Vineyard Wind 1 Update
Massachusetts Fisheries Working Group
July 19, 2024

Vineyard Wind 1 Blade Incident

Public Statements and Notices

- Vineyard Wind Statement on Offshore Incident, July 15, 2024
- Vineyard Wind Announces Safety Response and Debris Recovery Efforts on Nantucket, July 16, 2024
- UPDATE: Vineyard Wind Continues Debris Recovery Efforts on Nantucket, July 17, 2024
- Vineyard Wind Update on Damaged GE Vernova Blade, July 17, 2024
- Offshore Wind Mariner Update No. 106: AW38 Blade Incident, July 17, 2024
- Vineyard Wind Update on Damaged GE Vernova Blade, July 18, 2024

Media Contact:
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cgilvarg@vineyardwind.com
(857) 998-1130

VINEYARD WIND

Thank You

Using the Automatic Identification System and machine learning to improve estimates of development exposure for the scallop fishery in Southern New England

Massachusetts Fisheries Working Group – 7/19/2024

Julia Livermore and Todd Guilfoos

DEM RHODE ISLAND

DIVISION OF MARINE FISHERIES

RHODE ISLAND

THE UNIVERSITY OF RHODE ISLAND

Background – Offshore Wind in SNE

- Block Island Wind Farm – 5 turbines, 30 MW
- Multiple federal commercial scale farms actively under construction, permitted or proposed – hundreds of turbines, multiple GW
- Areas to be developed are current and historic fishing grounds

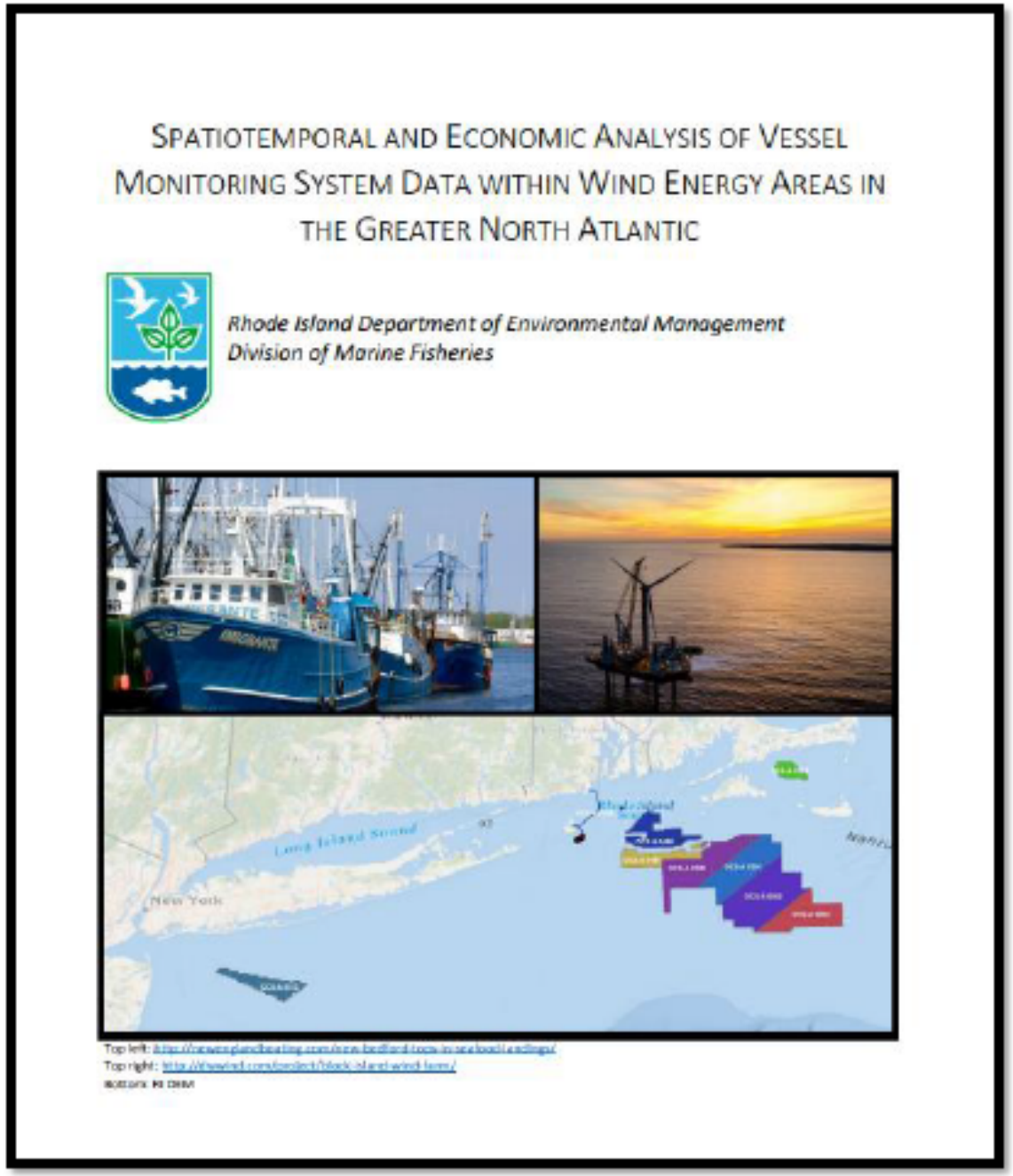
Fisheries Dependent Data (not exhaustive)

Dataset	Description	Challenges
Dealer Reports	Value, amount, and grade of seafood landed	No information about where seafood came from
Vessel Trip Reports/Logbooks	Self-reported effort info (location, gear used, catch, etc.)	Limited reporting based on statistical areas, poor resolution
Vessel Monitoring Systems	Location information for fishing vessels	Not all fisheries required to have, different reporting frequencies
Automatic Identification System	High resolution location information for any vessel	Only required on vessels >65 ft.
NOAA Observer Reports	Highly reliable fisheries observer data on catch, bycatch, gear, location, etc.	Only certain fisheries have observer requirements and limited coverage by vessels

*****None designed specifically for characterizing where fishing is occurring – primarily meant for enforcement or management**

Existing Resources

- NOAA VTR and Observer Revenue Data Model
- VMS Data on NROC/MARCO Data Portals
- RIDEM VMS/VTR/Dealer Revenue Analysis
- Other models in development



SPATIOTEMPORAL AND ECONOMIC ANALYSIS OF VESSEL MONITORING SYSTEM DATA WITHIN WIND ENERGY AREAS IN THE GREATER NORTH ATLANTIC

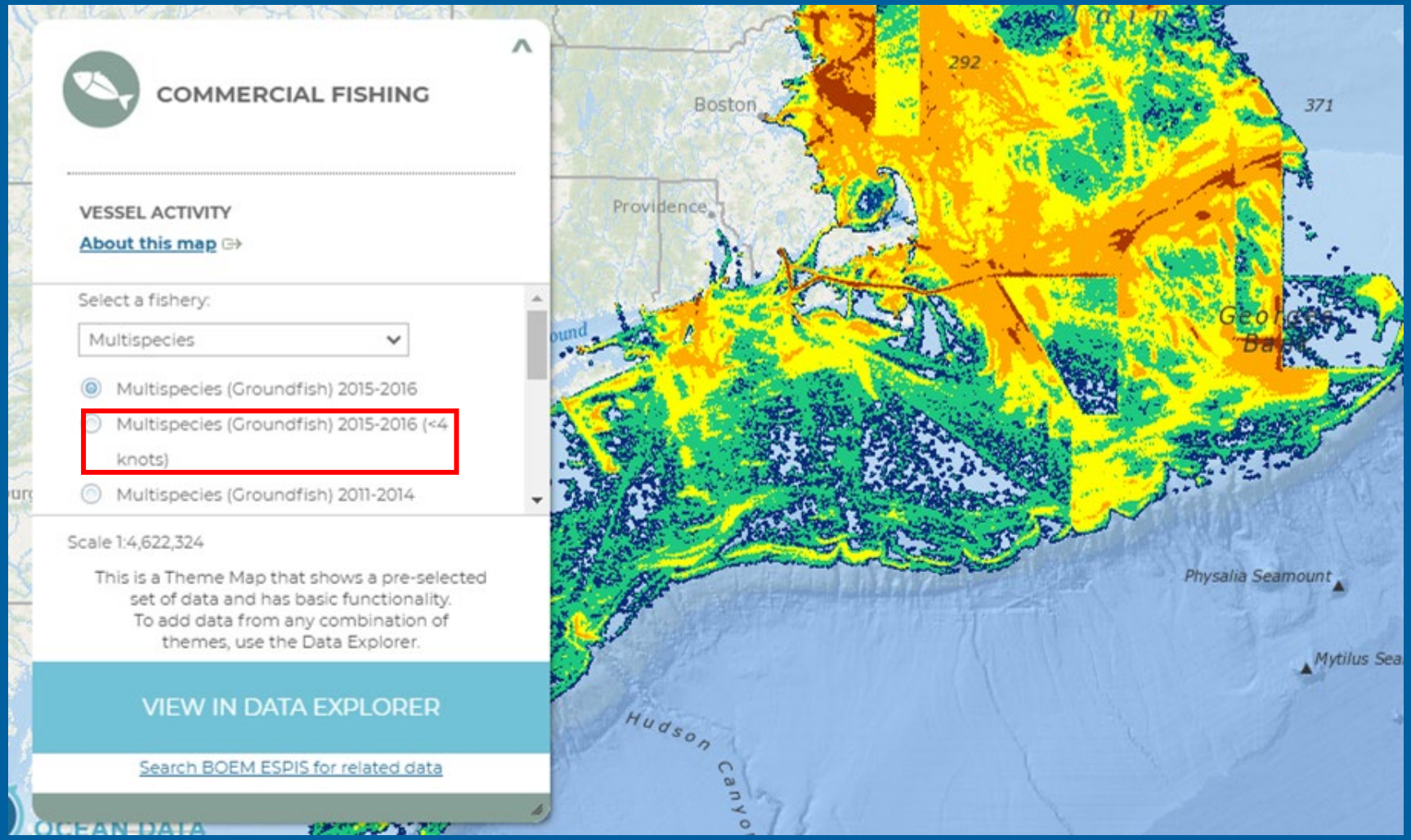
Rhode Island Department of Environmental Management
Division of Marine Fisheries

Key Problem with Existing Approaches

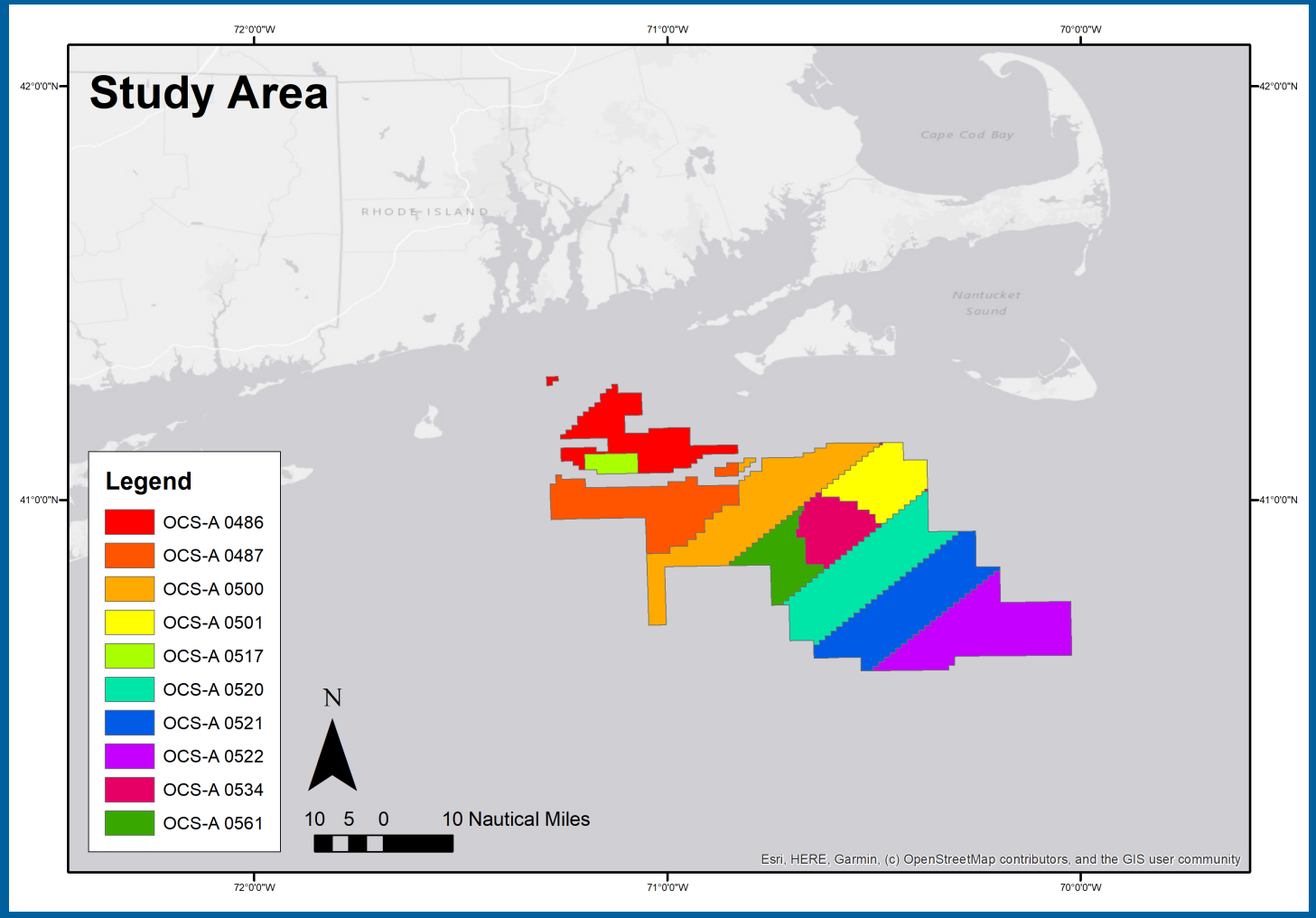
Muench et al. (2017) - On the precision of predicting fishing location using data from the Vessel Monitoring System (VMS)

- Using speed to separate fishing from non-fishing activity is not accurate for most gear types

This is the problem we're focused on addressing!



