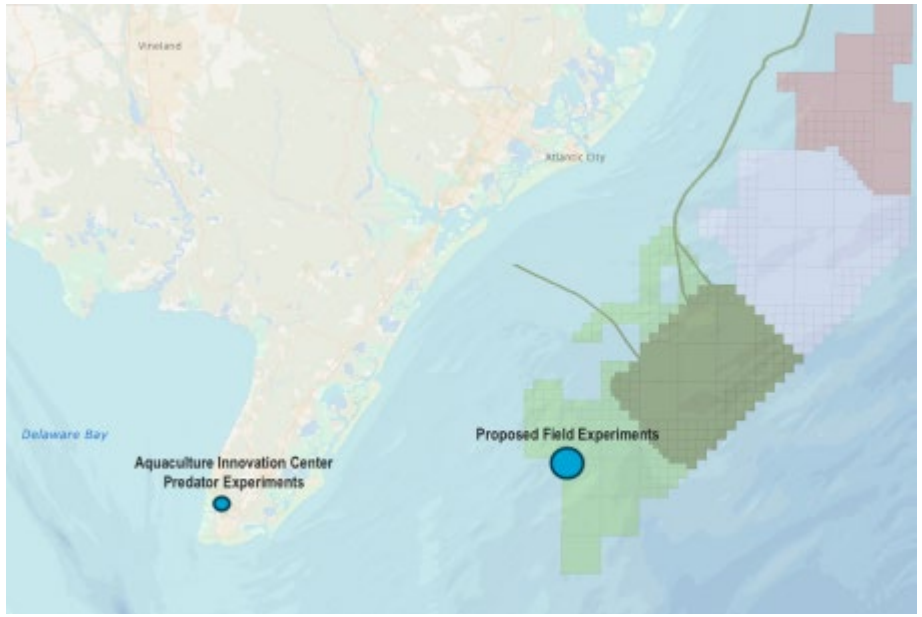
Density Experiment

New Jersey Offshore Wind Research and Monitoring Initiative

Surfclam Fishery Enhancement

Daphne Munroe, Laura Steeves & Sarah Borsetti (Rutgers University), Tom Dameron (Surfside Seafood), Rusty Cassway & Ross Baxter (Research Vessel Explorer)

Objective 2: Evaluate predation pressure and seasonal variability on varying size/density of clams



Predator Experiment Conditions

Factors	Levels		
Season *3 levels*	Spring	Summer	Fall
Predators *2 levels*	Moon Snail *Euspira heros*	Rock Crab *Cancer irroratus*	
Burial Condition *2 levels*	Clams buried	Clams unburied	
Clam Seed Size *3 levels*	Small	Medium	Large
Density *2 levels*	Low *5 clams/m²*	High *35 clams/m²*	

New Jersey Offshore Wind Research and Monitoring Initiative

Ocean Glider Environmental & Ecological Baseline

Preliminary Data

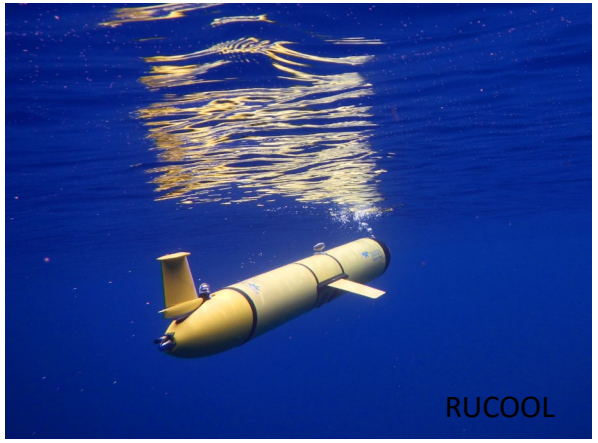
Grace Saba and Josh Kohut (Rutgers University)

Oceanographic Data

Temperature
Depth
Salinity
Density
Chlorophyll-a
CDOM
Dissolved Oxygen optode
pH

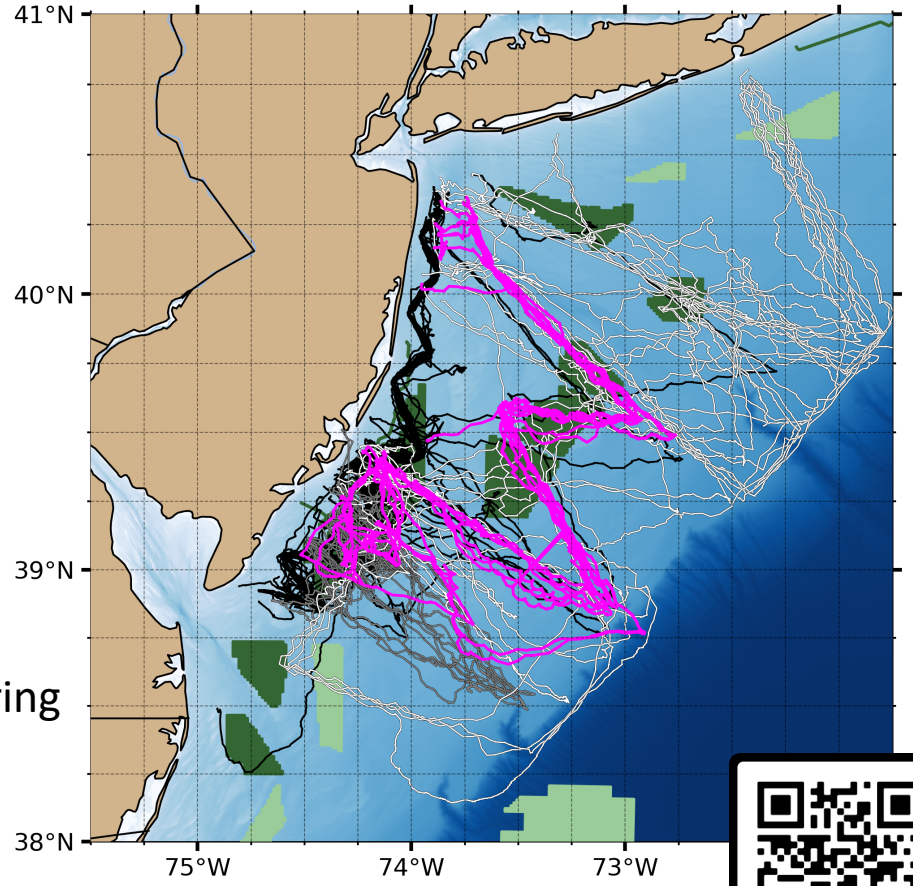
Biological Data

DMON (whale acoustic sensor)
Vemco acoustic fish receiver
AZFP (zooplankton, pelagic fish)



4 Paired Seasonal Glider Missions:
Spring, Summer, Fall, Winter

3 Gap-Fill Single Glider Mission:
Spring/Summer, Summer/Fall, Winter/Spring



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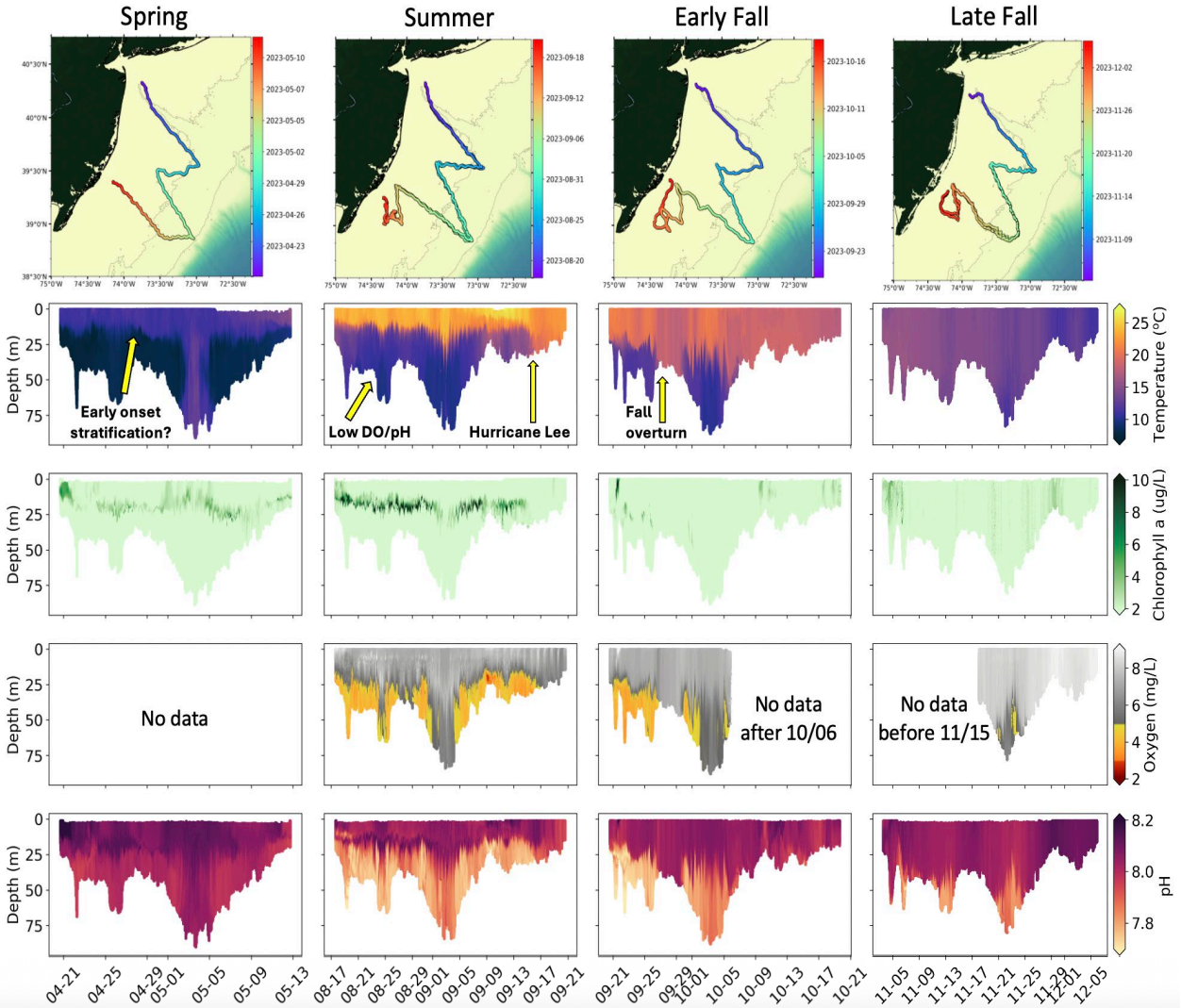
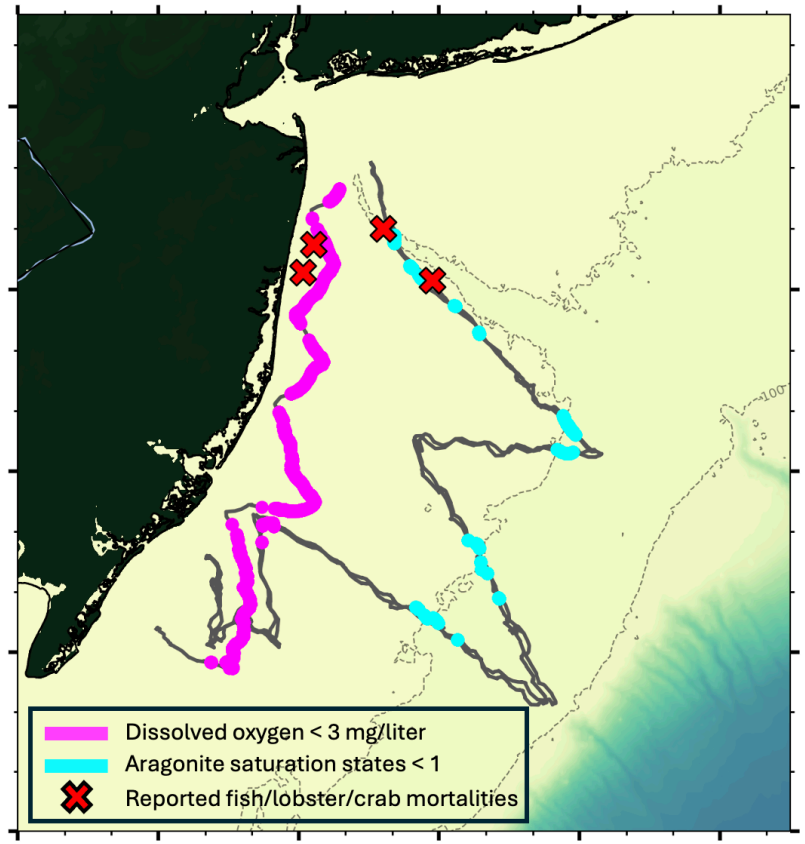