Study Scope



- 2013-2018 data
- Spatial extent defined at left
- Fishery Management Plans:
  - Atlantic Sea Scallop
  - Northeast Multispecies (groundfish): American plaice, Atlantic cod, Atlantic halibut, Atlantic pollock, haddock, redfish, white hake, winter flounder, witch flounder, yellowtail flounder, and ocean pout (currently prohibited)
  - Monkfish (likely insufficient data)
  - Small-mesh Multispecies: offshore hake, red hake, silver hake
  - Surfclam and Ocean Quahog
  - Atlantic Mackerel, Squid, Butterfish

High Level Methods

- Merged AIS, VMS, VTRs, dealer reports, USCG registry records, and the NOAA Observer data
- Developed a machine learning approach to modeling the probability of fishing based on vessel activity at the FMP level
- Enhanced “feature engineering” by obtaining information on key vessel behavior patterns directly from the fishing industry and commercial fishing research organizations (CFCRI, Mass Fishermen’s Partnership, RI CFRF, and RODA)
- Model trained using merged NOAA Observer Program data where fishing status of vessels is known
- Fishing activity maps are being generated by extrapolating the fitted model to the full non-observer data set and combining with “fallback” to VMS and VTR where applicable

Feature Engineering

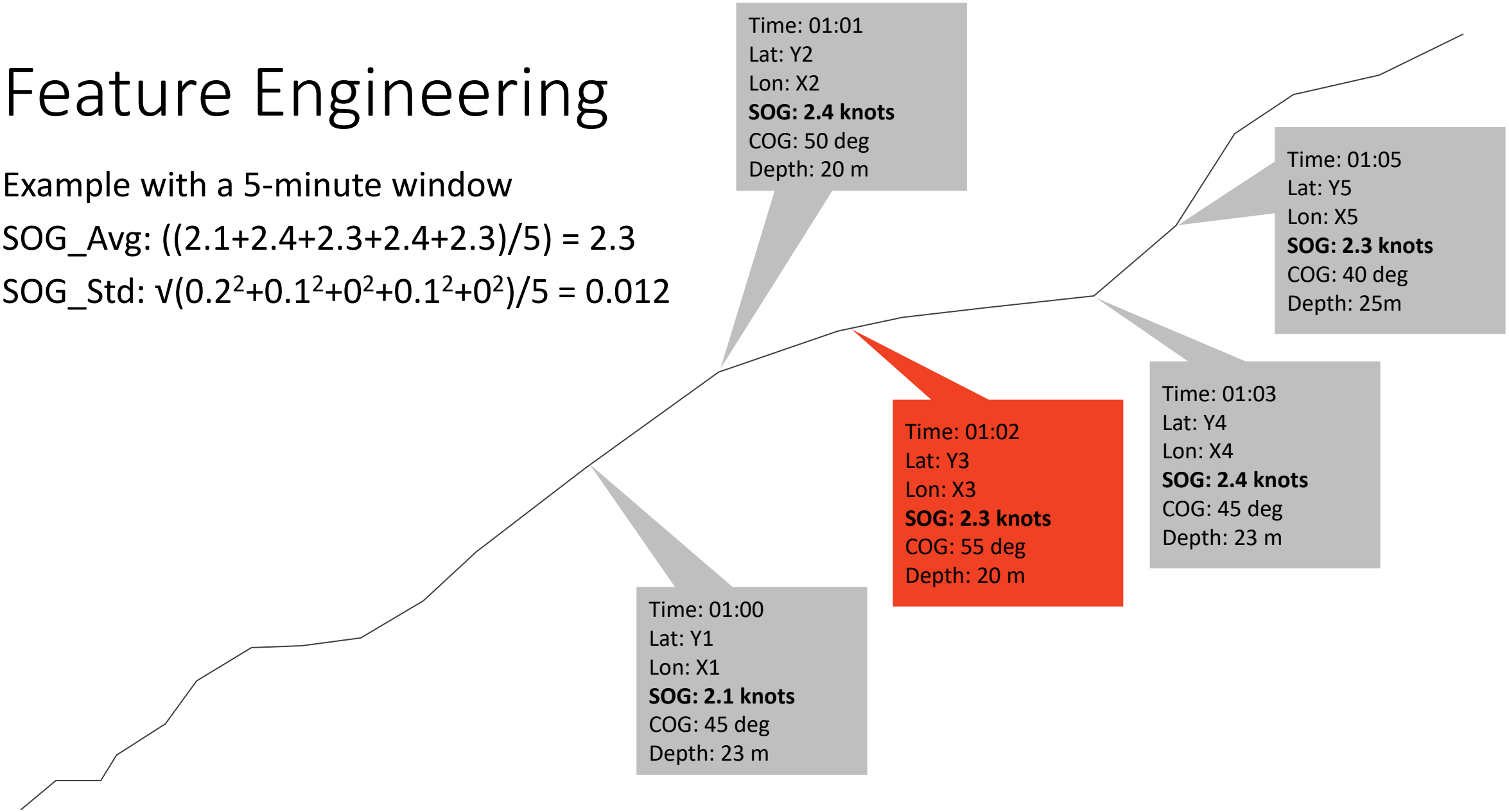
- Moving window approach to estimate fishing or not, per O'Farrell et al. (2017)
- Features engineered on 15-minute windows (based on industry input)
  - SOG_Avg (average speed over ground)
  - SOG_Std (standard deviation of speed over ground)
  - Crow_flies_km (straight line distance from start to end locations)
  - Depth_Avg (average depth)
  - Depth_Std (standard deviation of depth)
  - Moon (moonlight - percentage)
  - Month (month dummy)
  - COG_Avg_Abs_d (average of change in course over ground between consecutive points throughout the window)
  - Weekday (weekday dummy)
  - d_COG_StartEnd (change in course over ground start to end point)

Feature Engineering

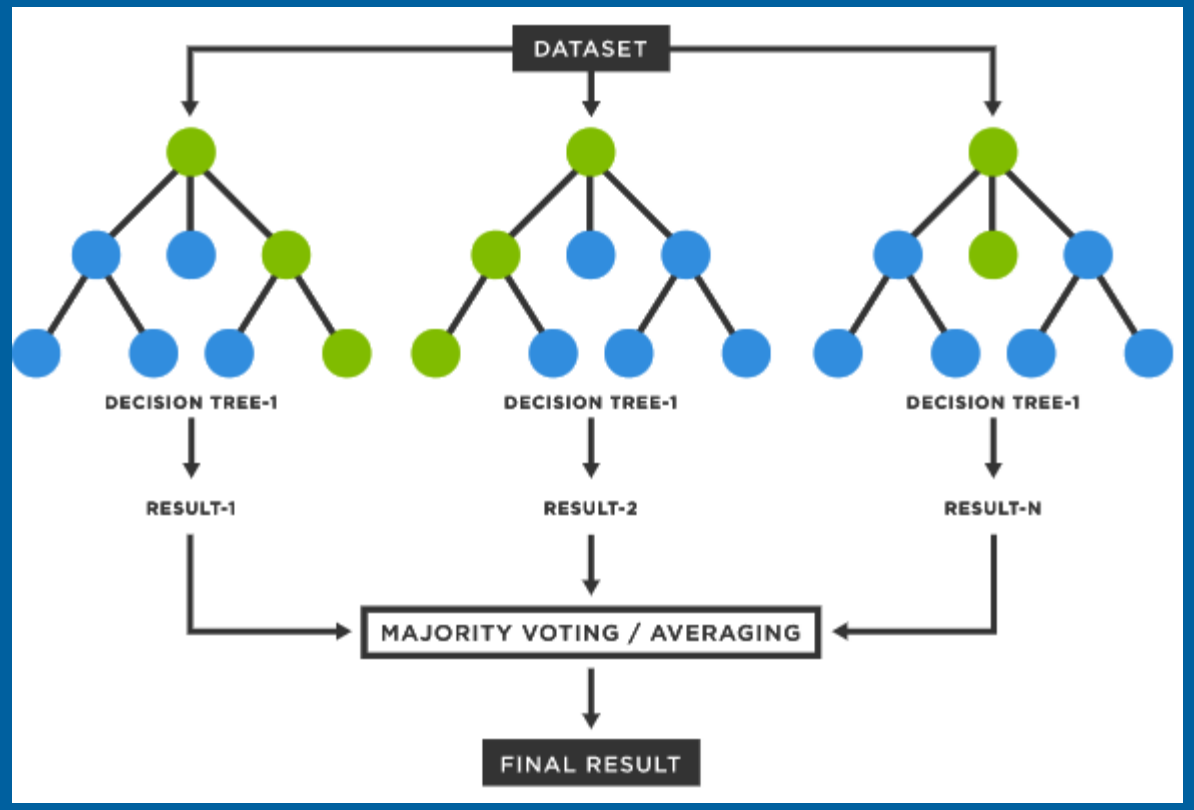
Example with a 5-minute window

SOG_Avg: ((2.1+2.4+2.3+2.4+2.3)/5) = 2.3

SOG_Std: $\sqrt{(0.2^2+0.1^2+0^2+0.1^2+0^2)/5}$ = 0.012



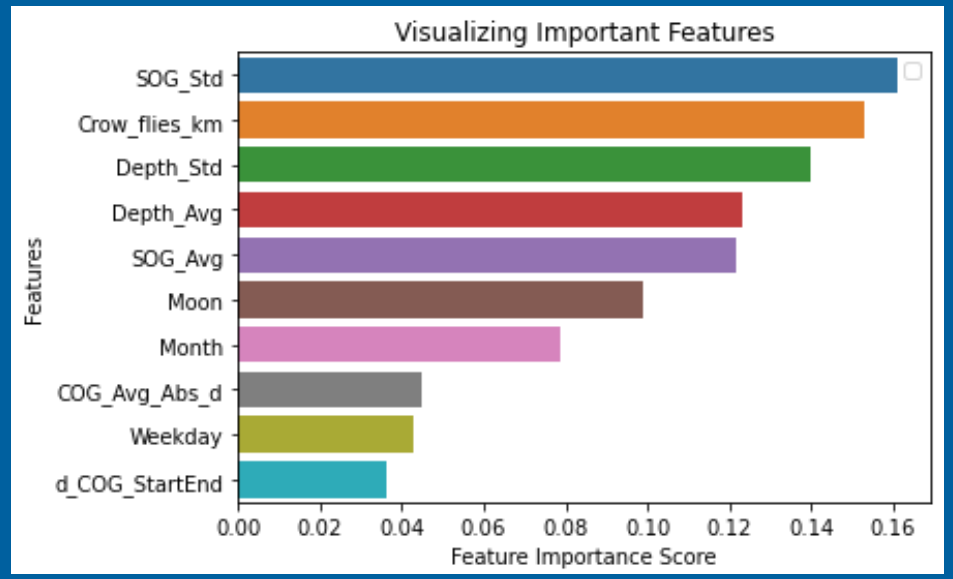
Modeling

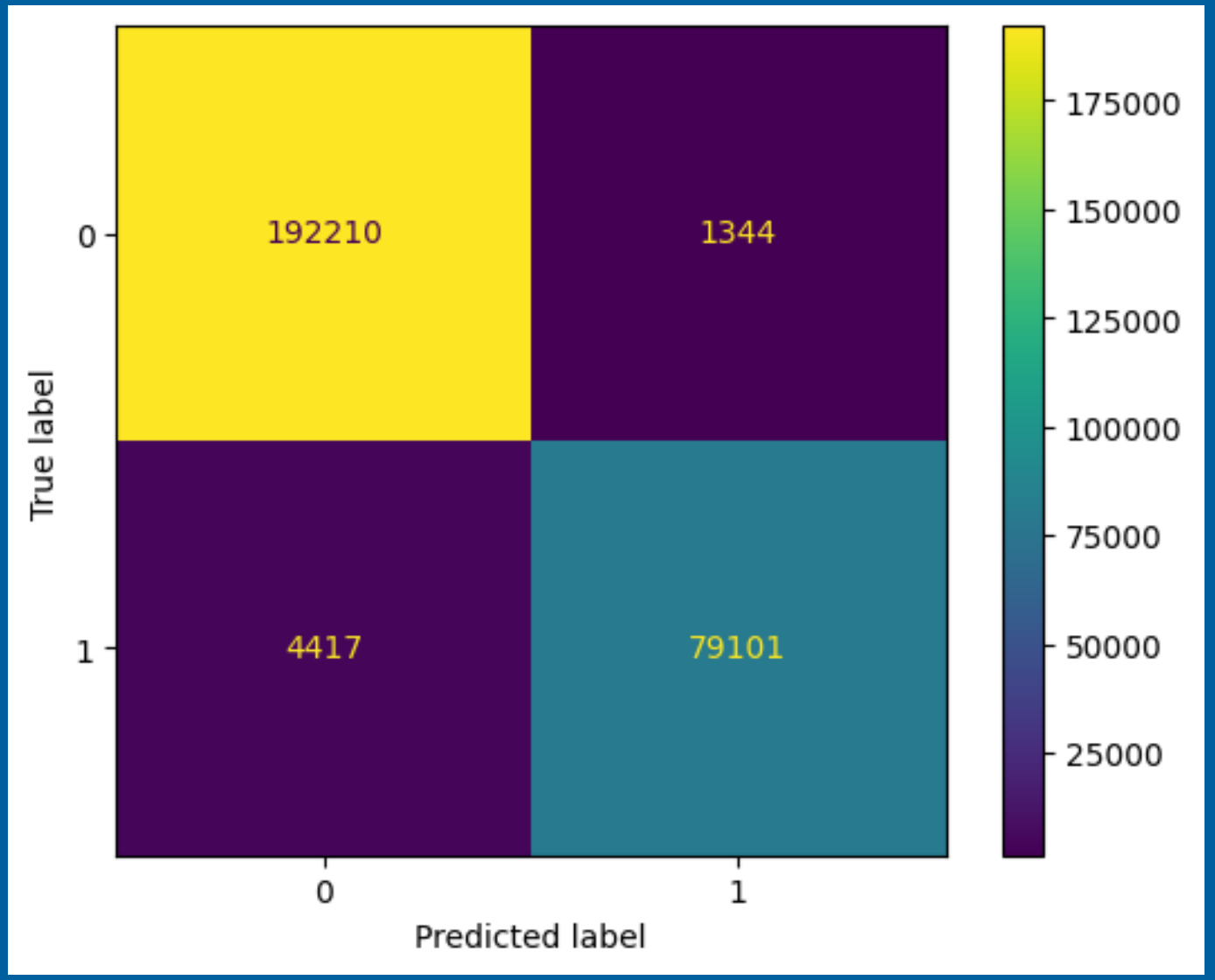


- Modeling done on the Unity cluster (UMass Amherst, UMass Dartmouth, and University of Rhode Island)
- Random forest approach
  - Also considered hidden Markov models and Gaussian mixture models
- 5-fold cross-validation for hyperparameter tuning
- Out-of-bag error rate

Model Performance - Scallop

- Random forest model performance
  - OOB error: 0.021
  - Accuracy (% Correct): 0.98
- Feature significance





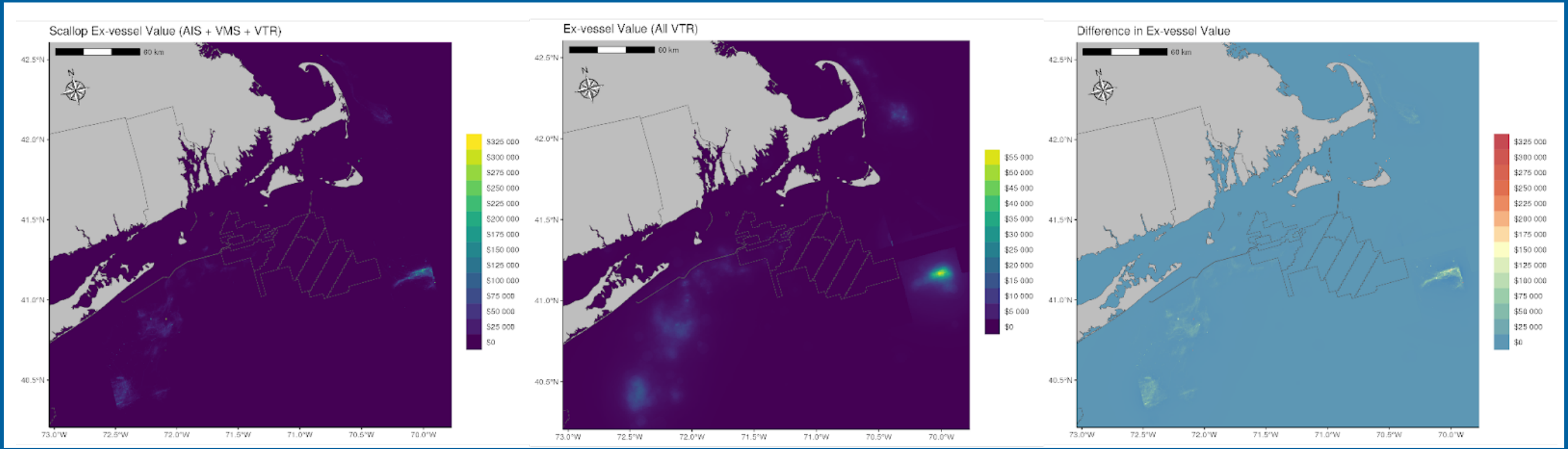
Model Performance - Scallop

- Coverage by dataset
  -

Source	# Trips	All Trips	% Coverage	# Seen Trips	% Seen
AIS	4761	10629	44.79%	330	6.93%
VMS	3624	10629	34.10%	NA	NA
VTR	2244	10629	21.11%	NA	NA

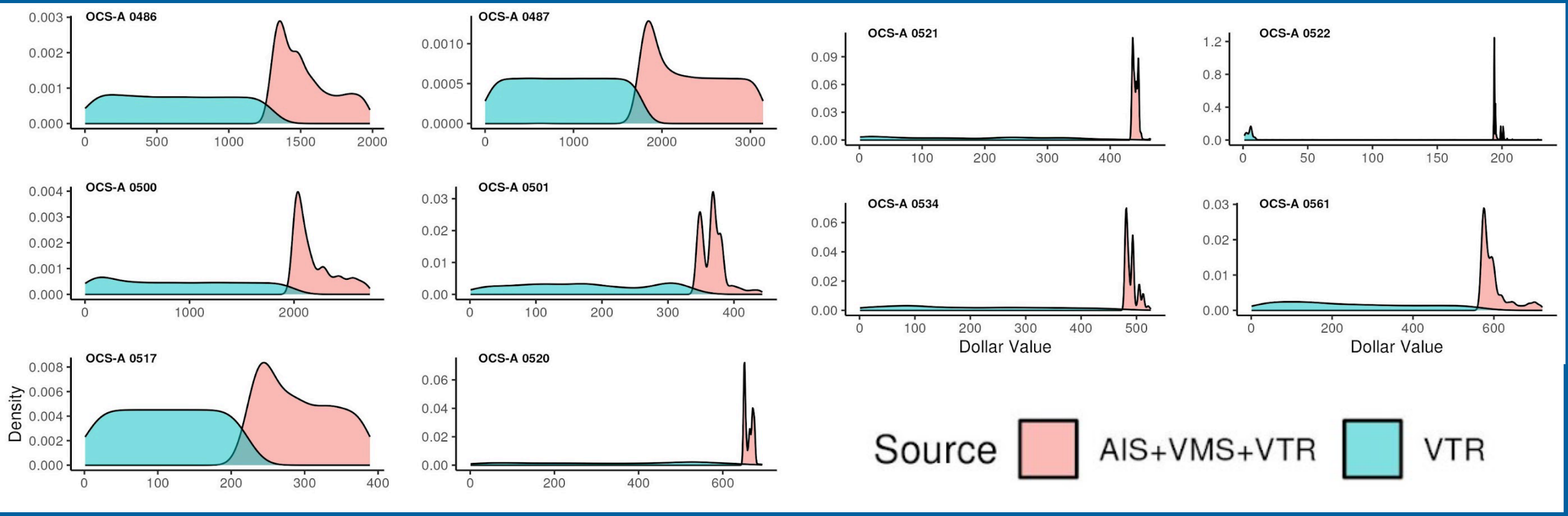
- Prediction accuracy (~98%) as compared to other tools
  - 49.3% accurate using speed cutoff of 5 knots, per Fontenault (2018) when applied to AIS
  - 47.9% accurate using speed cutoff of 5 knots when applied to VMS
  - 73.2% prediction accuracy of VTR footprints (based on OLS regressions between trip level VTR rasters and corresponding observer data)

Results after Fallback to VMS and VTR



- Comparison between AIS with fallback versus the VTR fishing footprints from 2015-2018
  - Higher resolution of AIS product – same general areas of fishing identified
  - Individual raster values are generally higher in AIS product, but are more tightly distributed

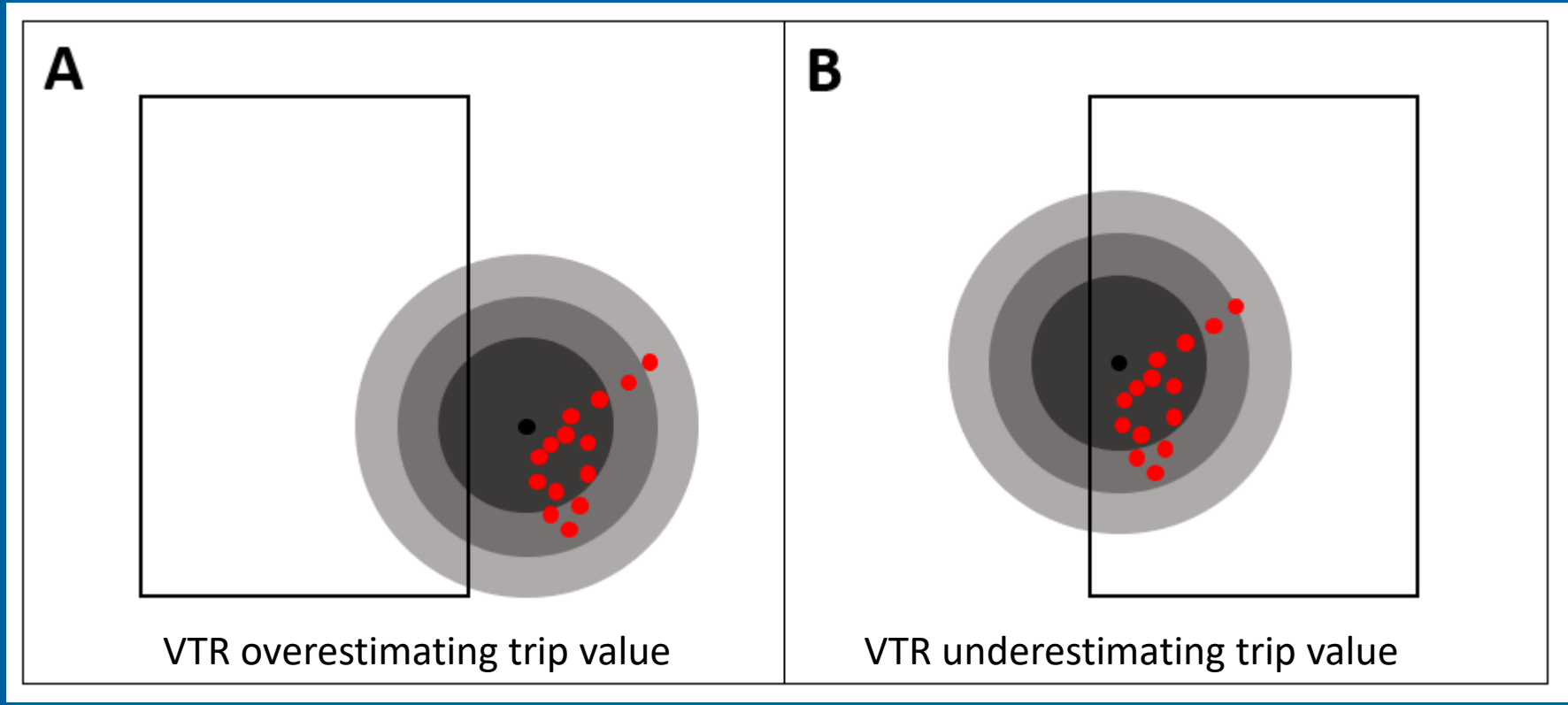
Results after Fallback to VMS and VTR



- Further supports how data are more tightly distributed in the AIS dataset due to higher resolution inputs.
- May indicate that using fishing footprints distribution of fishing activity may overestimate total fishing exposure in WEAs, but underestimate individual vessel impacts (similar to Allen-Jacobson et al. 2023).

Conclusion and Next Steps

- Implications of various datasets in OSW decision-making
  - When should we use which dataset?



Conclusion and Next Steps

- Next steps
  - Modeling and mapping is complete for other FMPs (surf clam/ocean quahog; squid, mackerel, butterfish; and NE multispecies and smallmesh multispecies)
    - Data coverage may be insufficient for monkfish FMP (primarily gillnet)
  - Cleaning up maps (improving visualization of final datasets) and writing project final report

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Thanks to the Regional Offshore Wind Science Pilot for funding this work!

Thank you to project advisors Todd Guilfoos, Pengfei Liu, and Tom Sproul of URI ENRE.

References:

Allen-Jacobson, L. M., Jones, A. W., Mercer, A. J., Cadrin, S. X., Galuardi, B., Christel, D., Silva, A., et al. 2023. Evaluating Potential Impacts of Offshore Wind Development on Fishing Operations by Comparing Fine- and Coarse-Scale Fishery-Dependent Data. Marine and Coastal Fisheries, 15: e10233.

Muench A, DePiper GS, Demarest C (2017) On the precision of predicting fishing location using data from the vessel monitoring system (VMS). Can J Fish Aquat Sci 75:1036–1047. doi: 10.1139/cjfas-2016-0446

O'Farrell, S., Sanchirico, J. N., Chollett, I., Cockrell, M., Murawski, S. A., Watson, J. T., Haynie, A., Strelcheck, A., & Perruso, L. (2017). Improving detection of short-duration fishing behaviour in vessel tracks by feature engineering of training data. ICES Journal of Marine Science, 74(5), 1428–1436. https://doi.org/10.1093/icesjms/fsw244

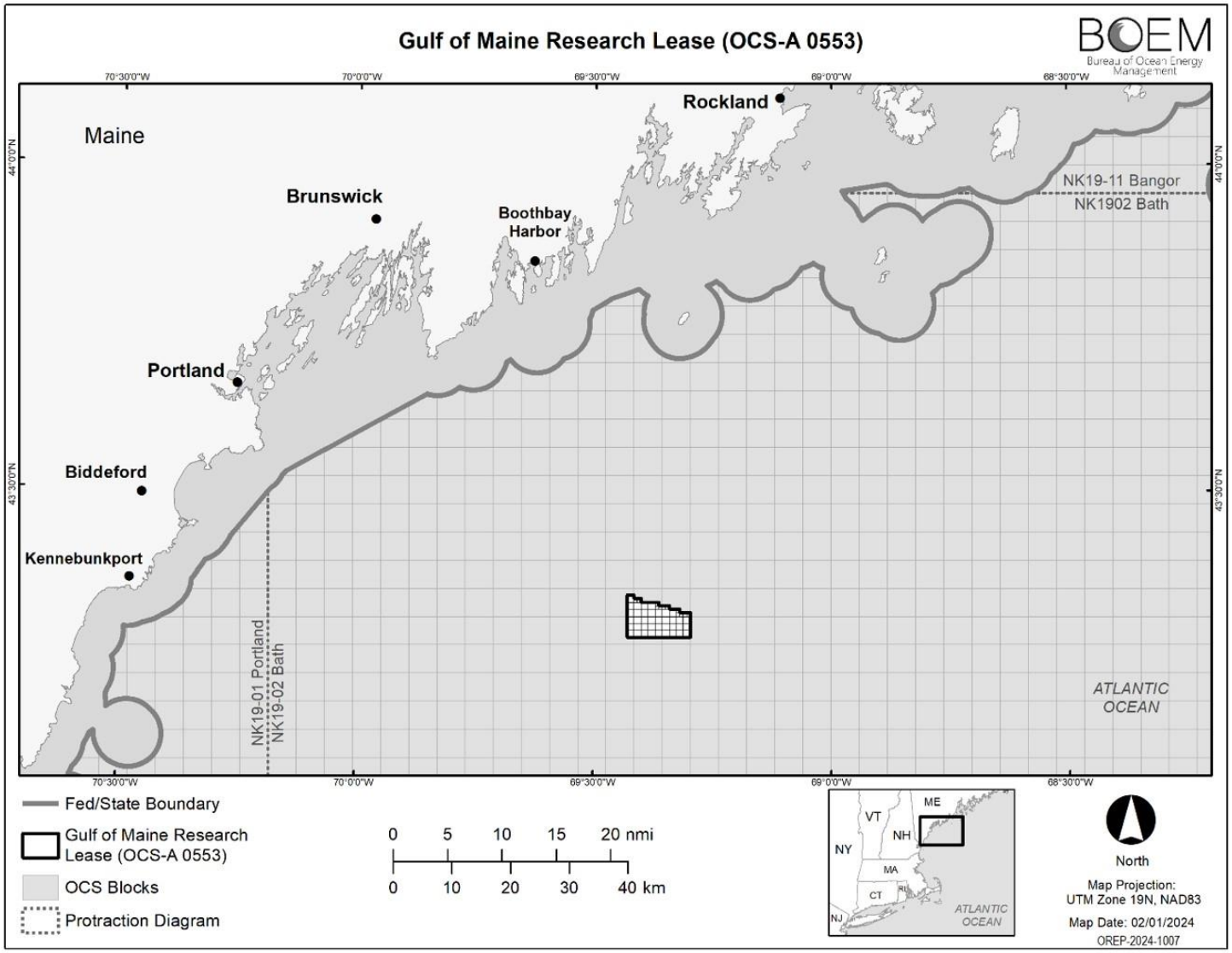
Fontenault, J. (2018). Vessel Monitoring Systems (VMS) Commercial Fishing Density Northeast and Mid-Atlantic Regions. Available at: https://www.northeastoceandata.org/files/metadata/Themes/CommercialFishing/VMSCommercialFishingDensity.pdf [Accessed December 28, 2022].

Update on the Maine Floating Offshore Wind Research Array

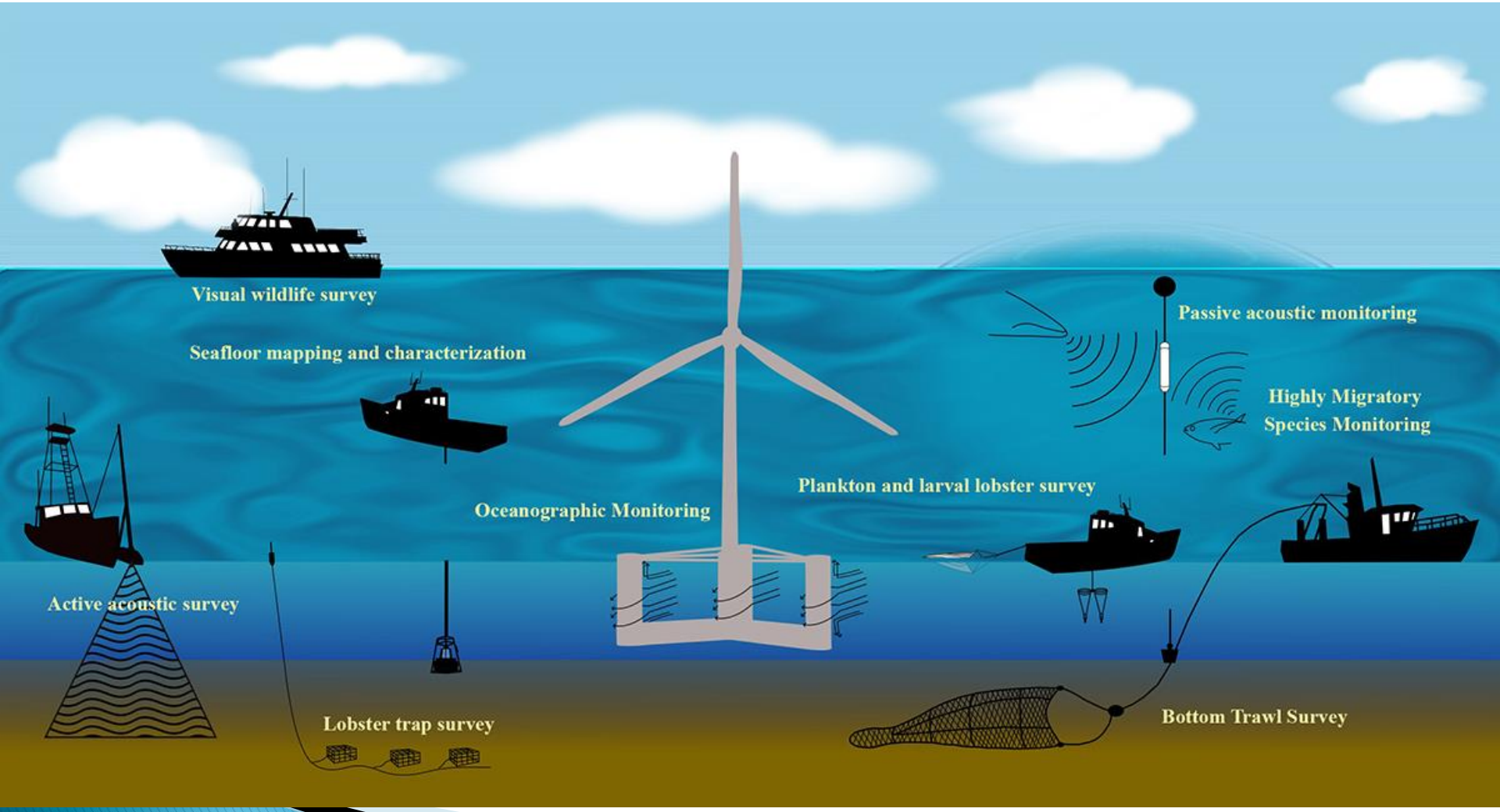
Massachusetts Fisheries Working Group
July 19, 2024