Unusual Ocean Conditions Possibly Linked to Mortality in Marine Life

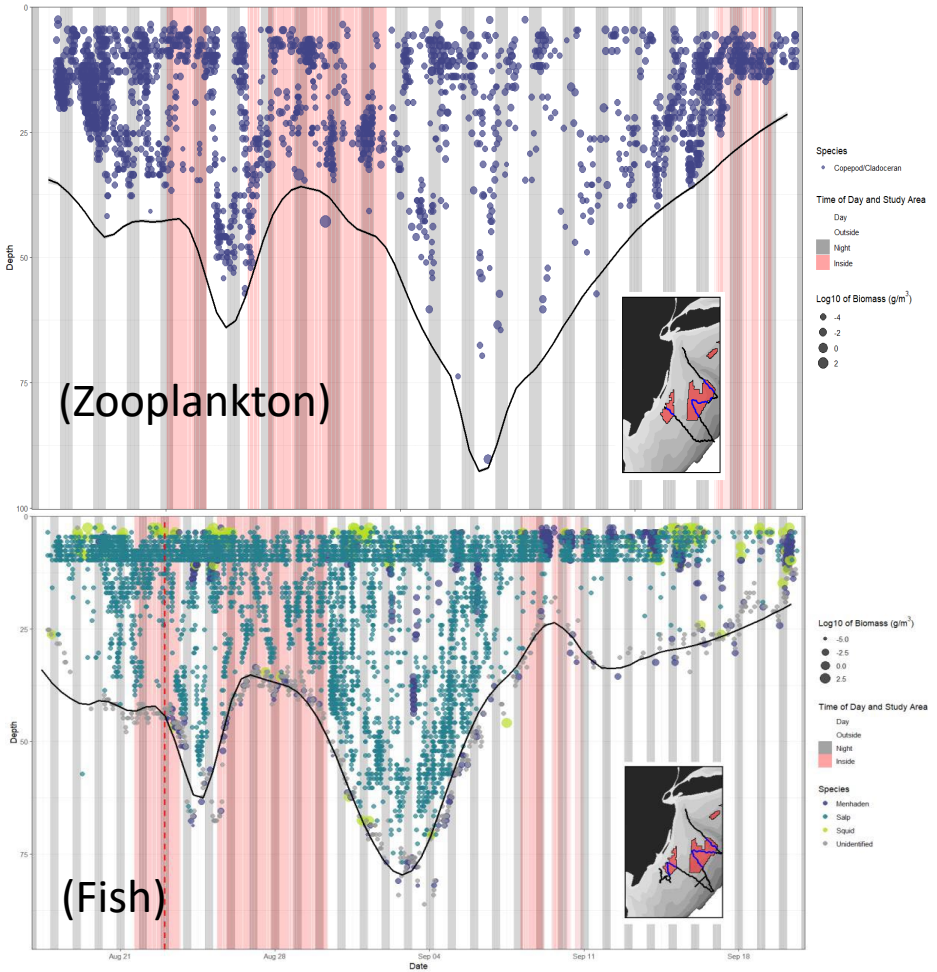
New Jersey Offshore Wind Research and Monitoring Initiative

Ocean Glider Environmental & Ecological Baseline

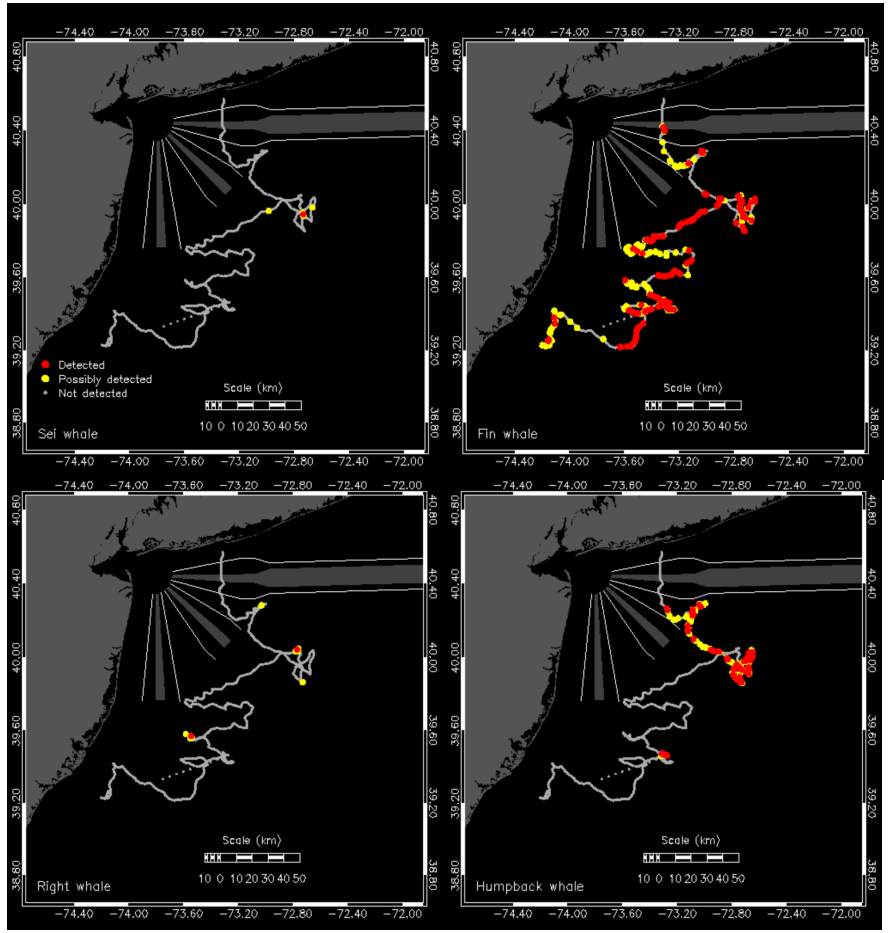
Preliminary Data

Grace Saba and Josh Kohut (Rutgers University)

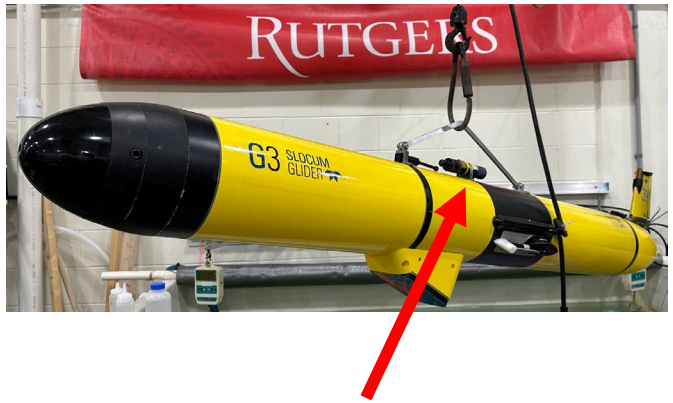
Acoustic Zooplankton Fish Profiler (AZFP)



DMON Whale Detection (1/24/24 - 2/26/24)



Innovasea Acoustic Receiver



1,324 Detections

114 Unique transmitters

MATOS

Mid-Atlantic Acoustic Telemetry Observing System

The Atlantic Cooperative Telemetry Network

Robots4whales.whoi.edu

New Jersey Offshore Wind Research and Monitoring Initiative

Acoustic Fish Telemetry

Keith Dunton & Jason Adolf (Monmouth University), Jeff Kneebone (New England Aquarium)
Collaborators, Kevin Wark (Endeavour Fisheries) & Michael Frisk (Stony Brook University)

Objective: Evaluate preconstruction fish movement, residency, habitat use in/around lease areas and cable corridors

Federally protected or prohibited & commercially or recreationally valuable species

Innovasea Acoustic Transmitters

New Jersey Offshore Wind Research and Monitoring Initiative

Acoustic Fish Telemetry

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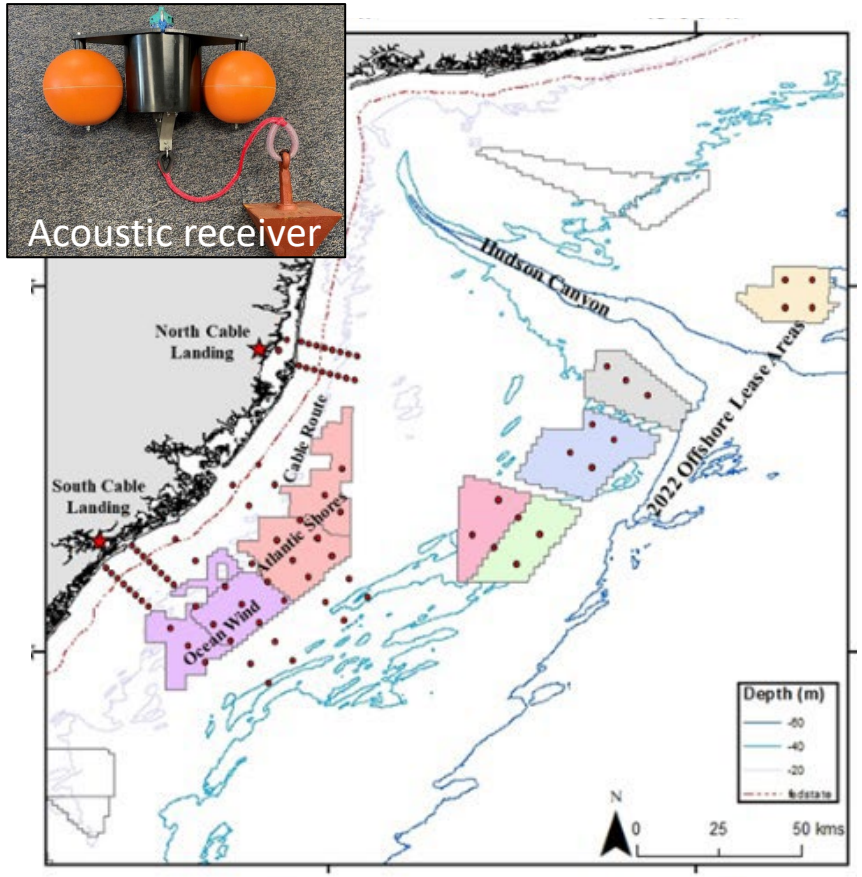
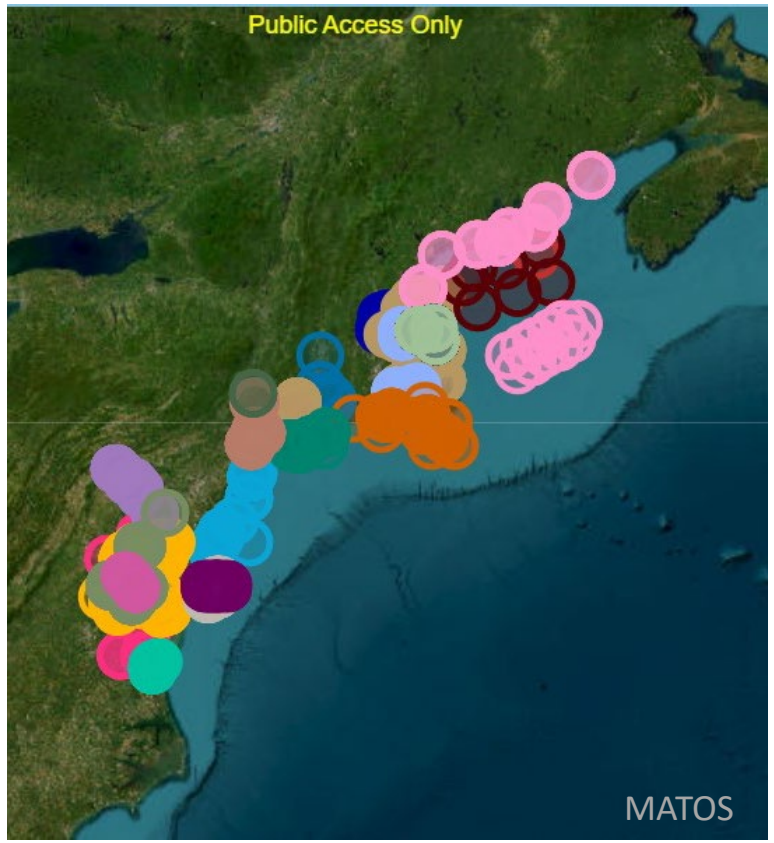




First NJ receiver network download coming soon!

MATOS

Mid-Atlantic Acoustic Telemetry Observing System

The Atlantic Cooperative Telemetry Network

New Jersey Offshore Wind Research and Monitoring Initiative

Assessing Fish Communities Using Environmental DNA

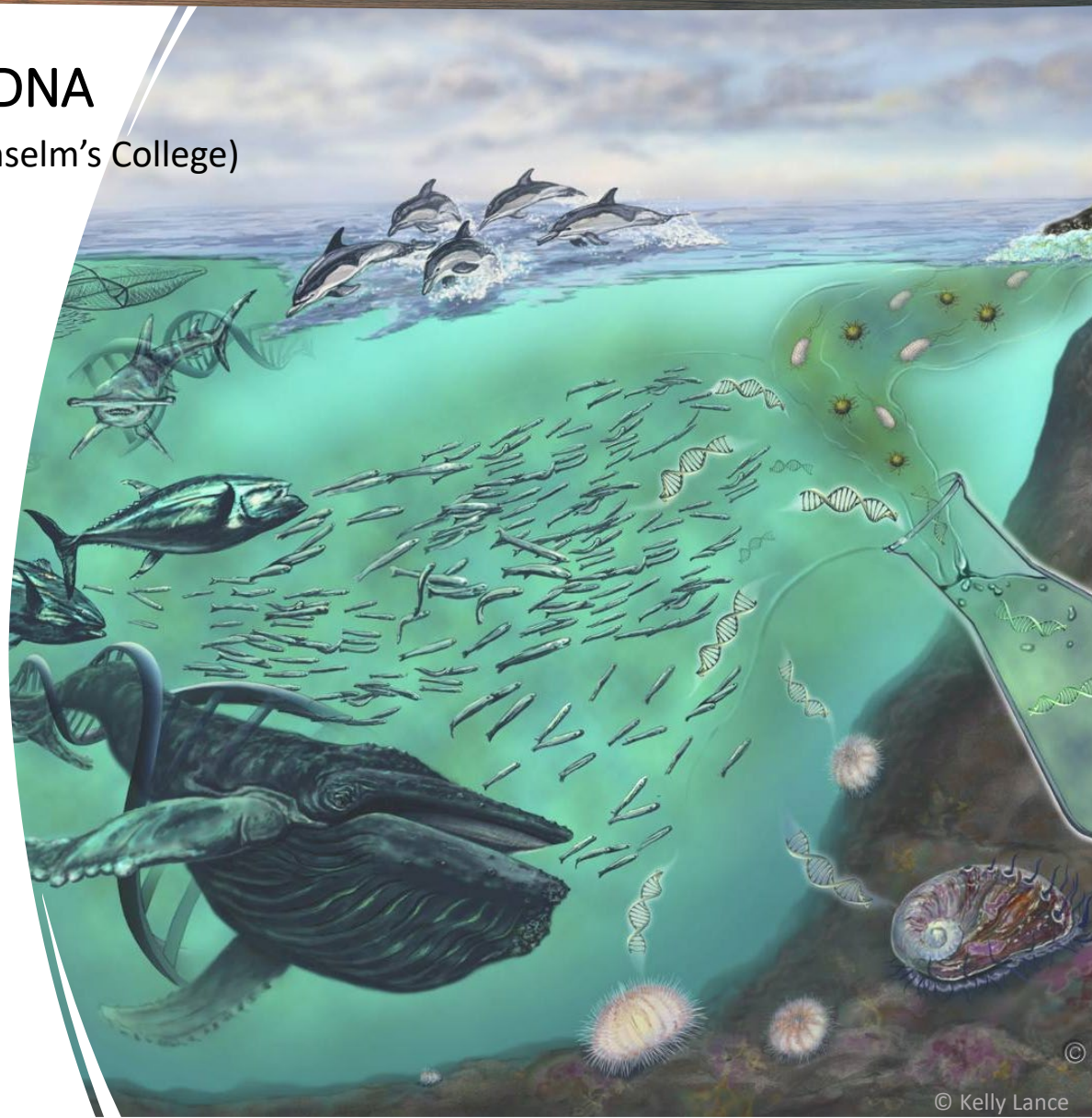
Jason Adolf & Keith Dunton (Monmouth University), Shannon O'Leary (St. Anselm's College)

eDNA is emerging, non-extractive technique

Provides species presence and relative abundance

Low cost / easily scalable

Calibration needed to groundtruth results



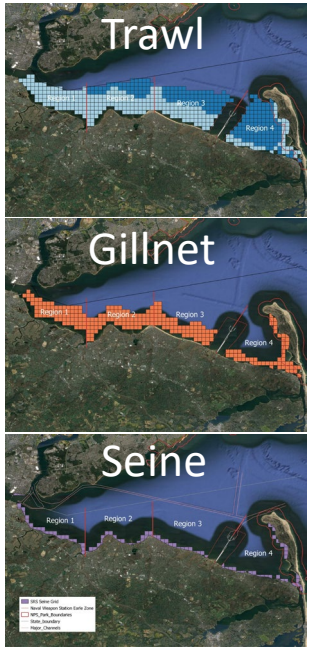
© Kelly Lance

New Jersey Offshore Wind Research and Monitoring Initiative

Assessing Fish Communities Using Environmental DNA

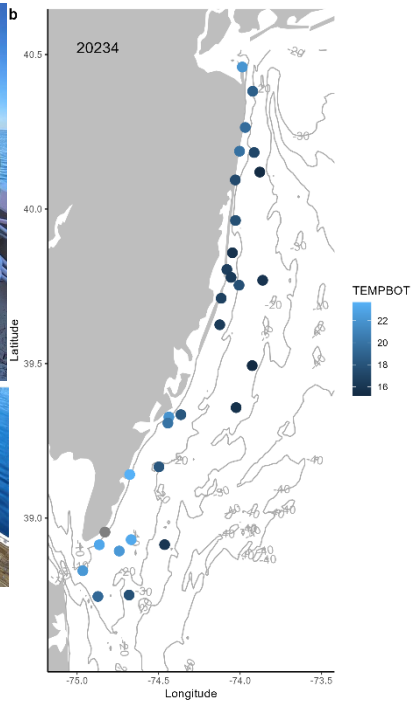
Jason Adolf & Keith Dunton (Monmouth University), Shannon O'Leary (St. Anselm's College)

Campaign 1: Calibration and refinement with NJ Fisheries Surveys



Raritan-Sandy Hook Complex Fishery Resource Inventory

Artificial Reef Ventless Trap Survey



NJ Ocean Trawl Survey

June 2023 Ocean Trawl Survey
– Preliminary eDNA results

Same species were also abundant in trawl data

RANK	tax_id	sum_counts	RANK	tax_id	sum_counts
1	Nor_sea_robin	969053	41	Str_cusk_eel	3513
2	Am_butterfish	466828	42	Cunner	3267
3	Scup	318787	43	Sheepshead_minnow	3259
4	Bay_anchovy	316006	44	Frigate_or_bullet_tuna	2427
5	Black_drum_or_Spot	308265	45	Spanish_mackerel	2335
6	Weakfish_Cyn	299533	46	Giant_trevally99	1837
7	Windowpane_flounder	259010	47	Am_conger	1735
8	Atl_croaker_(nibea98)	258011	48	Atl_moonfish	1708
9	Brd_striped_anchovy	228311	49	White_perch	1646
10	Atl_menhaden_LS16_or_river_herrings	202719	50	Cobia	1576
11	Summ_flounder	200110	51	Humpback_whale	1281
12	Atl_menhaden_LS17	182120	52	Nor_sennet95	1180
13	Southern_kingfish(nibea95)	180666	53	Planehead_filefish	1124
14	Red_White_or_Spotted_hake	171480	54	Str_bass	1079
15	Black_sea_bass	146605	55	Nor_pipefish	917
16	Smallmouth_flounder	79135	56	Grey_triggerfish	915
17	Nor_kingfish	67599	57	Str_killifish	727
18	Rough_scad	61227	58	Little_tunny_or_skipjack_tuna	692
19	Bluefish	52115	59	Tuna_sp	526
20	Atl_or_nor_sand_lance	46456	60	Nor_stargazer	446
21	Fourspot_flounder	39809	61	Atl_chub_mackerel	406
22	Bottlenose_dolphin_Tursiops_truncatus	32587	62	Red_eye_round_herring	358
23	Thread_herring	30939	63	Dwarf_goatfish	307
24	Sturgeon	30141	64	Crested_blenny_refseq_not_full_length	302
25	Gulf_stream_flounder	25536	65	Great_black_backed_gull_Larus_marinus	248
26	Str_sea_robin	24148	66	Great_black_backed_gull_others	248
27	Atl_menhaden_LS15	22263	67	Atl_salmon	185
28	Tautog	21732	68	Pac_sand_lance	149
29	Summ_flounder99a	20234	69	King_mackerel	148
30	Hogchoker_trinectes	19513	70	Am_eel	107
31	Silver_anchovy	14017	71	Flathead_grey_mullet	79
32	Nor_puffer	13529	72	White_catfish	52
33	Silver_perch(nibea93)	10881	73	Laughing_gull_Larus_atricilla	44
34	Rough_silverside94	7876	74	White_mullet	42
35	Winter_or_Yellowtail_flounder	6581	75	Atl_cod	24
36	Mummichog	6551	76	Atl_herring	19
37	Atl_silverside	5508	77	Inshore_lizardfish	16
38	Seaboard_goby	5053	78	Catfish_sp	12
39	Silver_hake	3994	79	Atl_needlefish	11
40	Str_burrfish	3882	80	Whitefish_Cor	7

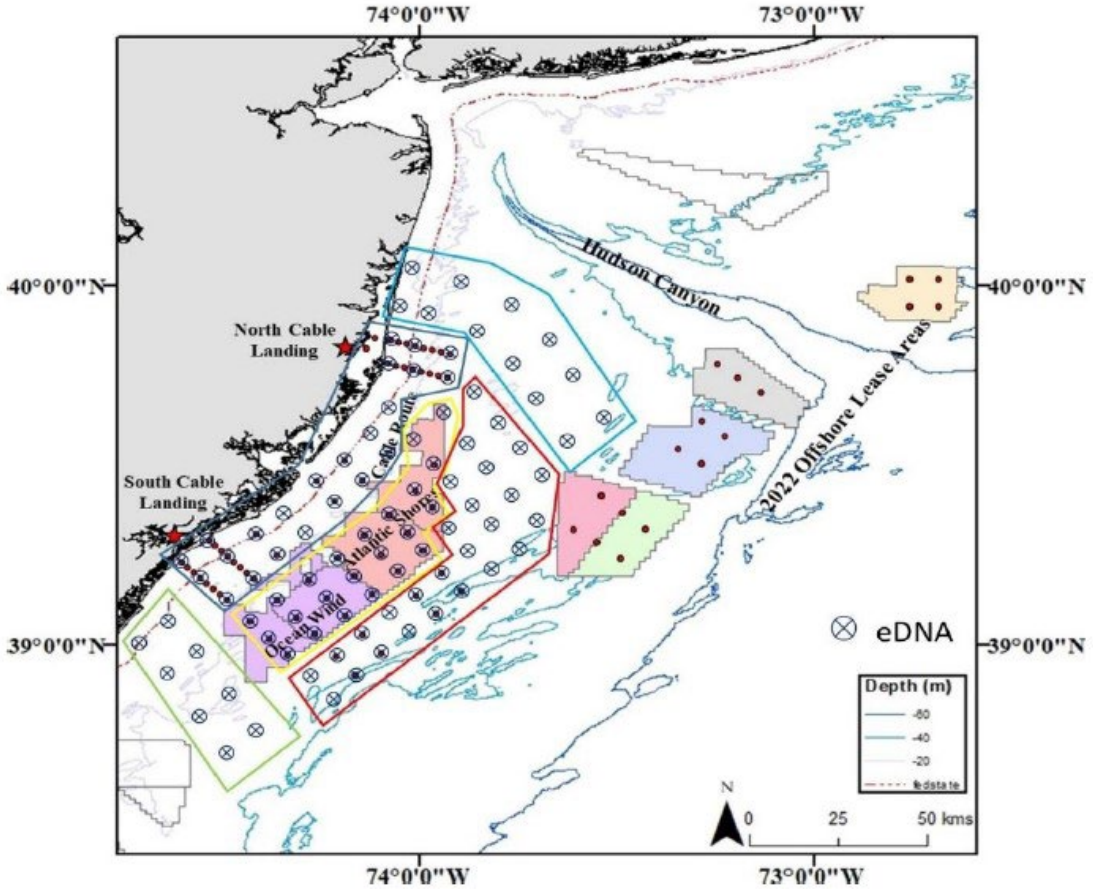
New Jersey Offshore Wind Research and Monitoring Initiative