www.maine.gov/dmr

Research Lease Location



DMR's Survey Plans



For More Information

https://www.maineoffshorewind.org/research-array/

https://www.maine.gov/dmr/science/wind-research

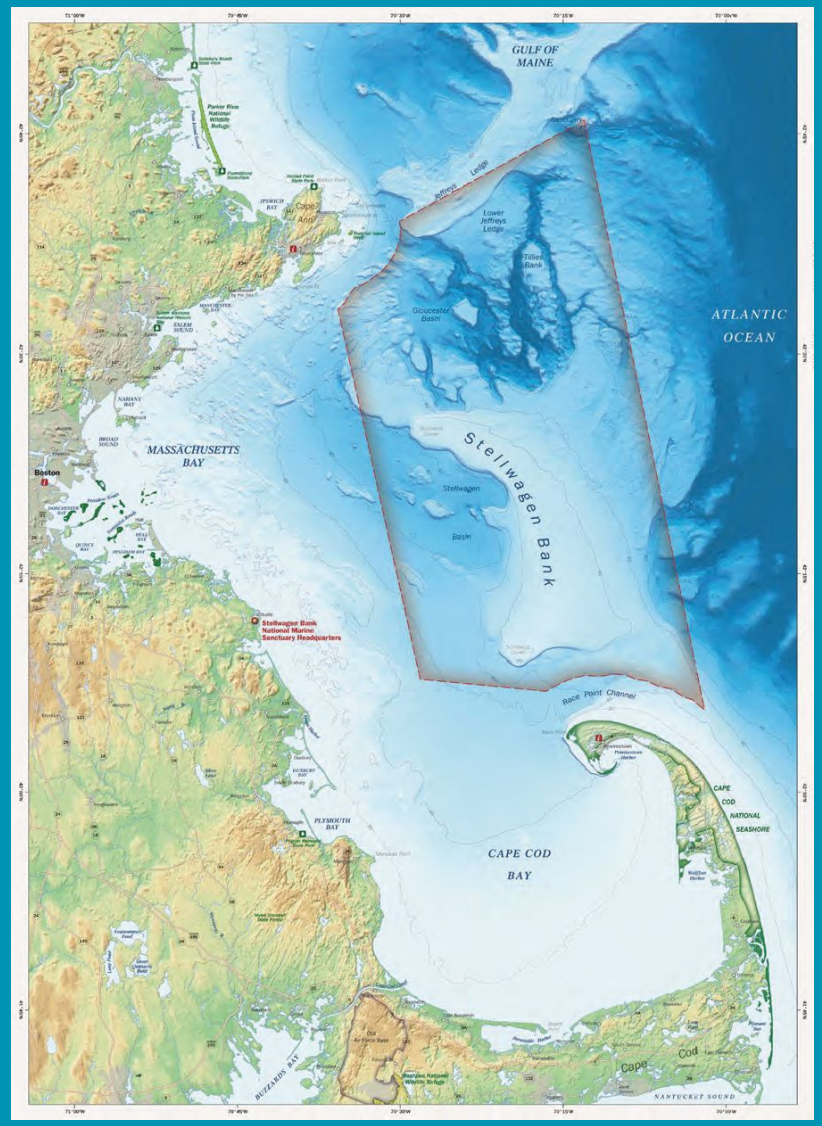
Erin.Wilkinson@maine.gov
207-530-1001

National Oceanic and Atmospheric Administration
Office of National Marine Sanctuaries

Stellwagen Bank National Marine Sanctuary and Offshore Wind

MA Fisheries Working Group
July 19, 2024

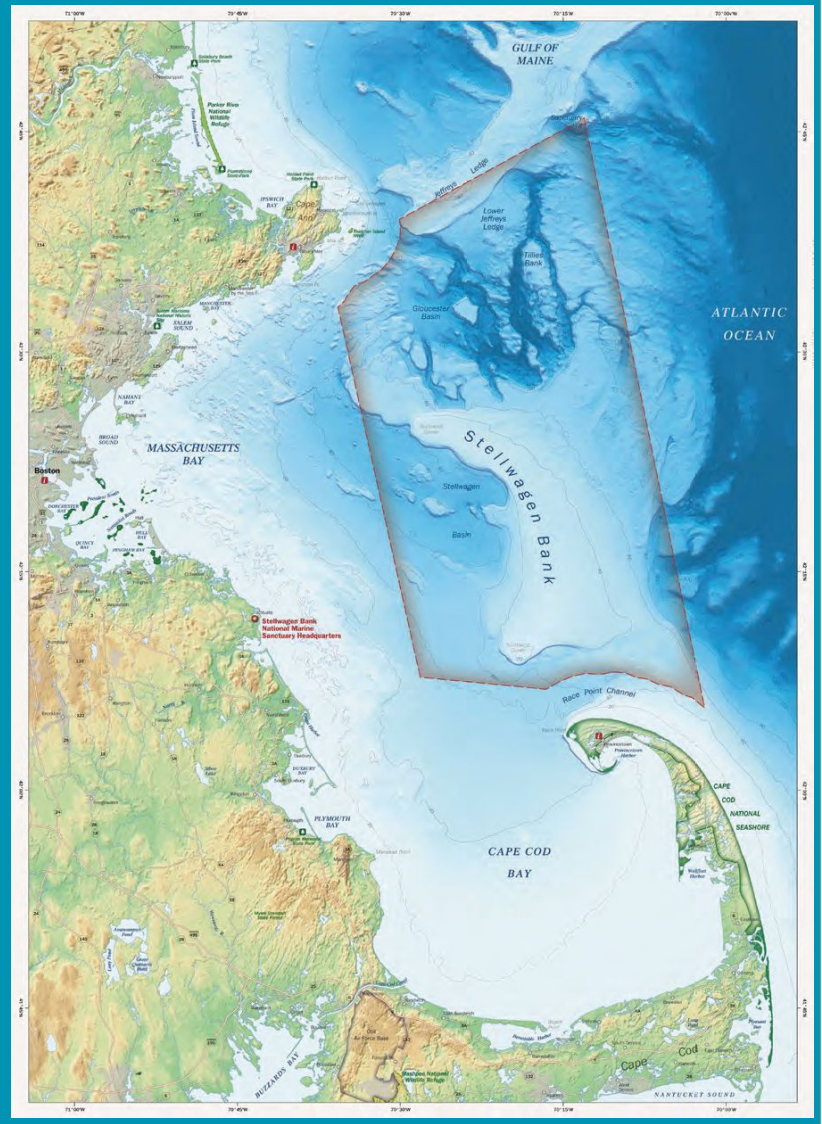
Alice Stratton
Ecologist / Permit Coordinator
Offshore Wind POC



National Marine Sanctuaries Act (NMSA)

- National Marine Sanctuaries Act passed in 1972
  - Designate as sanctuaries areas of special national significance
  - Facilitate to the extent compatible with the primary objective of resource protection, all public and private uses.
  - Managed by NOAA's Office of National Marine Sanctuaries (ONMS)

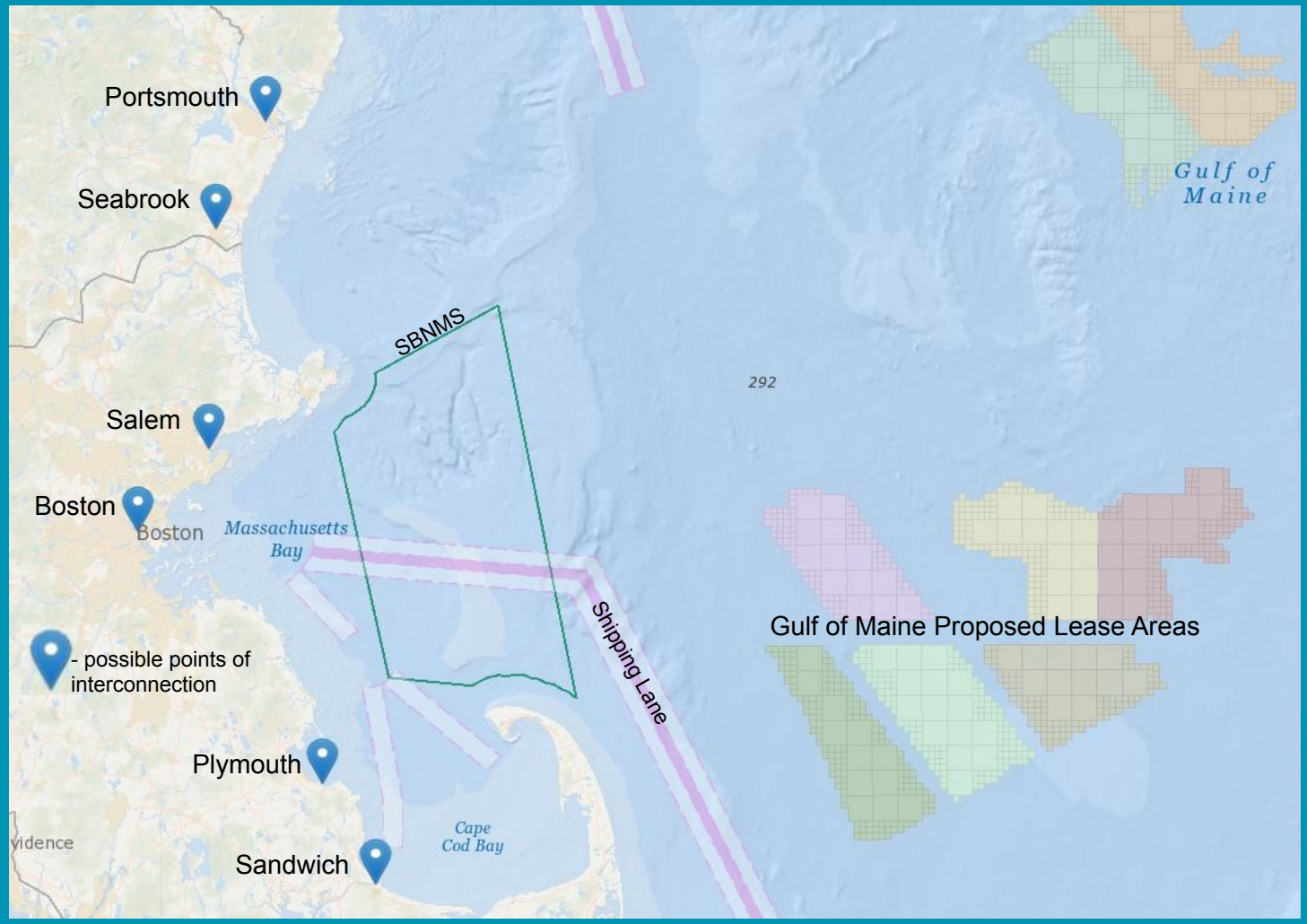
- Congress designated Stellwagen Bank National Marine Sanctuary in 1992 as part of NMSA reauthorization.
  - Underwater extension of Cape Cod
  - Lies entirely in federal waters



Stellwagen Bank National Marine Sanctuary (SBNMS)

Why is SBNMS involved in transmission discussions?

SBNMS is located between the Gulf of Maine proposed lease areas and the most likely shoreside points of interconnection.



Relevant Authorities

- The Outer Continental Shelf Lands Act (OCSLA) gives BOEM authority to manage offshore energy, but prohibits BOEM from issuing leases in certain areas, including national marine sanctuaries.

- The NMSA, however, provides several authorities to NOAA that could be used to allow activities related to renewable energy in sanctuaries.
  - NOAA has advised BOEM that they may consider authorizing installation of energy transmission cables within sanctuary boundaries under the authority of the National Marine Sanctuaries Act, through one or more of the following mechanisms—General Permits, Authorizations, Certifications, and Special Use Permits.

NMSA Permits in Leasing Phases

Site assessment and characterization, and monitoring:

- **Activity:** sediment sampling or placement of equipment on the seabed
  Prohibition: altering the seafloor or placing structure on the seabed
  NMSA Tool: general permit

- **Activity:** Use of untethered equipment (e.g. AUVs)
  Prohibition: discharge into sanctuary waters
  NMSA Tool: general permit

- Note that permitting authority related to protected species still lies with NMFS, and we would coordinate with them for any projects in SBNMS.

Permits for Transmission Cables

For energy transmission cables in a sanctuary, there are two likely steps for NMSA permits and authorizations:

- Most cable project activities will require a Federal construction / installation permit
  - ONMS could authorize that permit for use within SBNMS and add relevant sanctuary-specific conditions.

- Post construction: issue a Special Use Permit for “the continued presence of commercial submarine cables on or within the submerged lands of any national marine sanctuary.”

NMSA Special Use Permit (SUP)

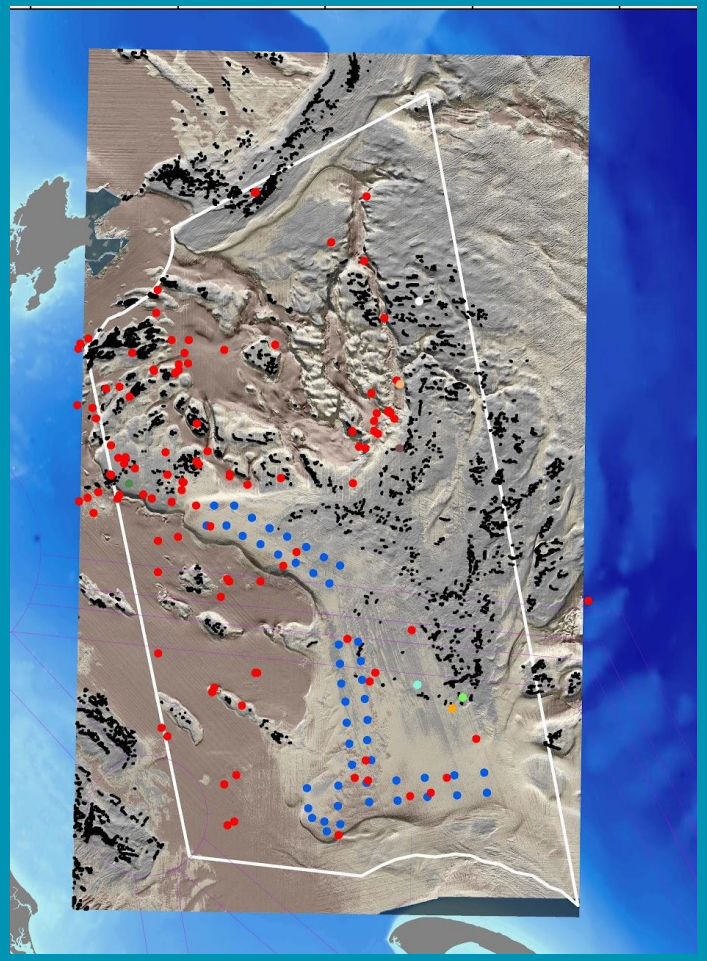
- Allows specific activities if necessary (1) to establish access to / use of any sanctuary resource or (2) to promote public use and understanding of a sanctuary resource.
- Only applies to categories of activities that have been noticed in the Federal Register, see https://sanctuaries.noaa.gov/management/permits/special.html
- Term and condition set by NMSA: Limited to 5 years, with option to renew.
- ONMS has authority to assess and collect fees associated with an SUP.

Sanctuary Resource Protection

ONMS is working with NOAA's National Center for Coastal Ocean Sciences and MA CZM to proactively map sanctuary resources to avoid or minimize impacts.

- Goal is to identify 2-3 areas most potentially suitable for cable installation
- Currently mapping high priority areas

ONMS strongly supports the development of shared transmission in order to minimize impacts to sanctuary resources. We encourage stakeholders to collaborate to make it possible.