Assessing Fish Communities Using Environmental DNA

Jason Adolf & Keith Dunton (Monmouth University), Shannon O'Leary (St. Anselm's College)

Campaign 2: Community Science

Campaign 3: Sampling with Acoustic Telemetry
Campaign 4: Seasonal sampling OSW Development Areas

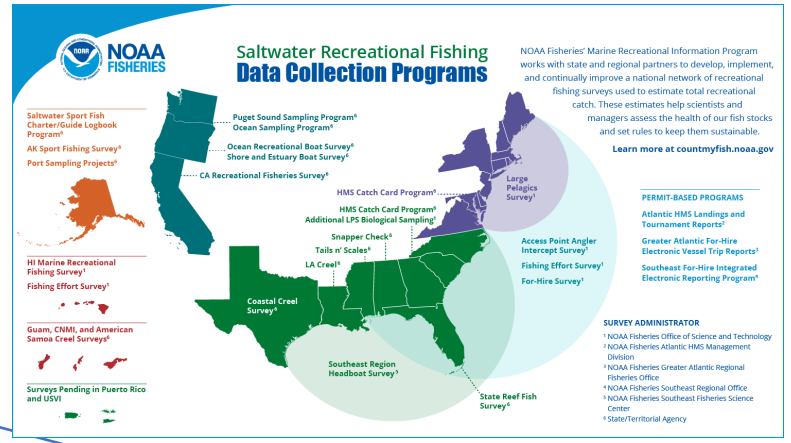


New Jersey Offshore Wind Research and Monitoring Initiative

Recreational Fishery SocioEconomics Survey

Pankaj Lal, Meghann Smith, Aditi Ranjan (Montclair University)

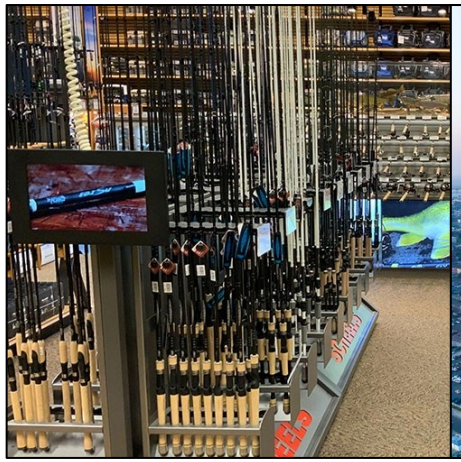
Complements NOAA rec. fishery survey but more specific to NJ OSW

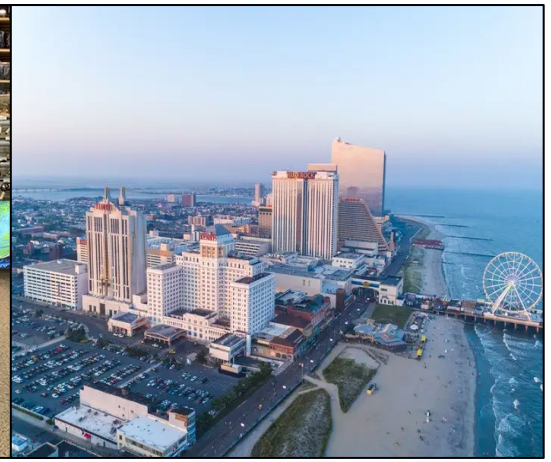


Goal: estimate and track over time the potential effects of OSW on rec. saltwater fisher behavior, expenditures, and perspective

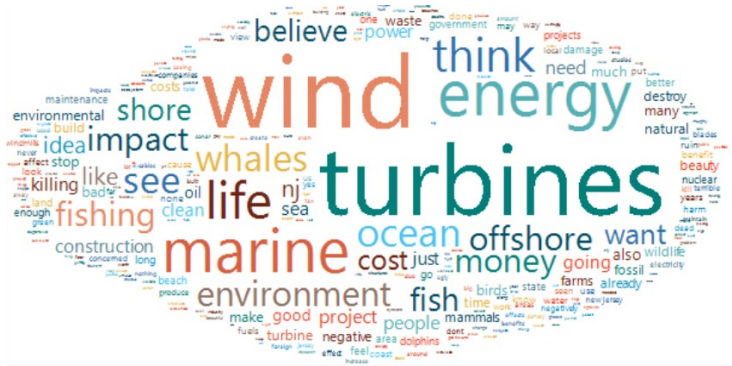
Where? What? When? How?

Fishing (Gear, fuel); Tourism (food & lodging, other recreation)





OSW Need; Fishing success & enjoyment



New Jersey Offshore Wind Research and Monitoring Initiative

Recreational Fishery SocioEconomics Survey

Preliminary Data

Pankaj Lal, Meghann Smith, Aditi Ranjan (Montclair University)

October 2023: Digital survey questionnaire sent to NJ registered saltwater anglers – targeted Long Beach, Atlantic City, Ocean City

>13K responses

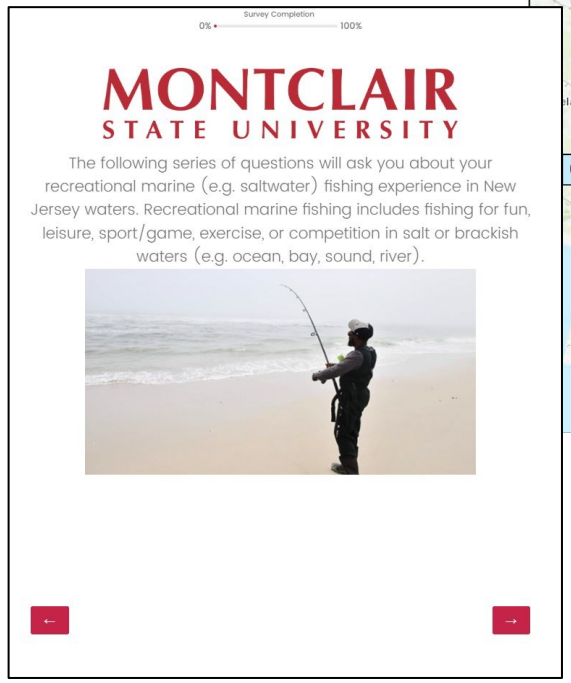
>8K completed surveys (8.5% response rate)

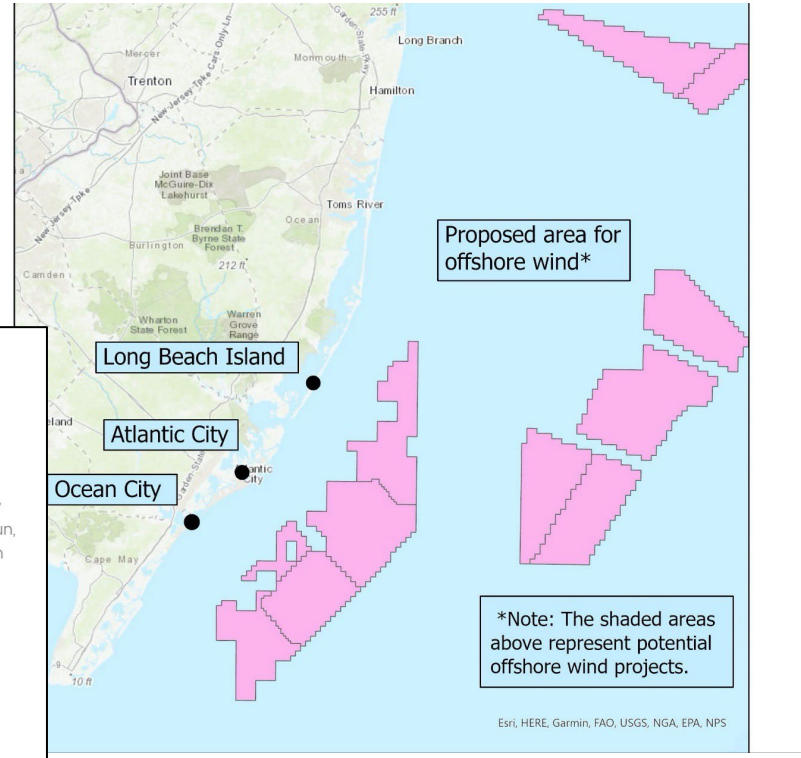
Avg 24 min to complete

Years fishing experience ranged 1-72

Analysis of survey responses is ongoing

Survey will be issued again Fall 2024

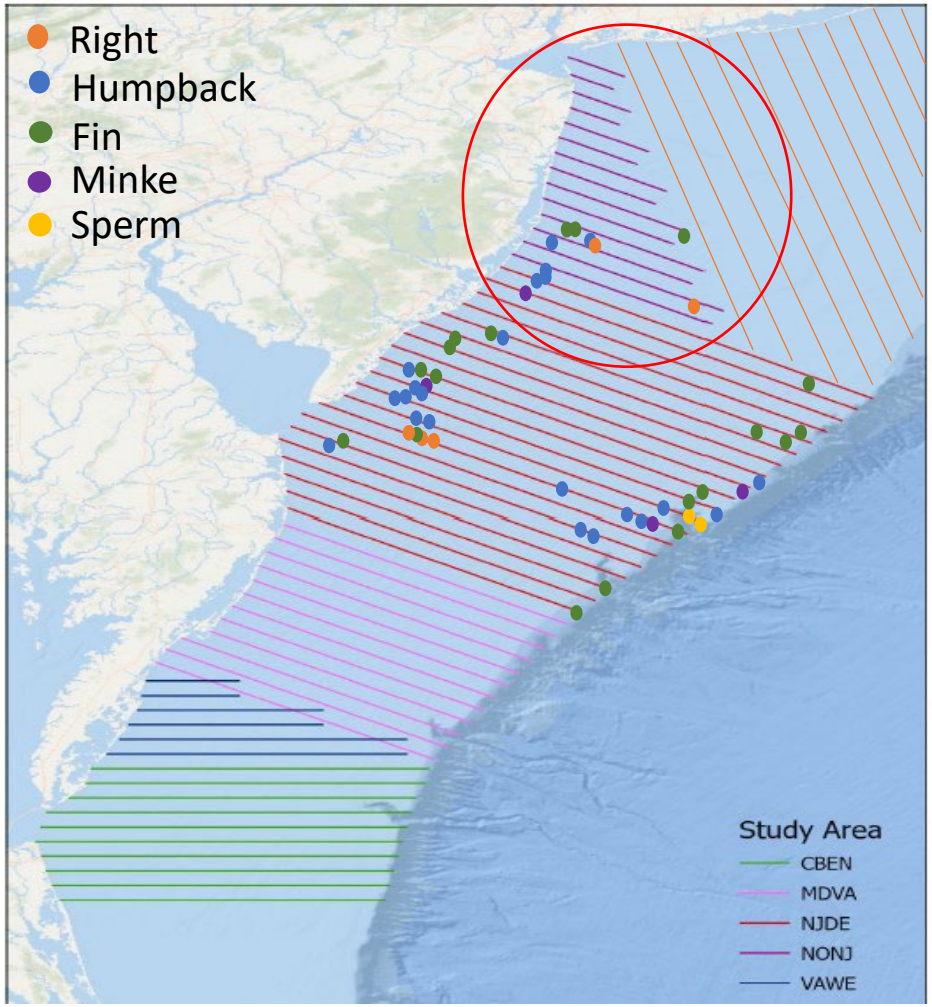




Aerial Right Whale Survey

Tim Cole, Brigid McKenna (NOAA Fisheries – Northeast Fisheries Science Center)

Preliminary Data



13 whales

30 whales

26 whales

Individuals Observed in NONJ & NJDE (Nov-Feb)

5 whales

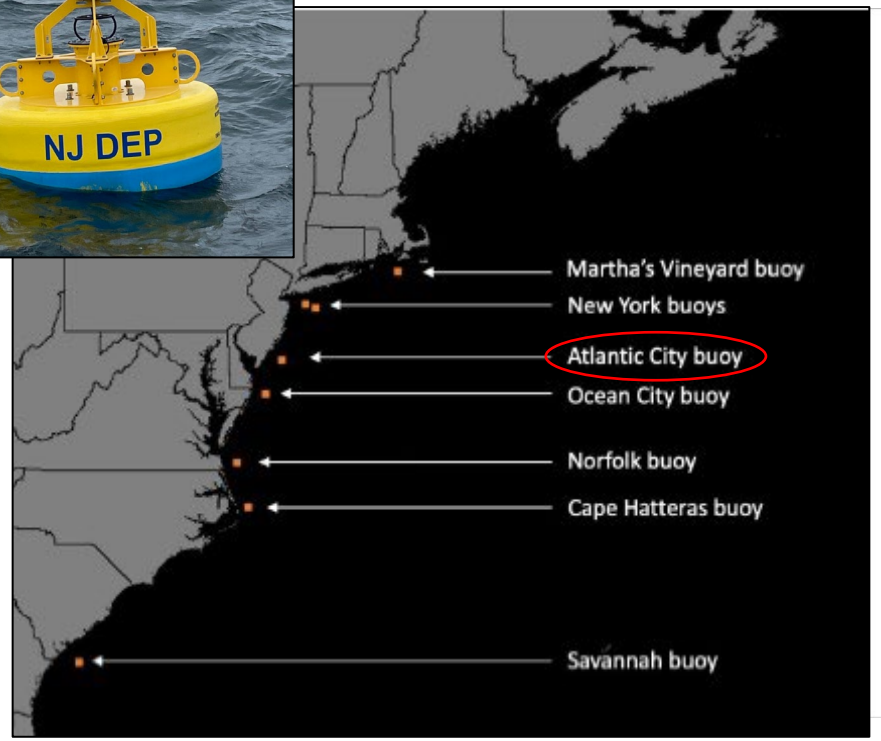
0 whales

2 whales

New Jersey Offshore Wind Research and Monitoring Initiative

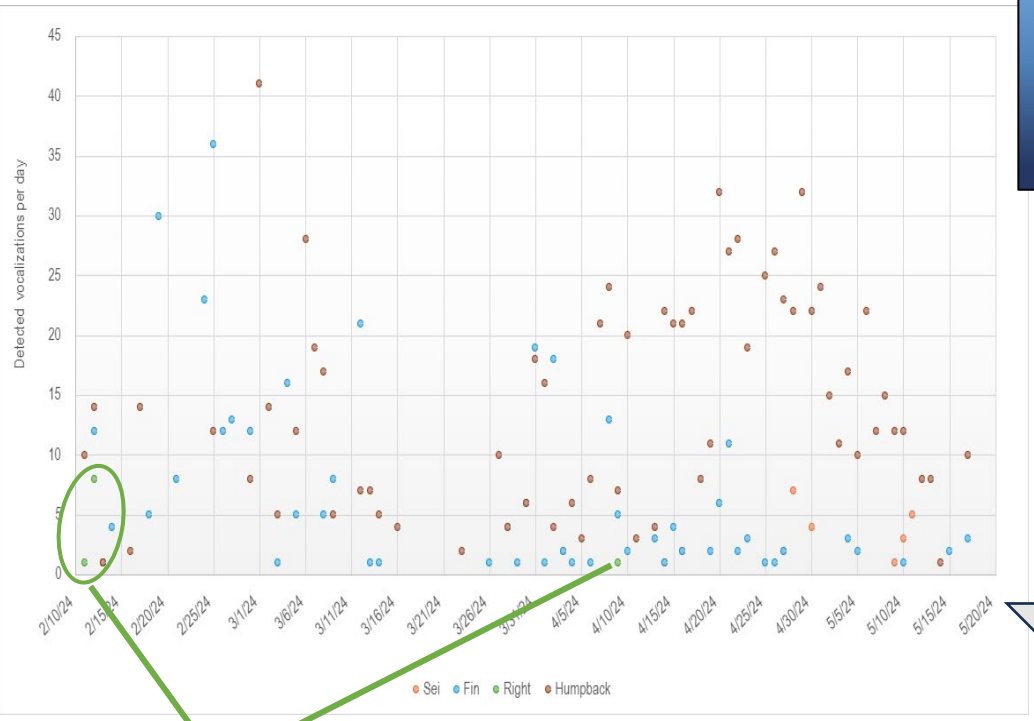
Near Real-Time Passive Acoustic Monitoring for Whales

Mark Baumgartner (Woods Hole Oceanographic Institute)



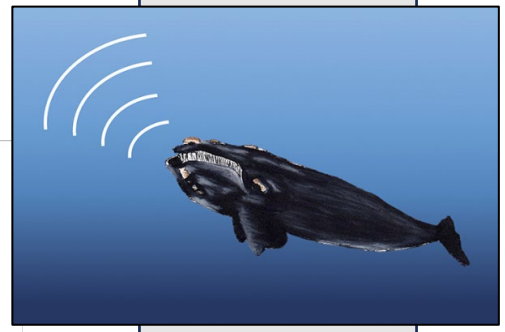
Deployed early February 2024

Preliminary Data



Triggered NARW NOAA Slow Zone

How **real-time** can we get?

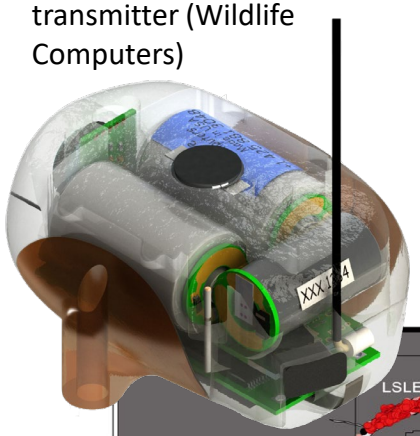


New Jersey Offshore Wind Research and Monitoring Initiative

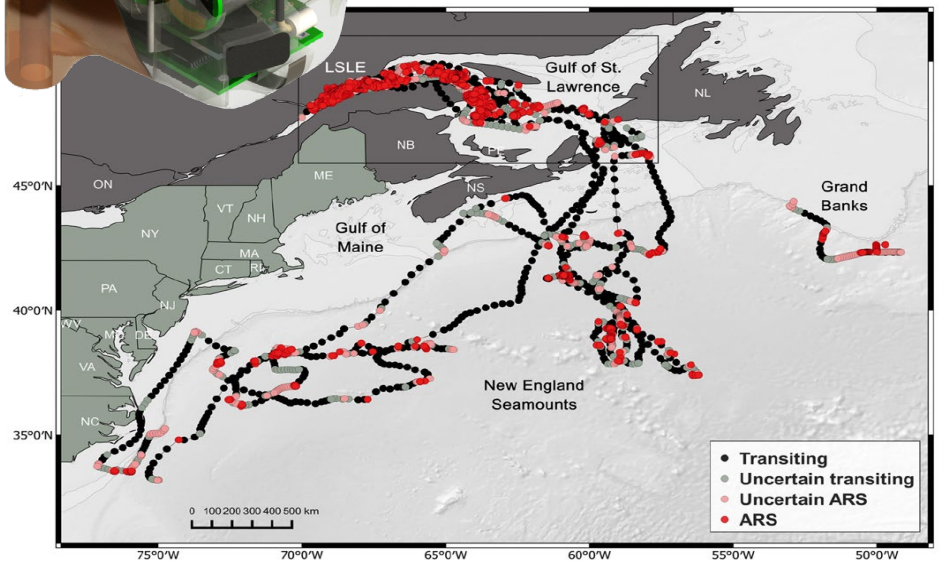
Whale Satellite Tagging and Habitat Use

John Wiedenman & Danielle Brown (Rutgers University); Alex Zerbini (NOAA, University of Washington)

LIMPET satellite transmitter (Wildlife Computers)

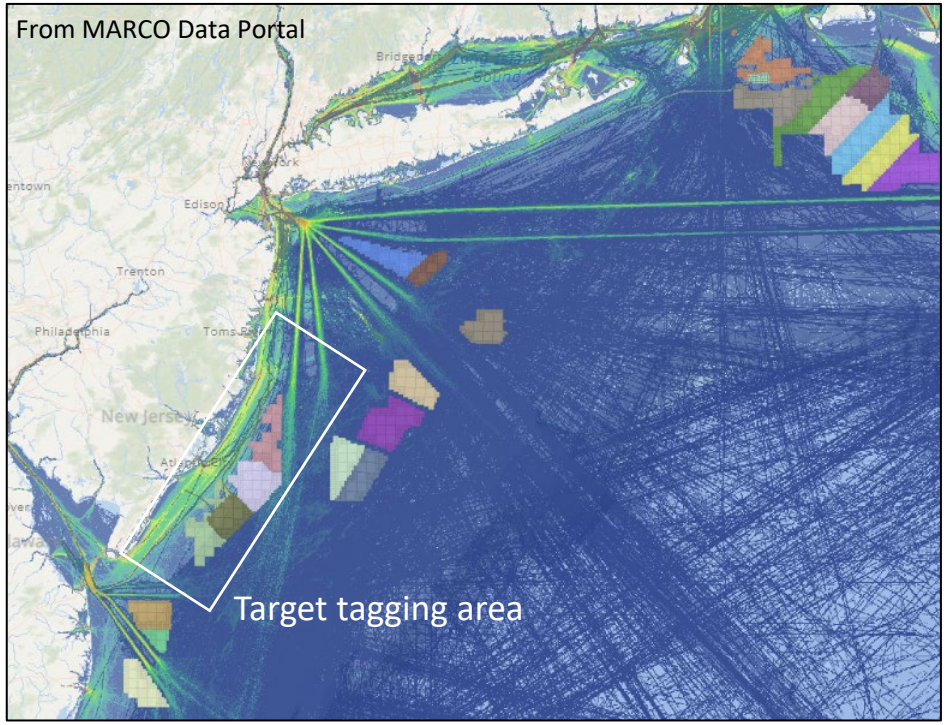


Evaluate movement, distribution & behavior



Example of tracking behavior from Lesage et al. 2017

Evaluate habitat overlap with WEAs and major shipping lanes



AIS vessel traffic showing major shipping lane

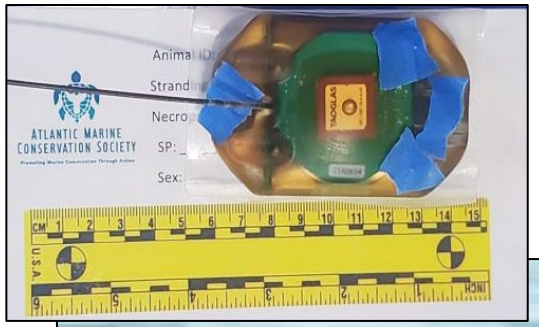
Coordination & Data Sharing

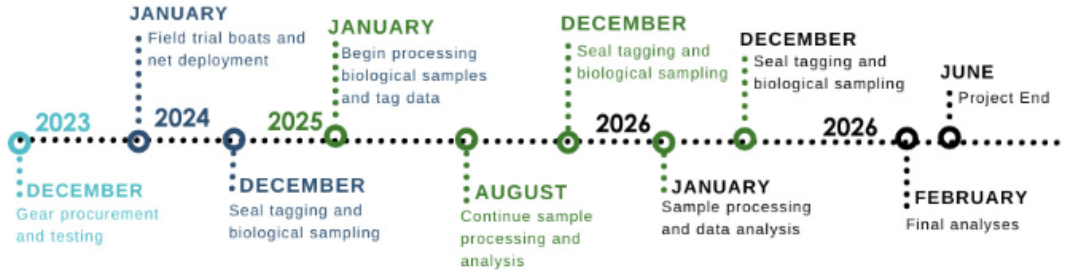
- Coordinate tagging with RUCOOL & Project WOW
- Photos to regional catalogs
- Obs. data to Whale Alert
- Track data to ATN
- Social Media engagement & Community Outreach