Sanctuary Mapping Initiative

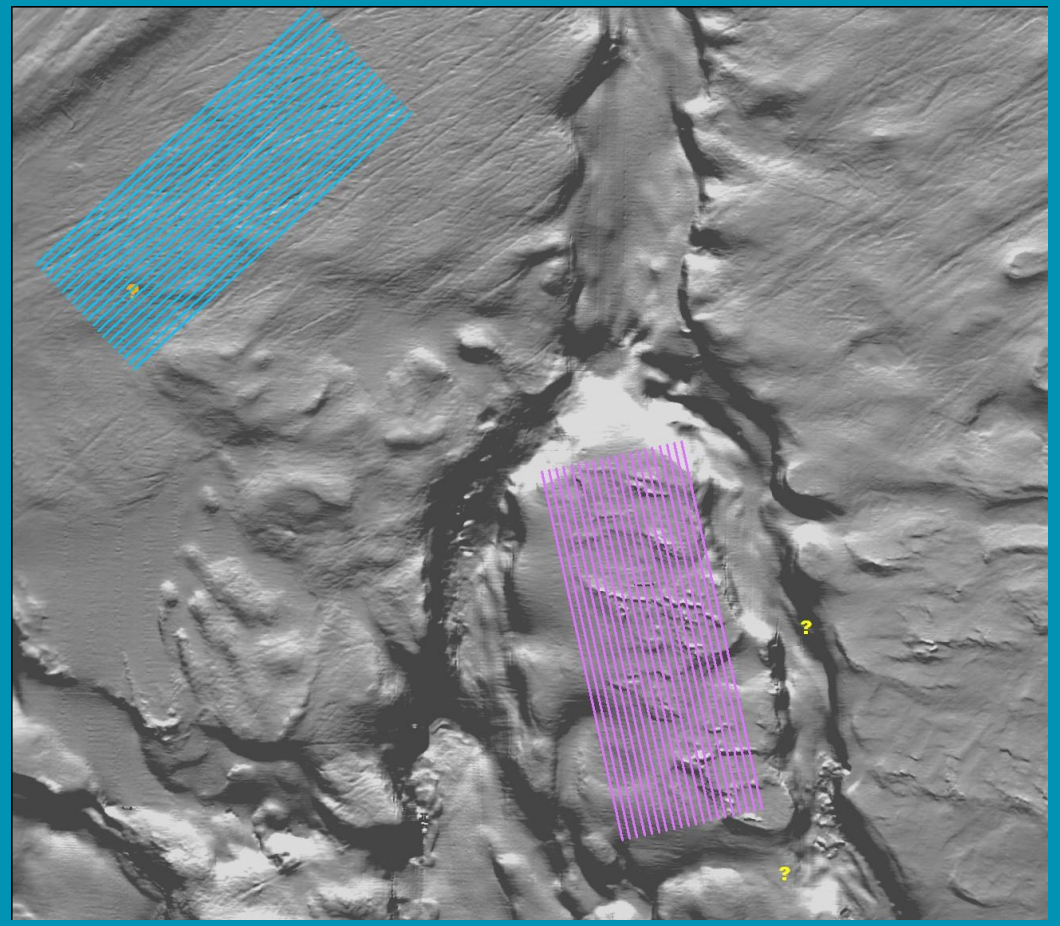
Goal: Side scan survey as much of SBNMS as possible

How: Hiring MA fishermen when they're not fishing to tow the side scan in prescribed areas under the guidance of a sonar technician.

Objectives:

1. Characterize habitats and historic resources in potential transmission cable corridors
2. Characterize habitats and historic resources outside of potential corridors

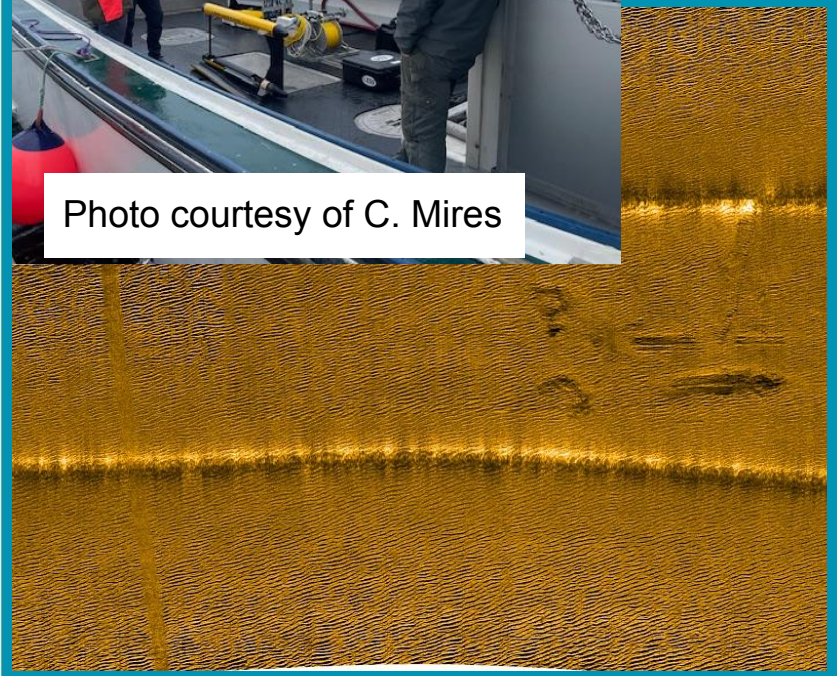
Funding: $1Million earmark sponsored by Senators Markey and Warren



Example of Side Scan Survey Areas

Sanctuary Mapping Initiative

Photo courtesy of C. Mires



Example of Side Scan Sonar output

Process:

1. Develop survey area with tracklines
2. “Mow the lawn”, i.e. tow side scan towfish over the tracklines
3. Create mosaic of multiple side scan swaths that overlap
4. Post-process the data and QA/QC
5. Interpret the data and ID features of interest
6. Make data publicly accessible on NOAA website

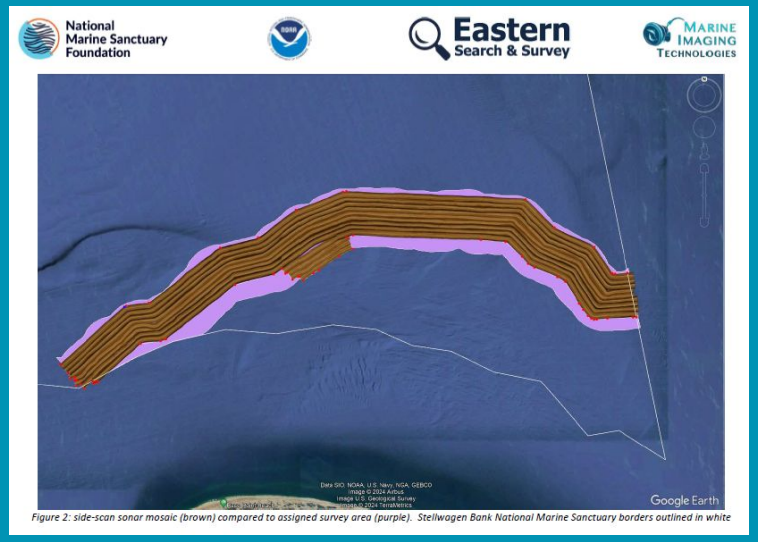
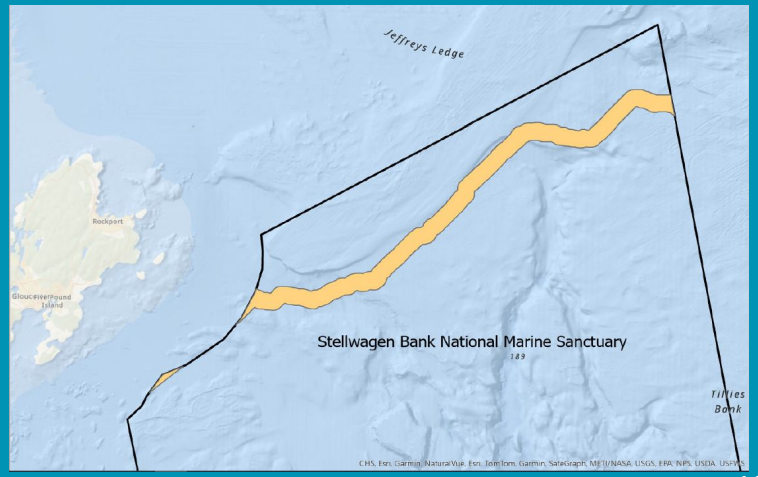
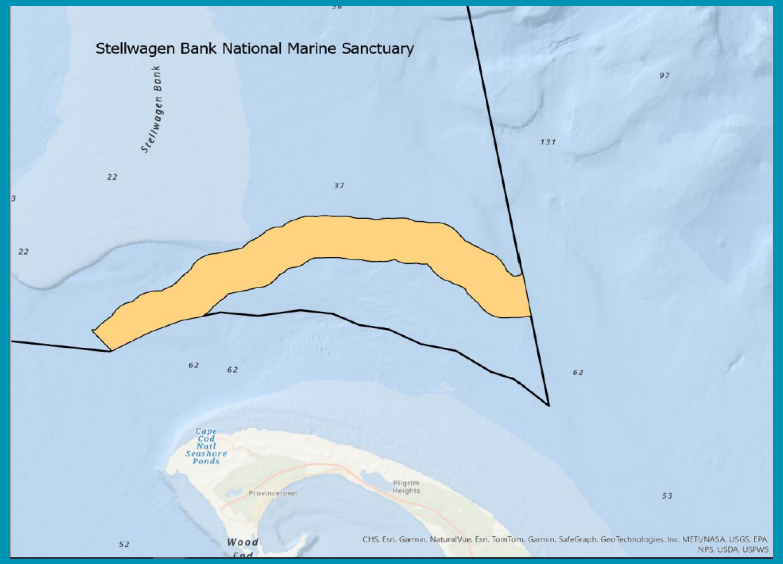


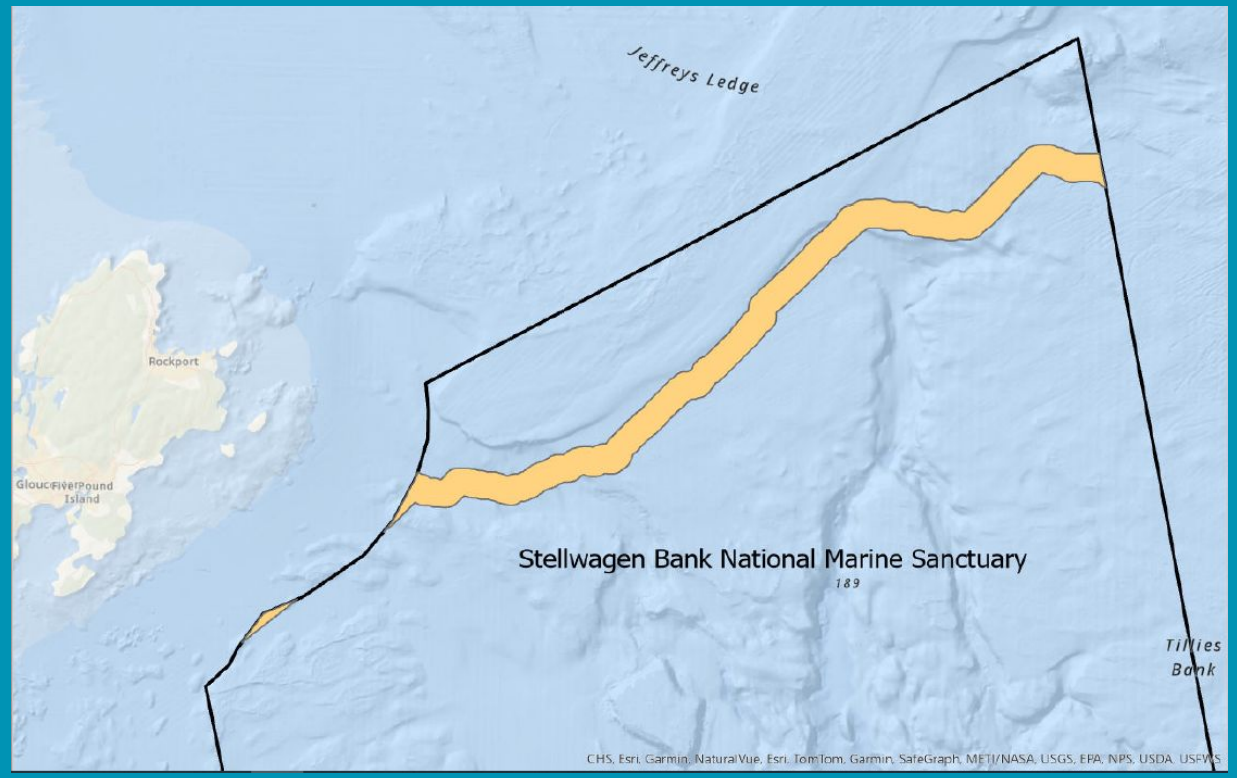
Figure 2: side-scan sonar mosaic (brown) compared to assigned survey area (purple). Stellwagen Bank National Marine Sanctuary borders outlined in white



Sanctuary Mapping Initiative

Initial mapping efforts:



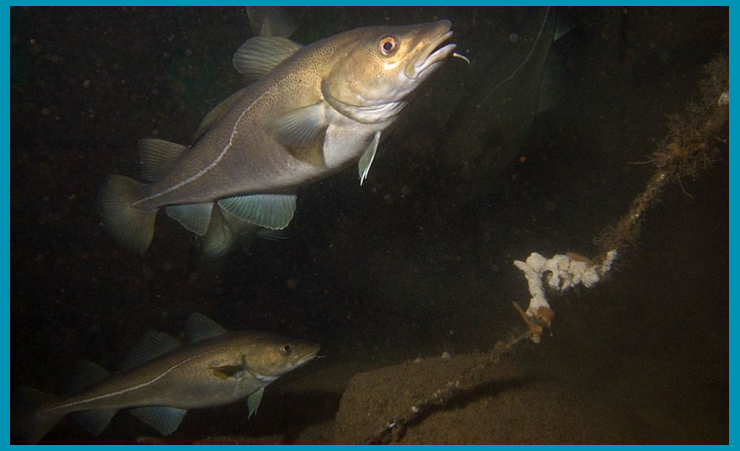


Sanctuary Resource Protection

The Office of National Marine Sanctuaries (ONMS) recognizes that climate change is a significant threat to sanctuary resources and renewable energy mitigates that threat. ONMS supports the responsible development of offshore wind.

Sand Lance. Photo: SBNMS Website.

North Atlantic Right Whale. Photo: L. Waters. NMFS Permit No. 27272-01.



Atlantic Cod. Photo: D. Costa/NOAA.

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Port Partners' Briefing

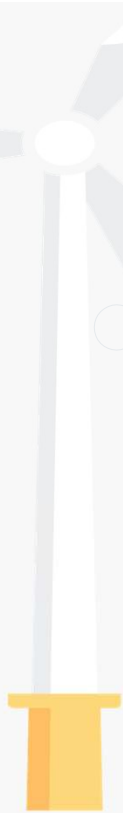
"The right info, at the right time, to the right people, in the right way"