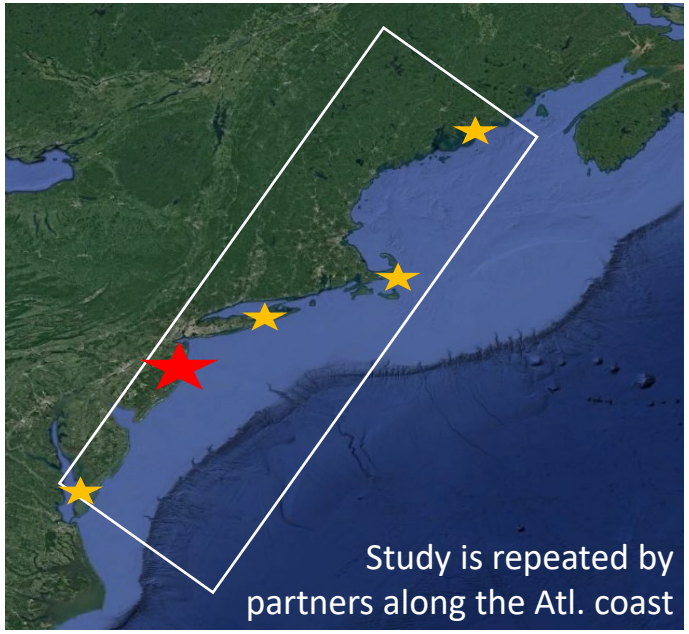
New Jersey Offshore Wind Research and Monitoring Initiative

Harbor Seal Tracking and Health Assessment

Jacalyn Toth Sullivan (Stockton University) & Robert DiGiovanni (Atlantic Marine Conservation Society)







Samples Collected	Testing/ Analysis
Blood samples	Serology/ Blood chemistry, Complete Blood Cell Count
Blood samples	Contaminents
Blood samples	Stress Hormones
Blood samples	Avian Influenza
Biopsy Samples	Diet, Fatty Acid, Stable Isotopes
Nasal/ Ocular/ Rectal Swabs	Avian Influenza
Vibressae	Diet analysis
Blood samples	Morbillivirus
Swabs	Morbillivirus
Fur	Contaminents
Fecal samples	Endoparasites
Fecal samples	Stress Hormones

New Jersey Offshore Wind Research and Monitoring Initiative

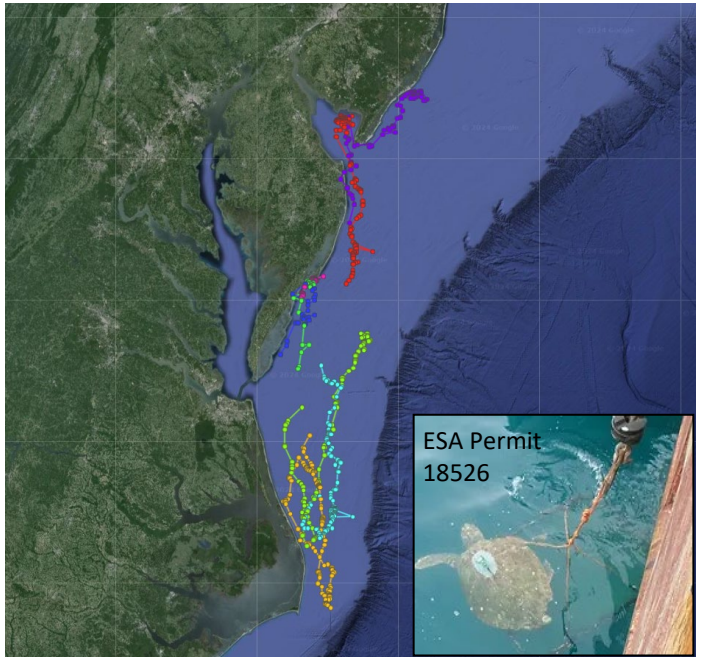
Sea Turtle Telemetry and Health Assessment

Samir Patel (Coonamessett Farm Foundation), Ronald Smolowitz (Coonamessett Farm), Heather Haas (Northeast Fisheries Science Center), Galit Sharon (Roger Williams University), Jim Gutowski (Viking Village Fisheries), Charlie Locke (R/V/ Salvation)

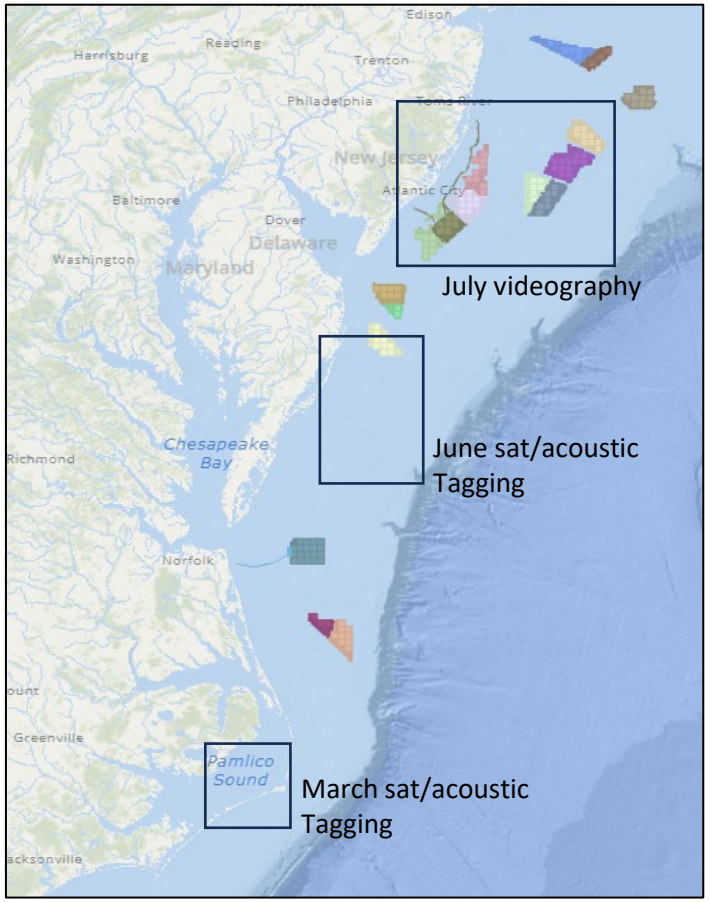
Objective: to evaluate preconstruction turtle distribution and movement, demographic changes, foraging shifts, health condition, and mortality risks

40 turtles over 2 years

Preliminary Data



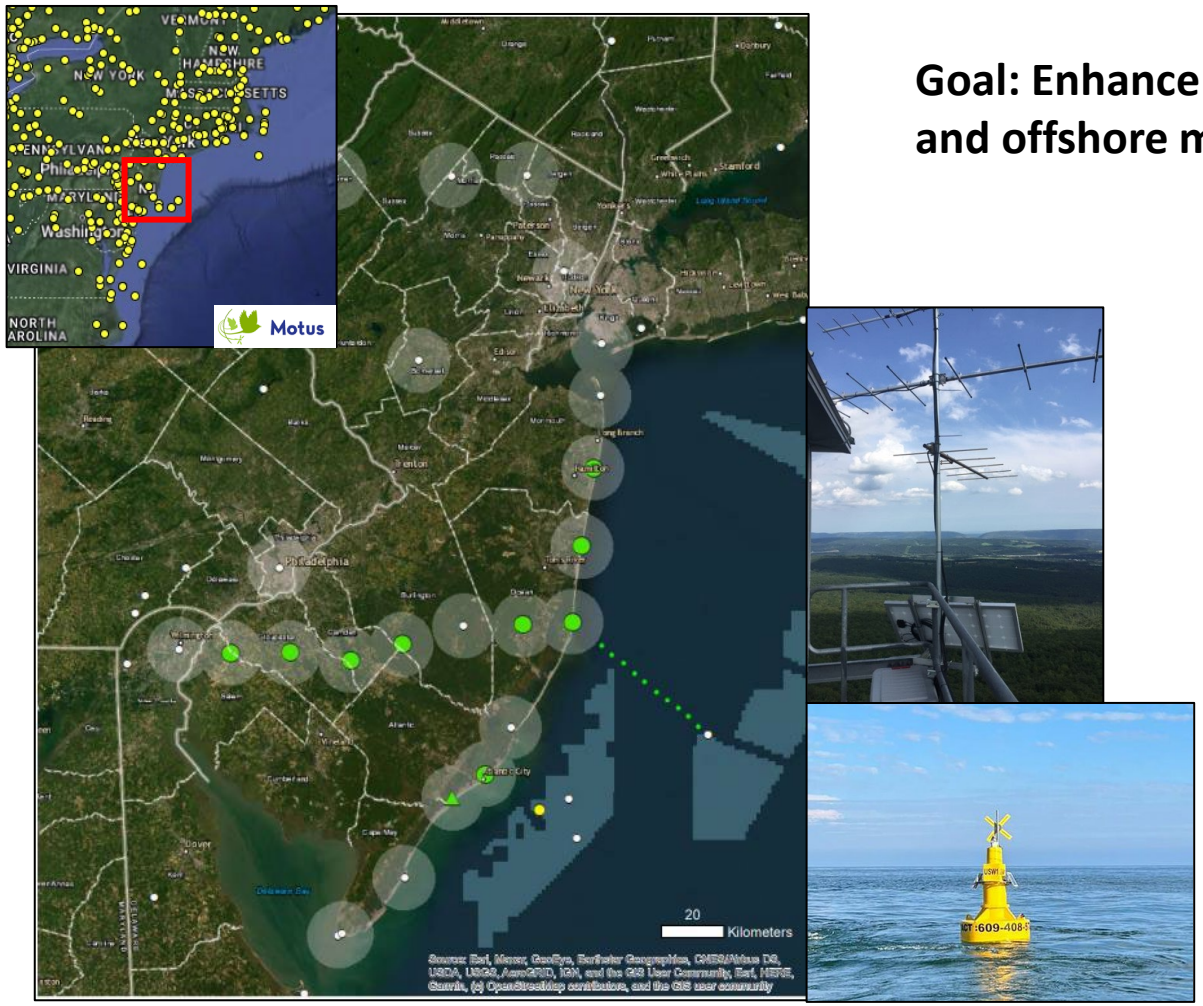
Potential data/samples per turtle	Analysis/Products	Potential WEA Impact
Carapace Size	Demographic information on study population and body condition index	Regional shift in demographics and health indices
Body Depth	Demographic information on study population	Regional shift in demographics
Tail Size	Demographic information on study population	Regional shift in demographics
Weight	Demographic information on study population and body condition index	Regional shift in demographics and health indices
Blood	Blood chemistry, stable isotopes, hormone levels	Shifts in health indices, stress levels, and foraging preferences
Skin	Stable isotope	Shifts in foraging preferences over larger time scale.
Cloacal lavage	Nematode presence, gut microbiome community, prey determination through genetic markers	Shifts in parasite load and foraging preferences over varying time scales
Body Temperature	Health status while captured	



New Jersey Offshore Wind Research and Monitoring Initiative

Motus Wildlife Tracking Network for Birds & Bats

Adam Smith & Todd Alleger (American Bird Conservancy); Evan Adams, Andre Gilbert, & Kate Williams (Biodiversity Research Institute); Stephen O'Malley, Carl Johnsen, & Benjamin Riker (Ocean Tech Services); Lisa Kiziuk, Alison Fetterman, & Aaron Coolman (Willistown Conservation Trust /Northeast Motus Collaborative)



Goal: Enhance NJ's capacity for monitoring bird and bat migrations and offshore movements through WEAs

Task 1: Review and assess site selection

Task 2: Coordinate with landowners/managers, lease holders

Task 3: Deploy/maintain 10 land & 10 ocean-based Motus stations

Task 4: Develop calibration protocols & assess detection ranges

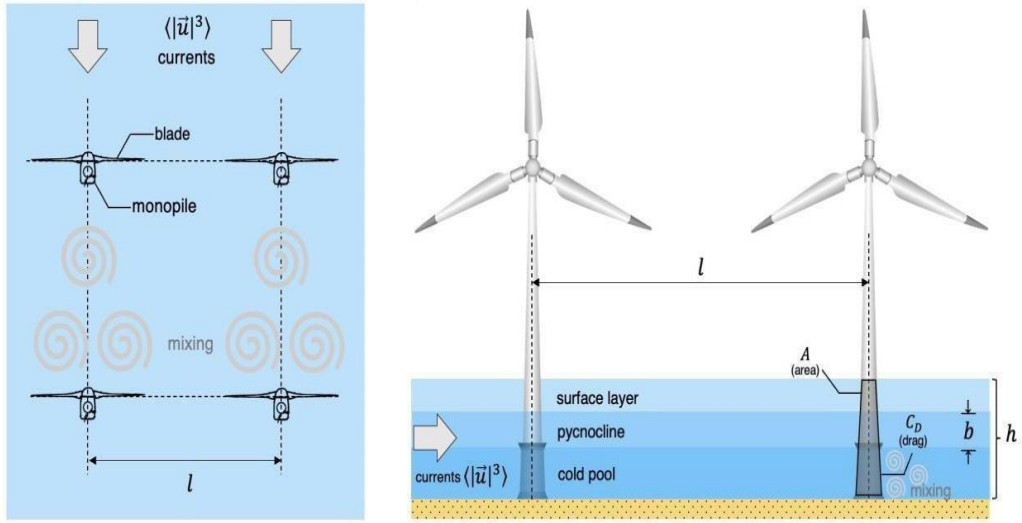
Task 5: Identify annual maintenance & data management costs

New Jersey Offshore Wind Research and Monitoring Initiative

Potential Impact of Turbines & Foundations on the Cold Pool

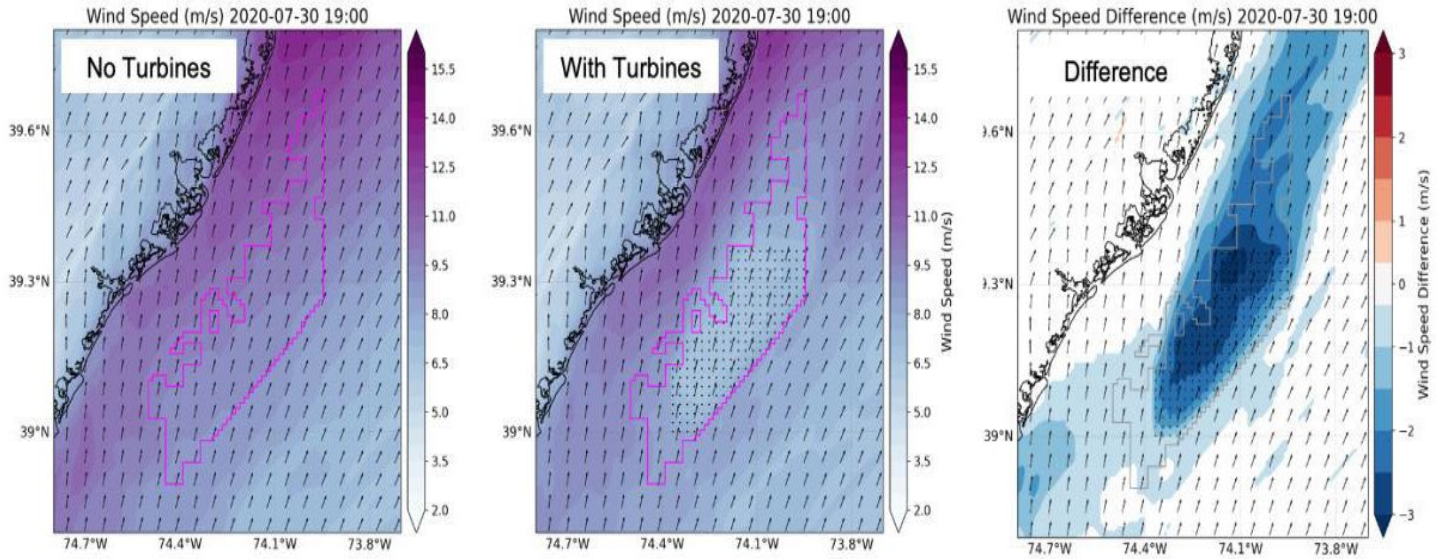
Travis Miles & Fernando Pareja-Roman (Rutgers University)

Study 1: Model time scales of hydrodynamic impacts to water column mixing



Schematized OWF to be used in analytical models based on Carpenter et al (2016).

Study 2: Model impacts of turbine wind wakes on ocean stratification



An example snapshot of the peak difference in wind speed at hub-height in our preliminary 1km RUWRF model domain with and without 15 MW turbines at 2km spacing, and the difference (right panel).

New Jersey Offshore Wind Research and Monitoring Initiative

Observing Guidance: Turbines as Monitoring Platforms

Josh Kohut, Mike Crowley, Doug Zemeckis, & Kaycee Coleman (Rutgers University); Tony MacDonald & Tom Herrington (Monmouth University)
Kris Ohleth & Lisa DeMarisco (Special Initiative on Offshore Wind); Rebecca Green & Chris Hein (National Renewable Energy Lab)

NJ OSW Solicitation 3

Attachment 8

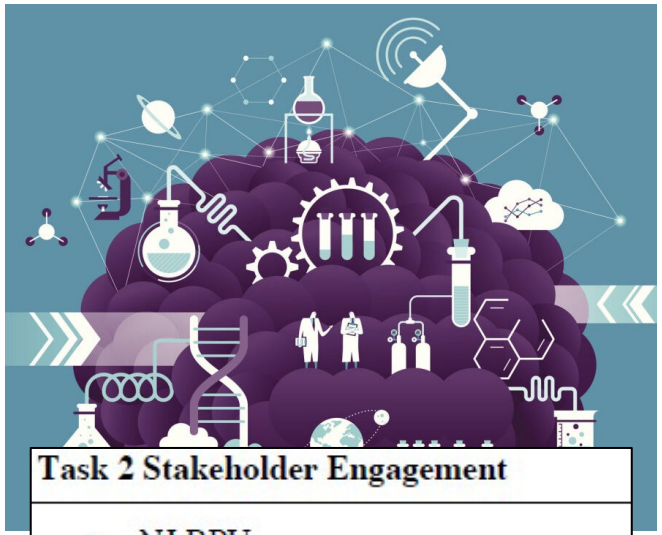
Offshore Wind Infrastructure Monitoring Plan Requirements

The Applicant shall develop a plan for the use of offshore wind infrastructure including turbine arrays, foundations, and substations as environmental and ecological monitoring platforms that can contribute to relevant regional monitoring, observing, and research efforts.

- This plan for co-located monitoring equipment must identify and describe the incremental investment and implementation plan to incorporate and integrate multiple sensors, platforms, and data systems on offshore wind infrastructure. The plan must articulate how the monitoring will align with the New Jersey RMI and regional research objectives, including contributing to:
  - Environmental and ecological baseline and monitoring frameworks;
  - Understanding changes to marine resources from established baselines during the construction and operation of wind turbines; and
  - Integration of existing and novel scientific approaches and platforms.
- The plan shall consider the entire footprint of the Project including wind farm area, cable routes, landfall locations, and upland routes, and shall address how implementation of the plan will inform outstanding questions related to and reduce impacts associated with wind farm construction and operation.
- The plan shall align with the Data Management and Availability plan as described in Attachment 7.
- The plan shall describe how the applicant will work collaboratively with and leverage relevant work from federal, state, academic institutions, other ocean user groups, developers of other wind farm projects in the region, and regional science entities to develop and implement the plan.
- The Applicant is encouraged to review the following resources posted to the Solicitation documents page of the BPU's Solicitation Website in the development of their plan.[1]

OSW Developer Infrastructure Monitoring Plan

Conceptual Plan for Regional Monitoring System



Task 2 Stakeholder Engagement

- NJ BPU
- NJDEP Environmental Resources Offshore Wind Working Group
- Wind developers
- BOEM and other federal entities
- NYSERDA and other state entities
- IOOS
- Regional Wildlife Science Collaborative
- ROSA
- Fishers and other ocean users
- eNGOs

Conceptual Plan for Regional Monitoring System

↓

***What* should be monitored?**

***How* should it be monitored/measured?**

↓

Guidance on observing system components
Guidance on deployment methodology
Guidance on data quality/management standards

↓

Inform future OSW Solicitations
Inform developer monitoring plans

Register for May 31 webinar of results

Looking Ahead… Projects in Development

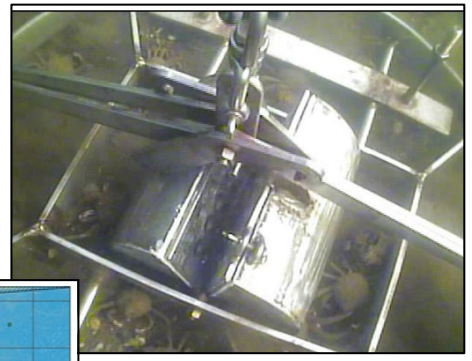
Not Yet Approved:

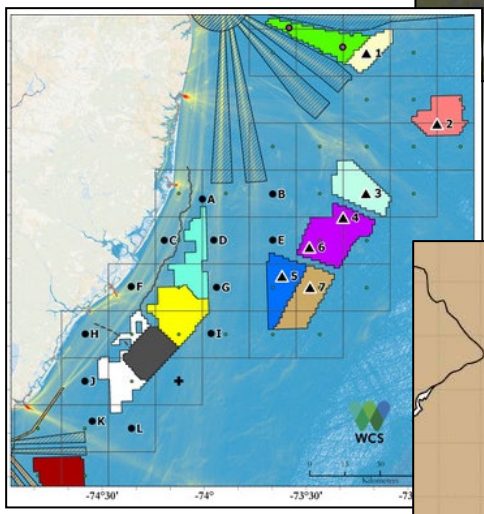
Proposals in Development:

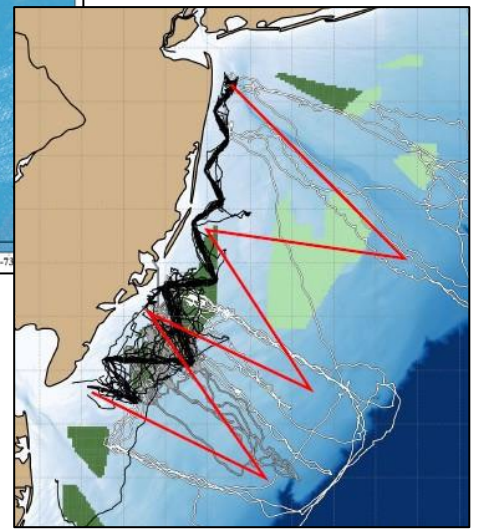
- Synthesis and gap analysis for benthic habitat data
- Archival PAM network for monitoring cetaceans
- Continued (glider) environ. & ecological baseline

Concept Sketches in Development:

- Surfclam mitigation workshop
- Plankton monitoring
- Elasmobranch distribution trends
- Cable EMF and heat transfer
- BRUV/Artificial Intelligence
- Fish community adaptation







New Jersey's Offshore Wind Research and Monitoring Initiative

Looking Ahead… Research Solicitation

Request for Proposals – approx. $4.75 M

- Non-extractive methods for surveying wildlife and habitat
- Technological innovations in data collection, analysis, and management
- Fishery sustainability and socioeconomic impacts of offshore wind activities
- Identifying and reducing offshore wind noise impacts on marine wildlife
- Characterization of benthic ecosystems and primary productivity
- Assessing bird and bat abundance, migration patterns, and risk exposure associated with offshore wind
- Current RMI Short-term, Highest-Priority Research & Monitoring Needs