7/19/24

AGENDA*

Welcome
Revolution
Sunrise
Starboard
Q&A

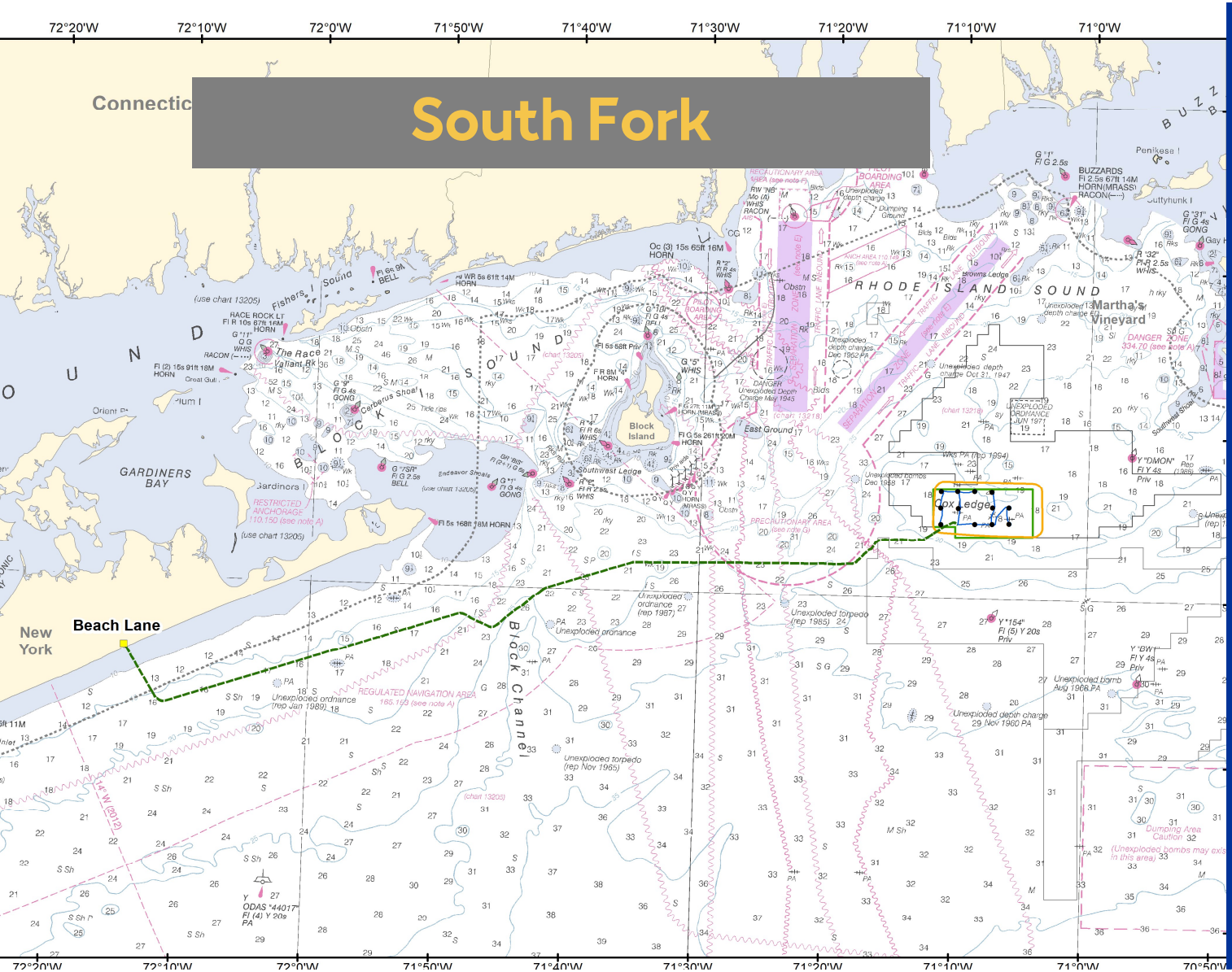
*present in shared screen for USCG



Ørsted

Mission

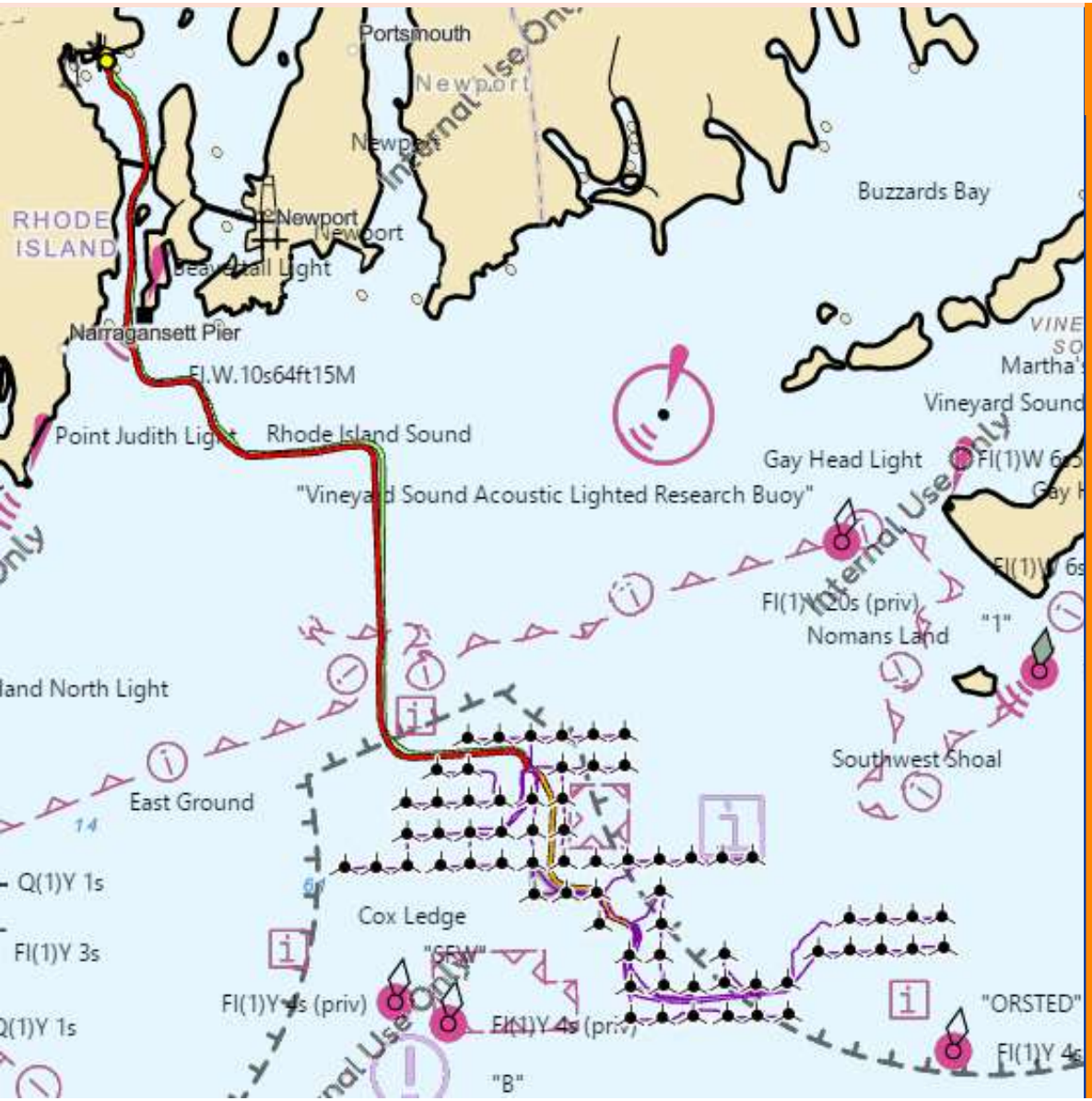
- **Weekly Project outlook**
- **Opportunity to ask questions and share operations**
- **Ensure Navigation Safety**
- *"The right info, at the right time, to the right people, in the right way"*
- **Dynamic Marine Environment**
- New INFO



12 Turbines powering 70,000 homes

O&M

AP07 Lights, AM05 SS AIS



Revolution

65 Turbines

304 MW- CT
400MW – RI

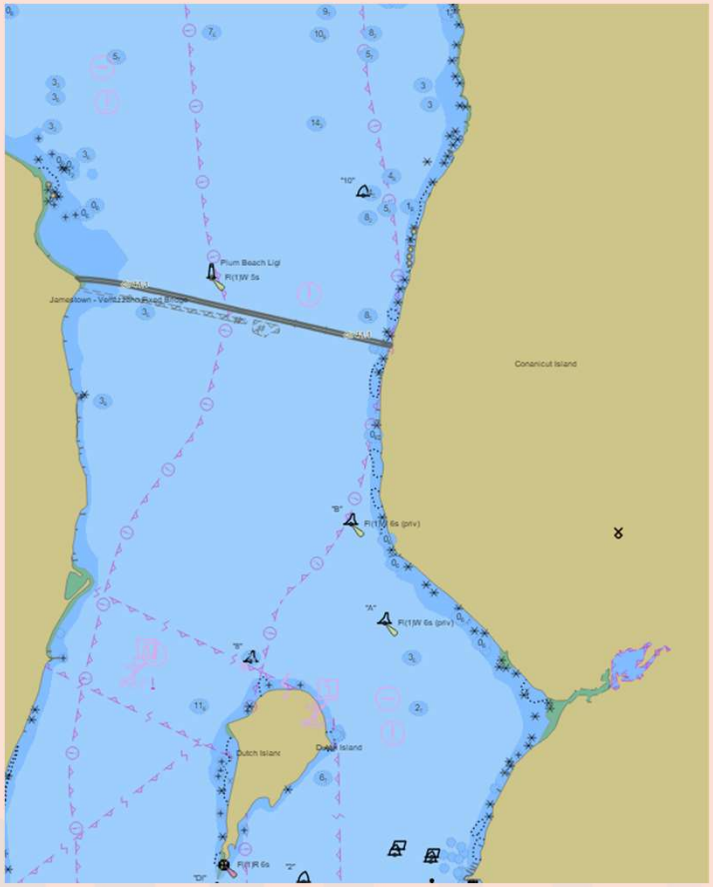
Commercial Operations
2025

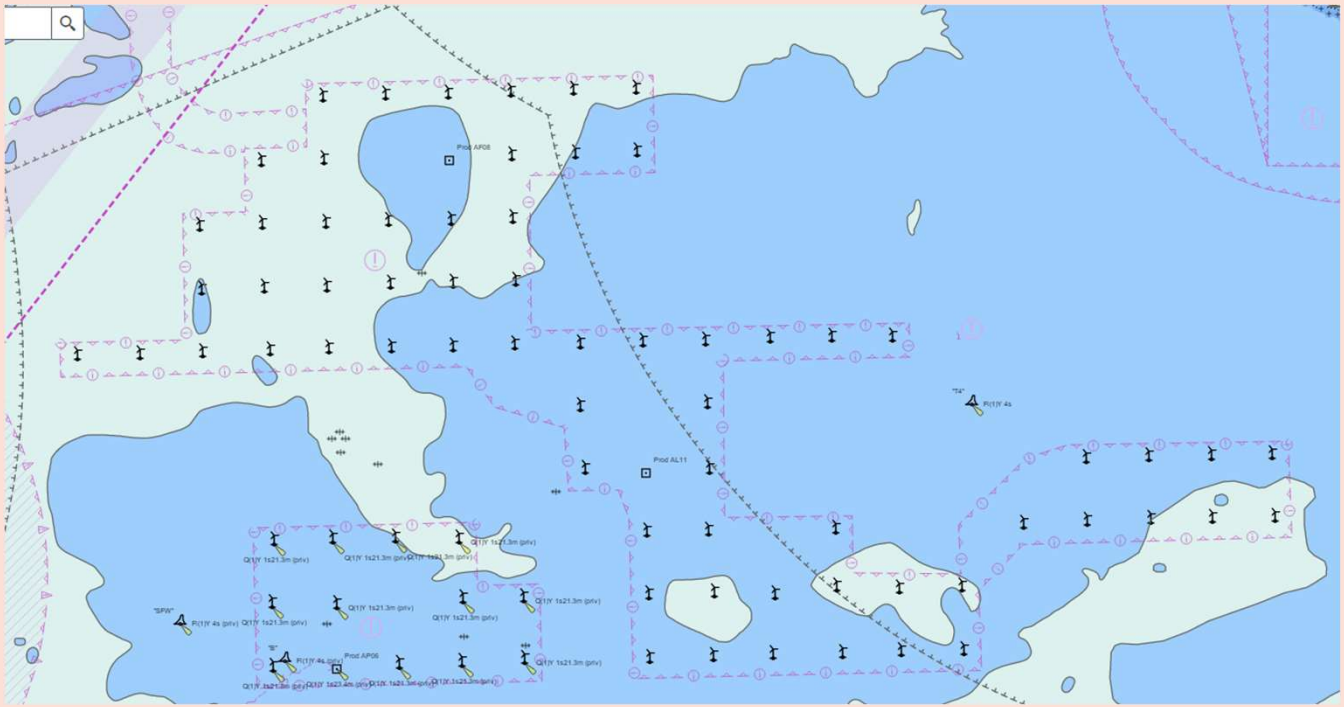
AIS sooner than SFW timeline…Nov or later

First Rev MP just after installation

26 installed

On the NOAA Chart!





NOAA ENC Viewer:

https://www.nauticalcharts.noaa.gov/enconline/enconline.html

"Construction" Zone +500m buffer


Boskalis
BOKALIFT 2

Monopile Installation

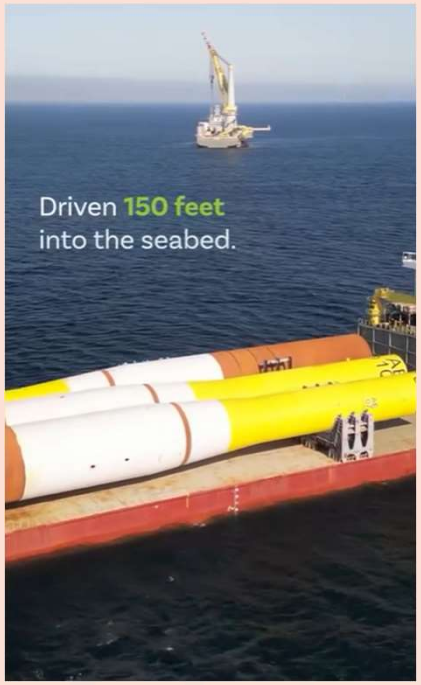
Big Bubble Curtain – pre-lay

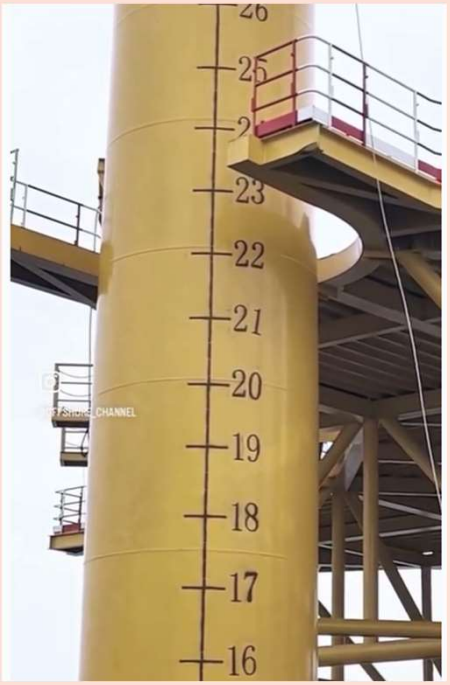
Secondary Steel

Safety Zones

500m

Flight Safety -





Inter Array Cables:

Lay then Bury

CLV Seaway Aimery

95m

PLGR on or about 11 AUG

Figure 5-2: Seaway Aimery

Inter Array Cables:

Installation Support Vessel

Ross Candies

On or about 20 AUG

Trenching Support Vessel

J. D. Assister

On or about 20 AUG

WTG Installation

July ‘24– June ’25

Feeder Barge to/from New London

Seajacks Scylla

22/23 July to New London

Crowley Tugs-

Sam and Ocean Wind, Barge 455-8

Seabed Preparation on the Export Cable

Sheila Bordelon

FLAG: US

Boulder Relocation by Grab

July

Laney Chouest

FLAG: US

Boulder Relocation by Plow

Aug

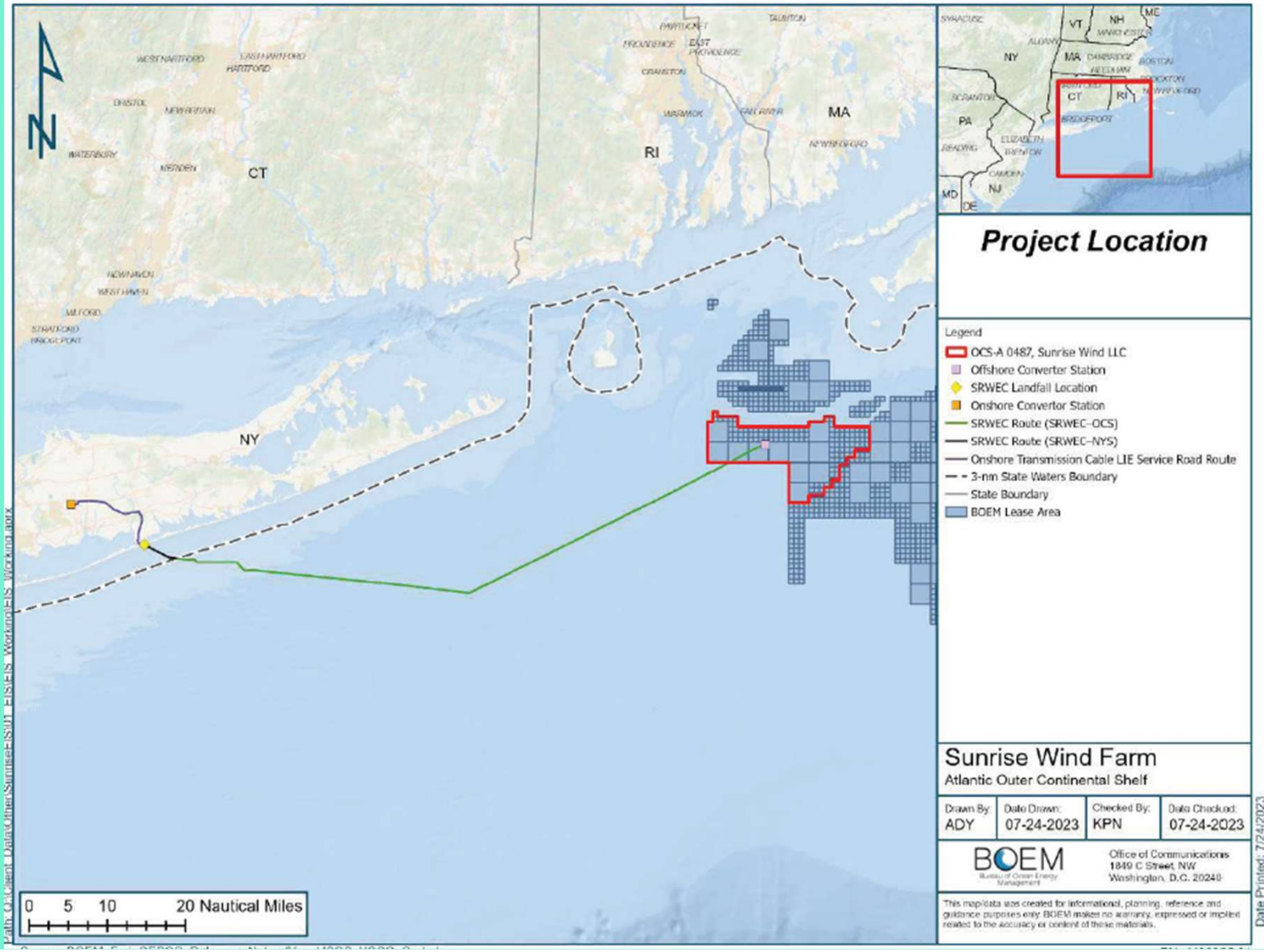
Timeline Re-cap REV01	
Export Cables	Begin mid July seabed prep
Foundations	Now->
Array Cables	Begin mid AUG w/ PLGR
WTG	Mid July ->