<u>RFP administered by New Jersey Sea Grant Consortium:</u>

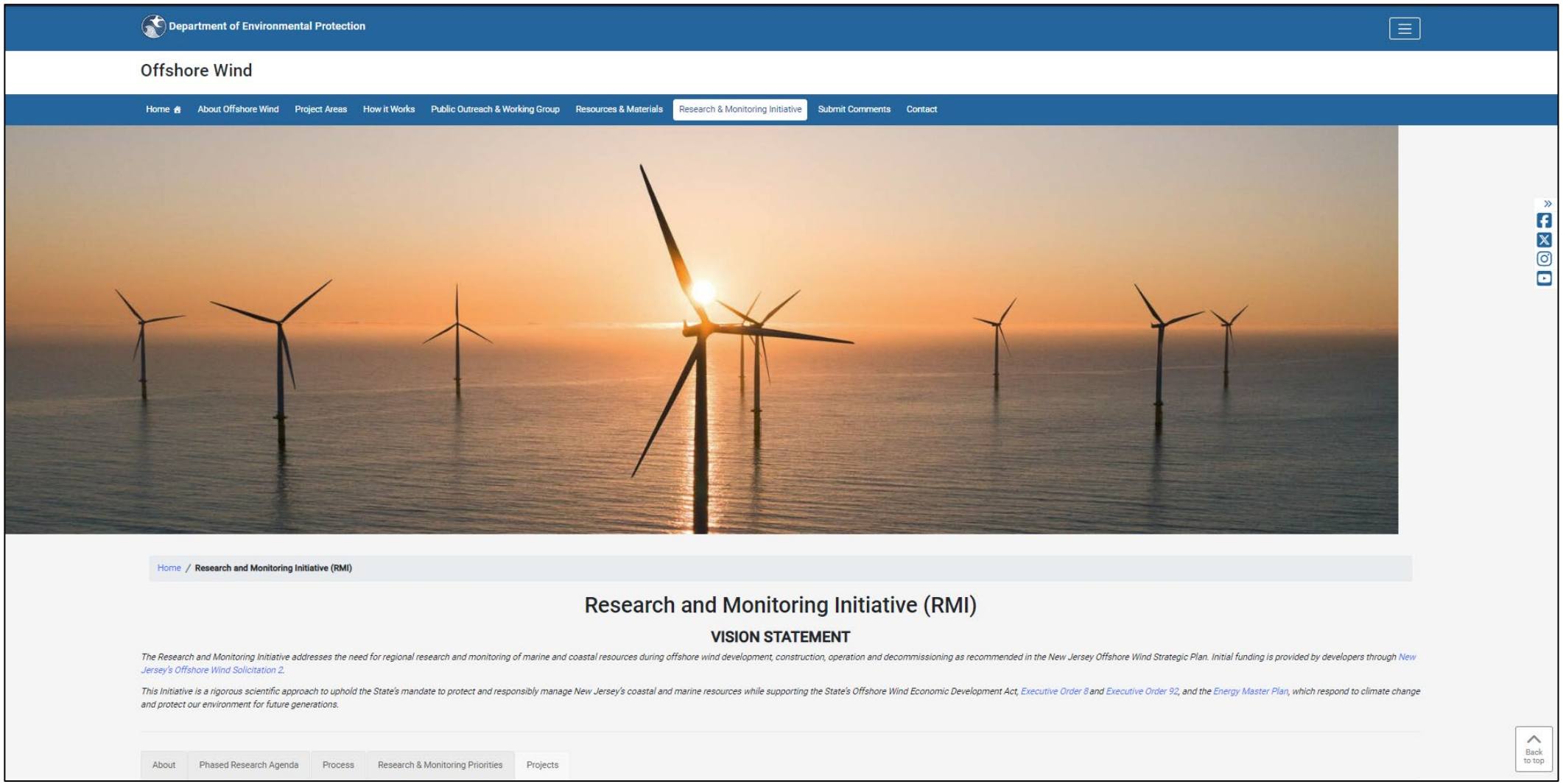
Distribute RFP

Coordinate Subject Matter Expert reviewers

Convene Technical Scoring Panel

Make Funding Recommendations to RMI

New Jersey Offshore Wind Research and Monitoring Initiative

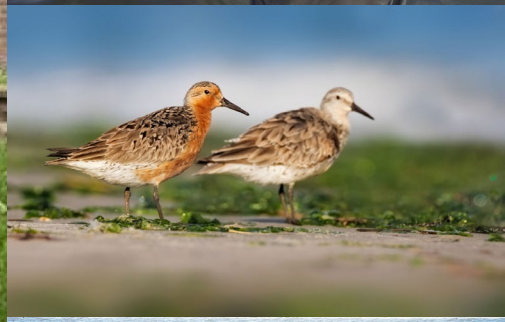
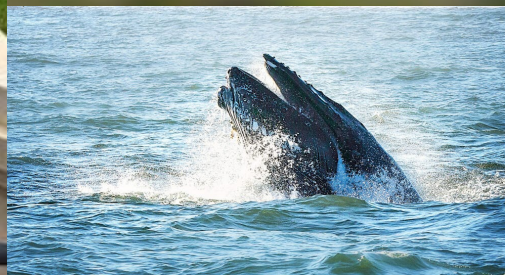


https://dep.nj.gov/offshorewind/rmi/#projects

Thank You!





Research partners and collaborators at the 2nd Annual RMI Symposium on May 17th, 2024

Review of *draft* RMI Research Needs

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 RMI projects
- As new science, needs, and opportunities arise
  - Regional Wildlife Science Collaborative for Offshore Wind, State of the Science, NOAA Fisheries, Fish Forward
  - Stakeholder interest

Short-term Highest Priority Research & Monitoring Needs → Research & Monitoring Needs

Current

- Data management
- Environmental change
- Benthos
- Birds
- Bats (2)
- Fishes & Invertebrates (2)
- Sea Turtles
- Marine Mammals (2)
- Fisheries (3)

Draft Update

- Coordination
  - Research Coordination
  - Data governance
- Technological Innovation
- Mitigation Research & Development
- Habitats & Ecosystems
  - Oceanographic & Atmospheric Change
  - Habitat Impacts
  - Ecosystem Change
- Fisheries
- Birds & Bats
- Fishes & Invertebrates
- Sea Turtles
- Marine Mammals

Research & Monitoring Needs

Highlights

Fisheries

- “Project should employ and collaborate with New Jersey fishermen when possible.”

Birds & Bats

- “Improve and inform OSW collision risk models.”

Multiple taxa

- Sublethal impacts such as health, reproduction, fitness, and bioenergetic consequences

Comments on Research Needs

Coordination

Research Coordination

- Advance regional and cross-sector (i.e., academia, state and federal government, wind developer, fishing industry, etc.) OSW research and monitoring coordination.

Data Governance

- Enhance consistency in governance of OSW research and monitoring data, including standardization of data collection methods, processing, analysis, housing, and QA/QC.

1) Is there anything that is unclear or missing that should be added/clarified in the current text?

2) What are the immediate needs in the next 2-3 years? What about the next 5-10 years?

3) What are the important data gaps?

Comments on Research Needs

Technological Innovation

Develop, test, and/or refine new tools (e.g., sensors, systems, or methods) for OSW research and monitoring to improve efficiency, quantity, quality, and/or utility of data, data collection, or decision-making processes. Technological advances may include autonomous, remote sensing, and AI tools for detecting, deterring, and mitigating OSW impacts on wildlife, environments, and fisheries.

1) Is there anything that is unclear or missing that should be added/clarified in the current text?

2) What are the immediate needs in the next 2-3 years? What about the next 5-10 years?

3) What are the important data gaps?

Comments on Research Needs

Mitigation Research & Development

Develop and evaluate potential strategies, technologies, tools, management policies, or other methods to mitigate the effects of OSW development on wildlife, environments, and fisheries. Investigate strategies to reduce or address OSW impacts to regional survey efforts. Mitigation research may include such topics as stock enhancement, avian collision curtailment, noise reduction, vessel collision with wildlife, etc.

1) Is there anything that is unclear or missing that should be added/clarified in the current text?

2) What are the immediate needs in the next 2-3 years? What about the next 5-10 years?

3) What are the important data gaps?

Comments on Research Needs

Habitats & Ecosystems

Oceanographic & Atmospheric Change
Examine potential effects of OSW development on meteorological and oceanographic conditions, including physical, chemical, and other processes and features (e.g., light and sound conditions, hydrodynamics, water column stratification, wind wake effects, etc.). Develop forecasting models to project future dynamics and conditions.

Habitat Impacts
Evaluate the effects of OSW development and oceanographic processes on sensitive coastal and marine habitats (e.g., artificial reef, prime fishing areas, surfclam beds, SAV, estuaries, etc.). Develop and/or test nature-based designs (i.e., green infrastructure that increases biodiversity and/or measurable benefits for ecosystem).

Ecosystem Change
Examine the effects of OSW development at ecosystem/landscape scales, including the connection between the oceanographic or atmospheric processes, habitats, and wildlife. Examine spatial and temporal dynamics in biological productivity (e.g., zooplankton distribution, primary productivity), trophic interactions, biomass, or other measures of resilience and/or recovery from disturbance.

1) Is there anything that is unclear or missing that should be added/clarified in the current text?

2) What are the immediate needs in the next 2-3 years? What about the next 5-10 years?

3) What are the important data gaps?

Comments on Research Needs

Fisheries

Develop, implement, and assess methods for evaluating and addressing direct and/or indirect effects of OSW on commercial and recreational fisheries, including changes in socioeconomics, sustainability, access, and cumulative impacts. Projects should employ and collaborate with New Jersey fishermen when possible.

Fishes & Invertebrates

Synthesize existing information and assess (using non-extractive methods when possible) potential effects of OSW development on the distribution, connectivity, behavior, health, reproduction, or other vital metrics for fish and invertebrate communities and species of concern. Evaluate potential environmental (e.g., water chemistry, sound, Cold Pool, etc.), biological (e.g., prey distribution, spawning aggregations, etc.), or other drivers of movement, behavior, and changes in fitness.

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Comments on Research Needs

Birds & Bats

Assess seasonal distribution, abundance, migration, and behavior (e.g. flight altitudes) for species likely to use OSW energy areas in the NJ/NY Bight using best available technology (e.g., GPS, radio/Motus, and satellite tags; audio-visual surveys; collision sensing, etc.). Evaluate potential environmental (e.g., atmospheric conditions, light, etc.), biological (e.g., prey distribution), or other drivers of movement and behavior, including related fitness and/or bioenergetic consequences. Improve and inform OSW collision risk models (e.g., attraction vs displacement, macro vs micro-avoidance behavior, habituation, etc.).

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3) What are the important data gaps?

Comments on Research Needs

Sea Turtles

Evaluate baseline and potential effects of OSW development on environmental and biological drivers of seasonal distribution, abundance, movement, and habitat use for sea turtle species in the Mid-Atlantic Bight. Evaluate effects of OSW development (e.g., attraction vs avoidance) and other stressors (e.g., oceanographic conditions, sound, vessel traffic, etc.) on turtle movement, behavior, fitness, and vessel strike risks. Advance emerging methods for sea turtle assessment and survey, including eDNA, remote aerial surveys, tag technology, biochemical assays, modeling, etc.

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2) What are the immediate needs in the next 2-3 years? What about the next 5-10 years?

3) What are the important data gaps?

Comments on Research Needs

Marine Mammals

Evaluate baseline and potential effects of OSW development on seasonal distribution, abundance, movement, and habitat use for marine mammals in the NJ/NY Bight. Evaluate potential environmental (e.g. oceanographic conditions, sound, etc.), biological (e.g. prey distribution), and other drivers of movement and behavior using in situ data collection or modeling techniques. Assess potential attraction or displacement effects of OSW development (e.g. sound, vessel traffic, or other stressors).

1) Is there anything that is unclear or missing that should be added/clarified in the current text?

2) What are the immediate needs in the next 2-3 years? What about the next 5-10 years?

3) What are the important data gaps?

Looking ahead

Survey next week

Research Needs

Upcoming Meetings

Topics

Project update/schedule for ASOW 1

Solicitation 3 Awardees Presentations

- *Environmental Protection Plan*
- *Fisheries Protection Plan*
- *Data Sharing*
- *Infrastructure Monitoring Plan*

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Send Comments

- On offshore wind https://dep.nj.gov/offshorewind/
- RMI Research Needs: survey