Sunrise Wind

84 WTG's

924 MW

600,000 Homes



Sunrise Wind

R/V Northern Franklin – pre construction Survey

Timeline Re-cap Sunrise Wind	
Cable Landfall Work	Fall / Winter '24
Installation	2025

Lease 500

600,000 homes

Residences in Rhode Island and Connecticut that would be powered by Starboard Wind

$1.9 billion

Avoided emissions damages in Connecticut and Rhode Island from using offshore wind power

20+ years

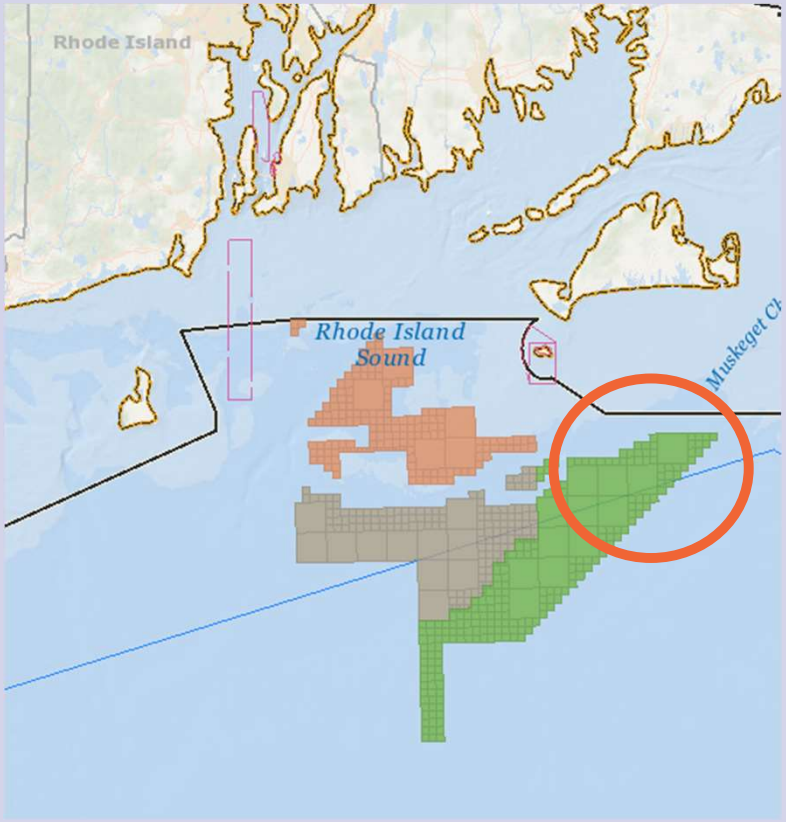
Ørsted's Starboard Wind project offers decades of reliable energy at predictable, transparent price

R/V Fugro Brasilas

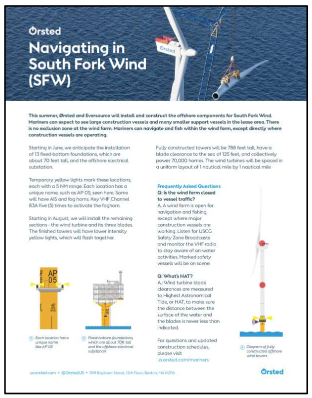
R/V Ocean Marlin

CTV Windserve Odyssey

R/V Bella Marie



Resources



Mariners Briefing: Northeast Marine Activity

Date of Notice: July 17, 2023
Notice no. 341

*Foundation Installation Vessel Bokalift 2 has begun foundation installation in the South Fork Wind Lease Area. Pile-driving operations are expected at **AM06**, followed by **AN08** and **AP08**. The offshore substation topside is awaiting installation at **AP06**.*

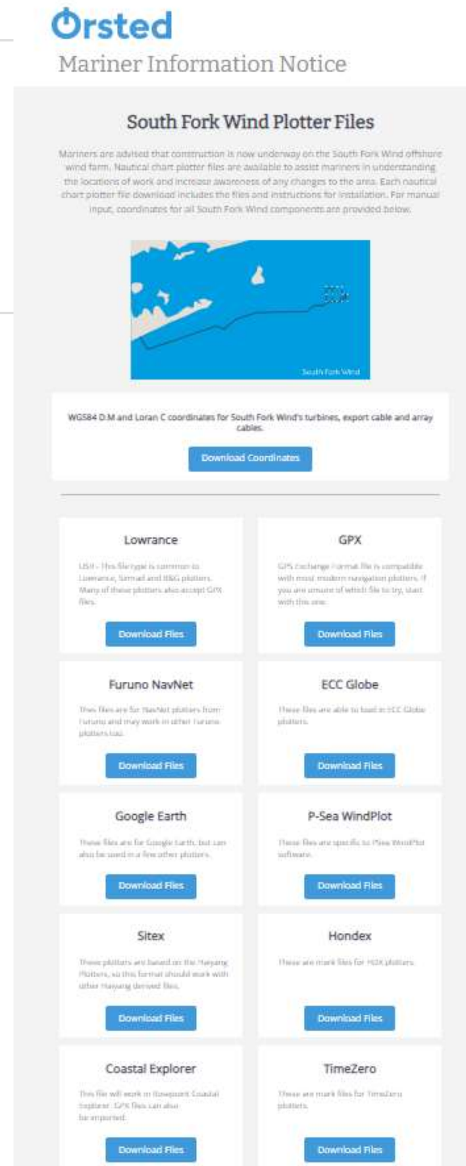
RI/MA Fisheries Direct Compensation

South Fork Wind is committed to working with the fishing community and has established a mitigation fund to pay all valid fisheries claims. While South Fork funds this program, claim eligibility and payment is administered through third parties set up by the States of Rhode Island and Massachusetts.

For Rhode Island commercial and charter fishermen, email RIFFVT.SouthFork@pkfod.com for more information.

For Massachusetts commercial and charter fishermen, stay tuned for more information.

Download South Fork Wind Nautical Chart Plotter Files

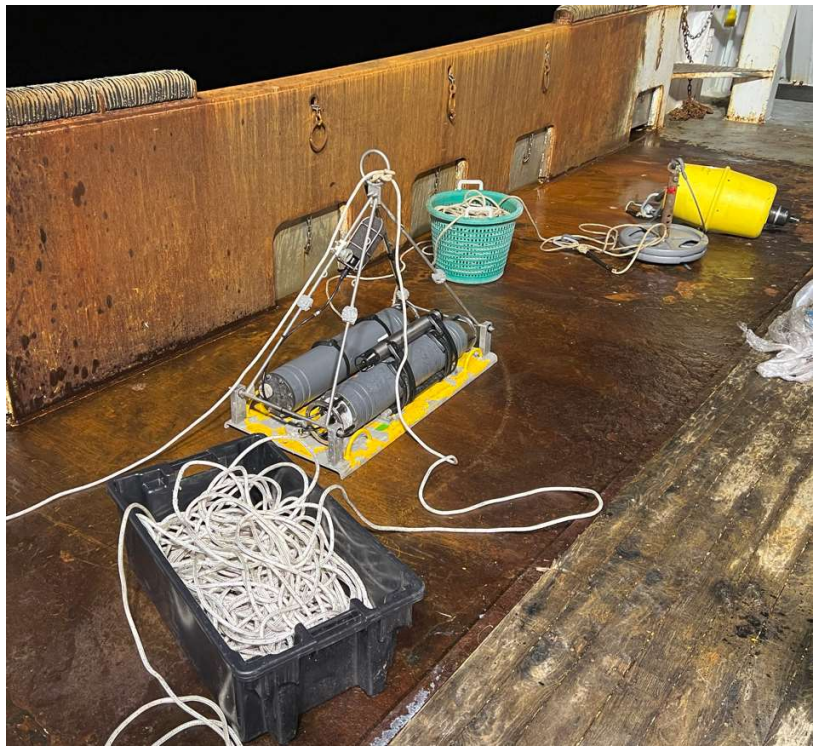


Research Activity

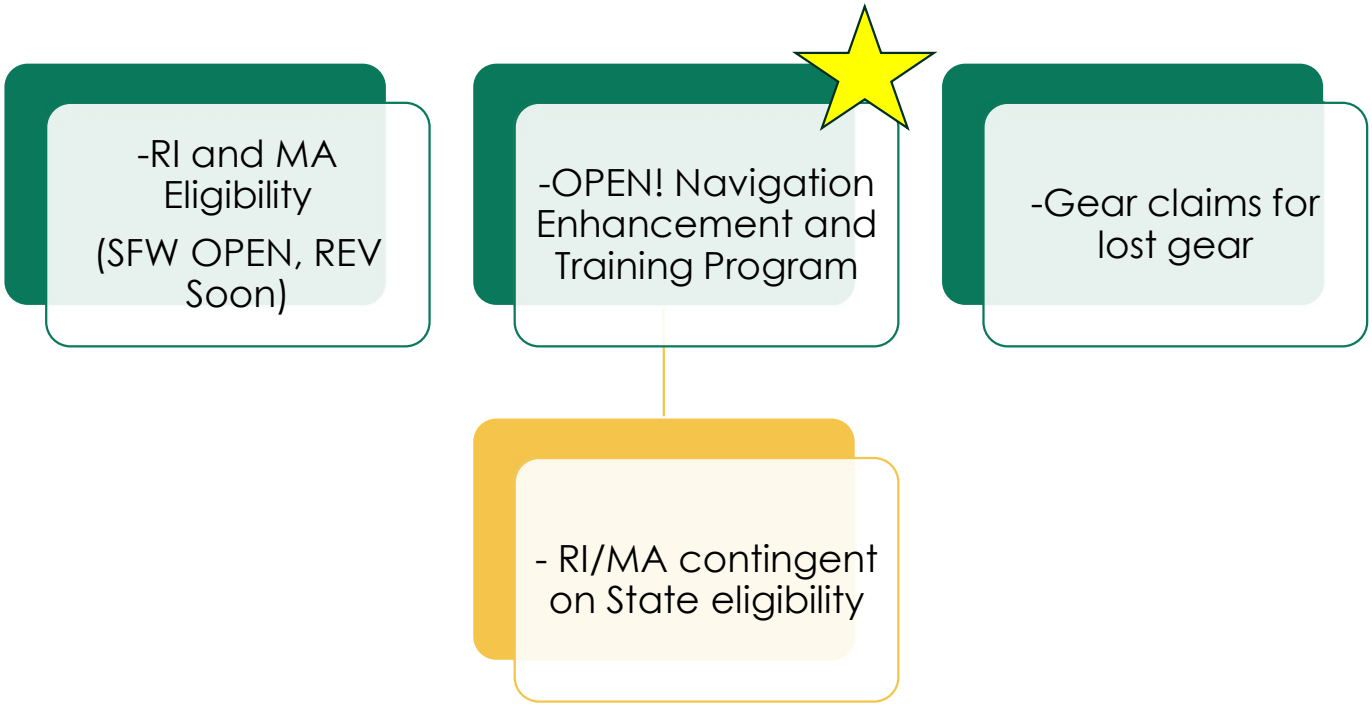
ARE YOU PLANNING ON ANY RESEARCH IN SOUTH FORK WIND?

-PLEASE JOIN OUR DAILY CONSTRUCTION COORDINATION CALL

REWARD!



Direct Fisheries Compensation



Public Engagement

22 Aug 2024 7-8:30PM

North Kingston, RI Community Center
Export Cable focused

NE Marine Affairs Team

John Mansolillo
Northeast Marine Affairs Manager

- Former Coast Guard Officer
- Based in Rhode Island
- JOMAN@Orsted.com

Julia Prince
Marine Affairs Specialist CT/NY

- Former NY Elected Official – Town of East Hampton
- Based in Long Island
- JULPR@Orsted.com

Claire Hodson
Marine Affairs Specialist – RI/MA

- Former Charter Fish, Shellfisher, Aquaculture, URI Sea Grant
- CLAHO@Orsted.com

Laura Gould
Marine Affairs Compliance and Execution Manager

- Retired USCG Officer
- LGOUL@Orsted.com

Ørsted Mariners' Brief

USCG D1 Local Notice to Mariner's

Shared mailbox:

MANEP@orsted.com

Q&A

ROSA
Responsible Offshore Science Alliance

Update to Massachusetts Fisheries Working Group on Offshore Wind

July 19, 2024

Mike Pol
Research Director
Responsible Offshore Science Alliance
mike@rosascience.org

Leading Regional Research on Offshore Wind & Fisheries

Mission:

We **advance research, monitoring, and methods** on the effects of **offshore wind energy development on fisheries** across US waters.

We serve as an objective resource for all sectors and facilitate the coordination of regional scientific research to collaboratively and efficiently deepen understanding.

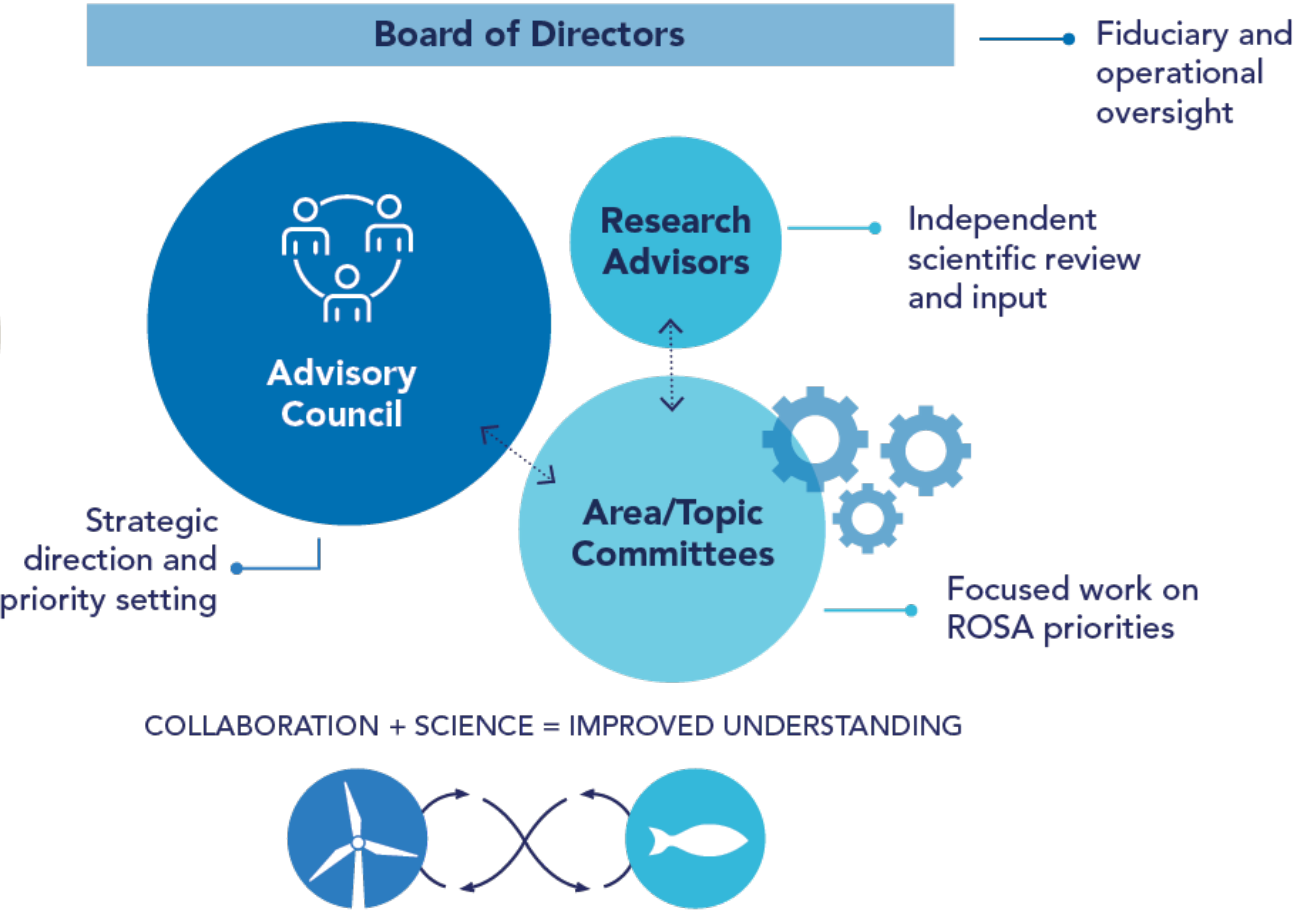
Inception:

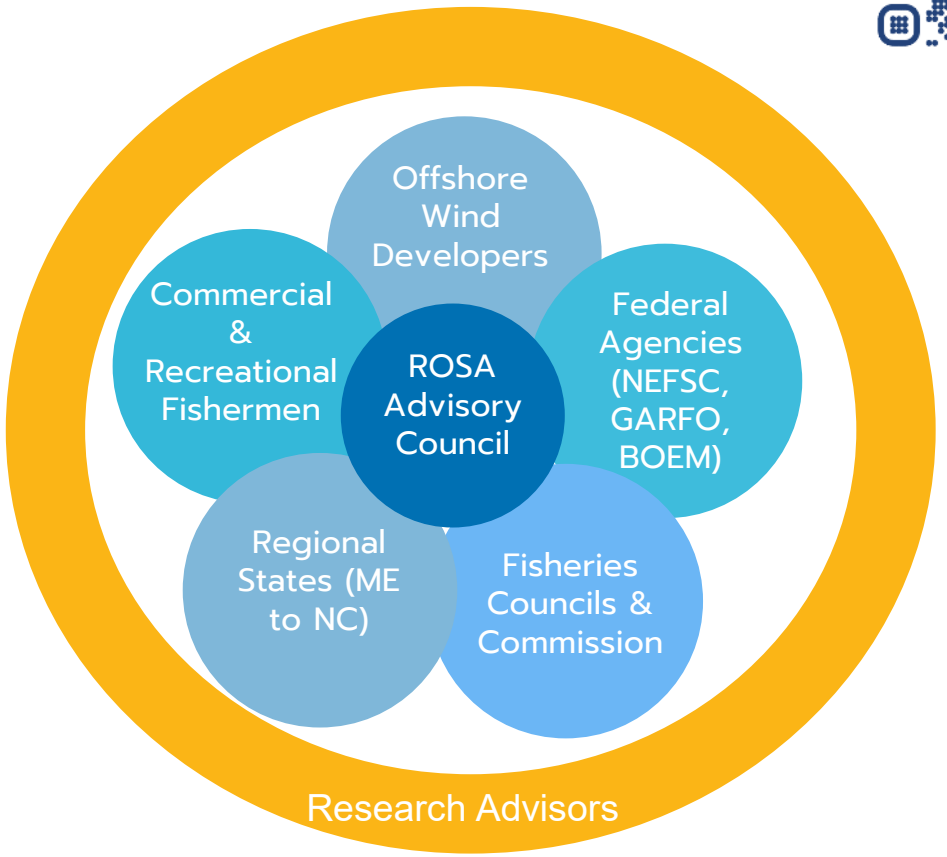
Formed in early 2019 as a 501(c)3

Partnership between RODA & OSW developers

ROSA

ROSA's Organizational Structure





*Tribal Nation representation TBD

ROSA

Strategic Plan – 3 Key Objectives

Administer Regional OSW Fisheries Research & Monitoring

Facilitate Assessment of Regional & Cumulative Impacts

Build Coordination Through Engagement

ROSA

Strategic Plan – Key Objectives

Administer Regional OSW Fisheries Research & Monitoring

Facilitate Assessment of Regional & Cumulative Impacts

Build Coordination Through Engagement

Fish FORWRD Maintenance

OSW Fisheries Research Funder Coordination

Regional RFP Process

Project Awarding & Management

ROSA

Offshore Wind & Fisheries Funder Coordination

First Meeting: May 28

Objective

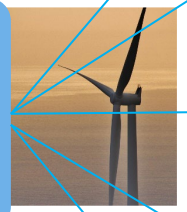
Gather funding entities (federal, state, & non-profit) on the east coast to coordinate research & monitoring funds for fisheries & OSW.

This will be achieved through maintaining an updated FishFORWRD Database and communicating funded and planned research through this meeting and future meetings.

Strategic Plan – Key Objectives

Administer Regional OSW Fisheries Research & Monitoring

Facilitate Assessment of Regional & Cumulative Impacts



Build Coordination Through Engagement

Data Standardization — **Data Governance Committee**

OSW Fisheries Research Funder Coordination

Update & Maintain Project Monitoring Guidelines

Committees of Practitioners — **Acoustic Telemetry Committee**

Listening Sessions

ROSA

Facilitate Assessment of Regional & Cumulative Impacts

- Updating & maintaining ROSA OSW Project Monitoring Framework & Guidelines to:
  - Create alignment in experimental designs, tools & methods, data sharing, analysis, & governance

- Four Elements:
  - Monitoring Framework & Principles
  - Fisheries Biological Monitoring Studies
  - *Benthic Habitat/EFH Monitoring Studies*
  - *Socioeconomic Monitoring Studies*

ROSA

Facilitate Assessment of Regional & Cumulative Impacts

OSW Fisheries Monitoring Plan Development, Implementation, & Evolution Listening Series

- Four Sessions were sector-specific:
  - Fishing Industries
  - OSW Developers
  - Regulators
  - Science & Research Community
- Final session
  - Cross-sector, open to public @ State of the Science
- Goal: document inconsistencies & challenges, identify solutions to increase coordination
- Final report (target publication: Q4 2024)

ROSA

Strategic Plan – Key Objectives

Administer Regional OSW Fisheries Research and Monitoring

Facilitate Assessment of Regional and Cumulative Impacts

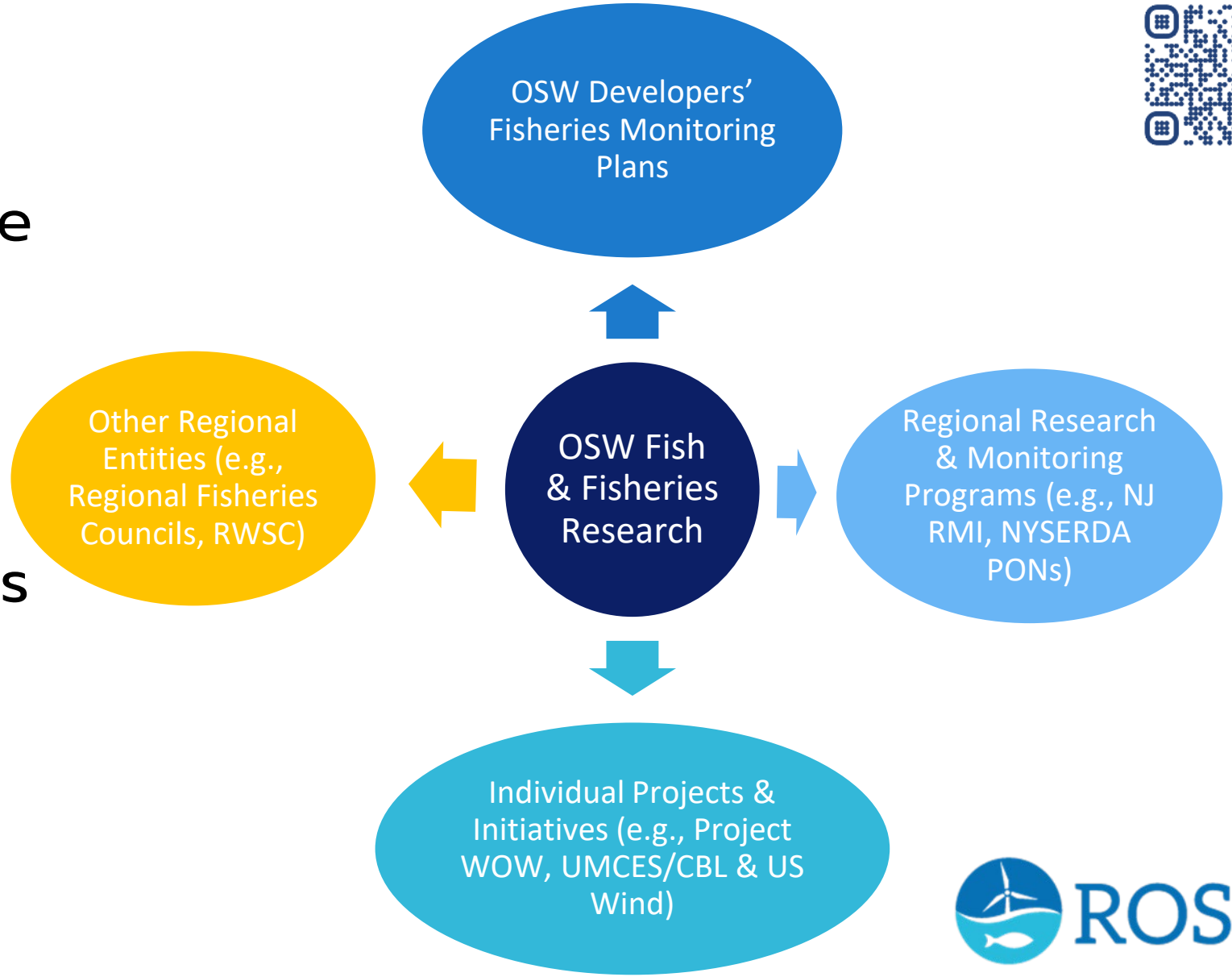
Build Coordination through Engagement

- **Fish FORWARD Maintenance**
- **OSW Fisheries Research Funder Coordination**
- **Update & Maintain Project Monitoring Guidelines**
- **Committees of Practitioners**
- **Listening & Working Sessions**
- **Information Sharing & Distribution**
- **Provide Fora (Quarterly Advisory Council Meetings, Convene Fisheries Symposia)**
- **Capacity Development (Internship Program, Graduate Committees)**
- **Advisory Panels & Subcommittees (RWSC, ERWGs, FWGs)**

OSW Fish & Fisheries Research Landscape

ROSA uniquely situated to coordinate across various:

- Funding sources
- Research institutions & organizations
- Data infrastructures



ROSA

Thank you!

ROSA is committed to

- **producing a bridge** across sectors,
- **promoting science-based discourse around ocean co-use** &
- **supporting meaningful solutions** to realize the important, albeit challenging, goal of equity among ocean users.

ROSA

BLUEPOINT WIND

2024 SURVEY WORK

Starting on or around July 28, 2024 and continuing through late September 2024, a geotechnical survey campaign will occur throughout the Bluepoint Wind Lease Area (OCS-A-0537). Vessel operations are planned for 14 fixed sampling stations within the lease area (see Figure at right).

The survey work will be conducted aboard the Fugro Resilience, a 274 ft long survey vessel with a red hull and white bridge. The Fugro Resilience's position will be live on AIS for the duration of the survey and the bridge will be monitoring VHF channel 16. The vessel will be stationary while deploying sediment sampling equipment. The vessel will have restricted or no maneuverability during the geotechnical investigations for extended periods of time - please observe a 0.5 NM passing clearance.

The results of this survey will assist Bluepoint Wind in understanding potential submerged obstructions, seabed and subsurface materials classifications, and the locations of potential historic or archaeological resources.

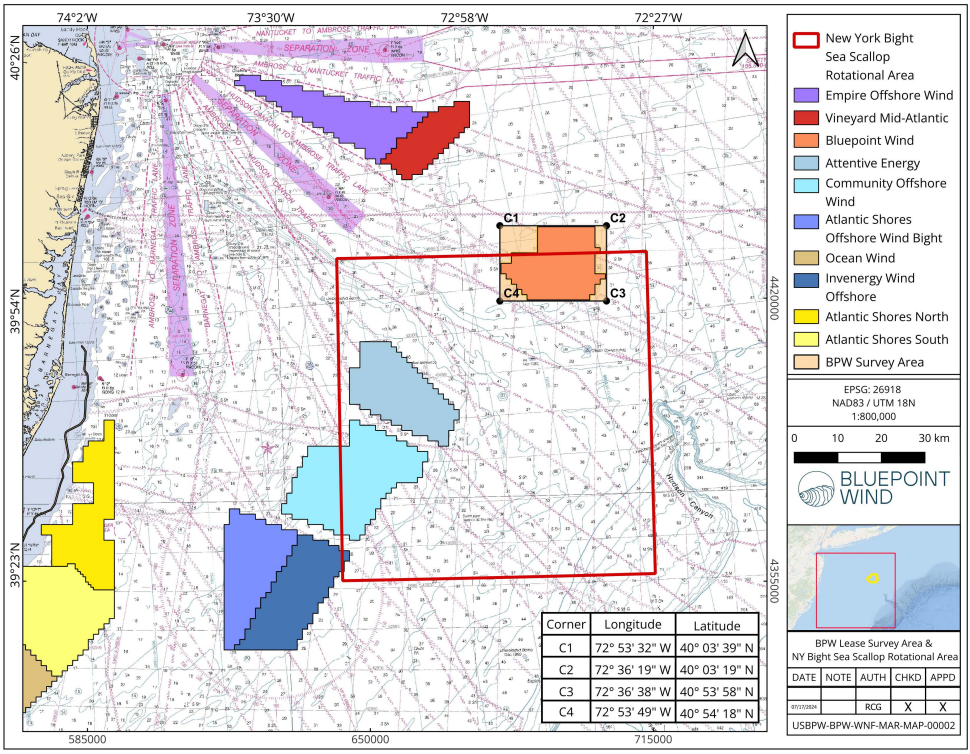


Chart of Bluepoint Wind Lease (OCS-A 0537), survey area, and New York Bight Scallop Rotational Area

- Survey activities will be conducted in accordance with federal and state regulations and health & safety policies and procedures.
- Survey activities and locations will be posted to the Local Notices to Mariners in U.S. Coast Guard Districts 1 and 5.
- Vessels will have Protected Species Observers (PSOs) on-board to identify protected species' presence and provide measures for the protection of marine wildlife while transiting or positioning the geotechnical survey equipment.
- Survey vessels will conduct work activities in accordance with the need to respectfully co-exist with fishermen and fisheries vessels, gear, and personnel.

Vessel Name: M/V Fugro Resilience
MMSI: 311001279
Call Sign: C6GL5
Flag: Bahamas
Length: 274 feet
Activity Start Date: July 28
Area: Offshore Lease Area OCS-A 0537 (53nm from NJ, 38nm from NY)
Operation: 7 days per week, 24 hours per day until survey completion

GET IN TOUCH:

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