

Alignment to Promote a Regional Approach to Fisheries Monitoring

MAFMC - Science and Statistical Committee

Greg DeCelles, Ph.D.
Ørsted Offshore North America

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Background

Calls for a regional approach to monitoring

"A regional approach to science would standardize monitoring methods (sampling gear, experimental design, spatial and temporal scales that more closely match the resource, and reporting standards) within a region to **make data comparable within and among projects.**" (*Methratta et al., 2020*)

"As long as standard protocols are adhered to, then individual studies can be used to compare wind farms to one another and to explore regional trends. Therefore, data collected by wind energy developers directly through their site-specific studies require the **monitoring protocols to be identical for all developers.**" (*Massachusetts Division of Marine Fisheries, 2018*)

"Specific gear designs (net dimensions, configuration, mesh size, trap dimensions) and sampling protocols (tow length, soak time) should be developed with input from the commercial fishing industry, and should strive to **maintain consistency with ongoing regional-scale projects,** such as the Virginia Institute of Marine Science's North East Area Monitoring and Assessment Program (NEAMAP) and Southern New England Cooperative Ventless Trap Survey." (*Petruny-Parker et al., 2015*)



Monitoring guidance

BOEM

- BOEM guidance for fisheries monitoring.
- Recommended fisheries sampling gears include; otter trawl, beam trawl, gillnet, ventless pots.
- Before-After Control-Impact (BACI) design is specified.
- There is some specificity in the recommended gear characteristics (e.g., 1" codend liner, tow speed and duration), but developers were also encouraged to consult with local fishing industry and consider regional species of interest when selecting the characteristics of the sampling gear.

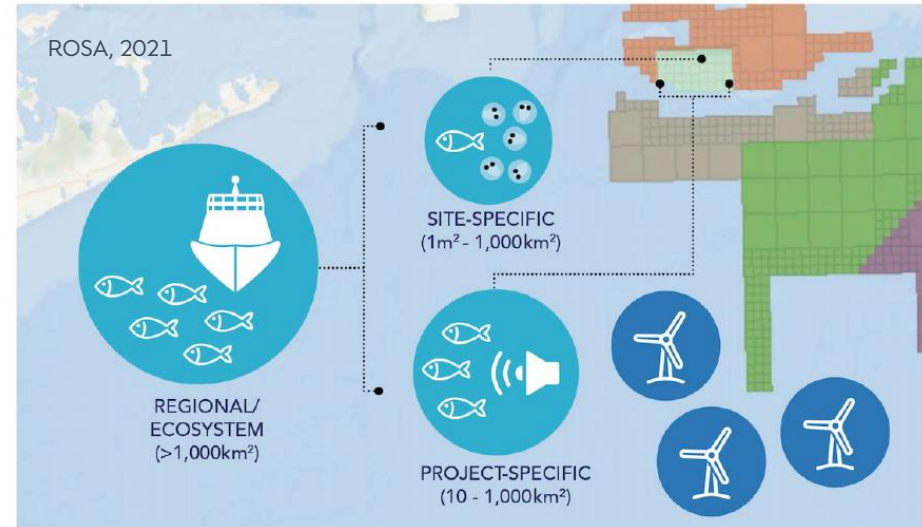


Monitoring guidance

ROSA

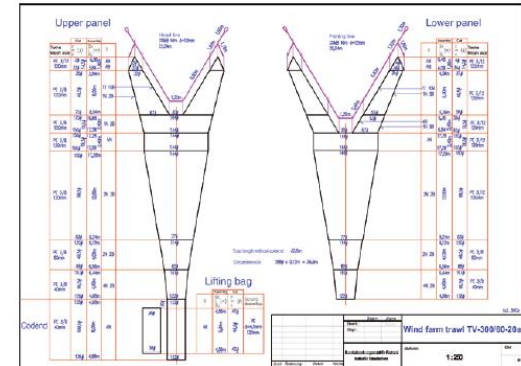
Document was intended to build on the existing BOEM guidance and outline the fundamental elements needed for an offshore wind monitoring project.

- “To facilitate standardization with existing data, gear configuration should mirror that used by existing surveys, particularly otter trawl, dredge, ventless trap, and some types of hook gear, whenever possible. For gear types that are not used in regional surveys, (e.g., gillnets), gear configuration should mirror local commercial fishing operations”.
- “Support the integration of monitoring efforts across multiple spatial and temporal scales”.
- Emphasis on power analyses to inform sampling design, but no explicit guidance on the effect size to be tested.
- No explicit guidance on the duration of monitoring.
- Guidelines for data elements to be collected and data analysis approaches to be carried out.



Fisheries monitoring at German offshore wind farms

- Germany developed prescriptive requirements for fisheries monitoring at its offshore wind sites.
- Developers are required to carry out two years of pre-construction monitoring, to monitor during construction, and to perform three years of post-construction monitoring.
- Fisheries monitoring must be performed using either an otter trawl (Baltic Sea) or a beam trawl (North Sea). The technical specifications of the sampling gear are provided in the regulations.
- The necessary sample sizes and the seasonality of sampling are specified within the requirements.
- Oceanographic covariates that must be collected are identified.
- The criteria that must be used to determine reference site locations are described in the document.



Trawl surveys

Ørsted are proposing to carry out NEAMAP style trawl surveys at the Ocean Wind 1, Revolution Wind, and Sunrise Wind lease sites.

- Trawl net constructed according to NEAMAP specifications.
- F/V Darana R will be used to execute the trawl survey at Ocean Wind 1.
- Net mensuration equipment will be used to assess trawl geometry in real time.
- Tow speed and tow duration will be consistent with NEAMAP methods.
- Sampling will be restricted to daylight hours to minimize diel variability in catch rates.
- Intend to use the same vessel and reference sites for monitoring at both the Revolution Wind and Sunrise Wind.
- Largely consistent with methods being used by Vineyard Wind at their lease sites.

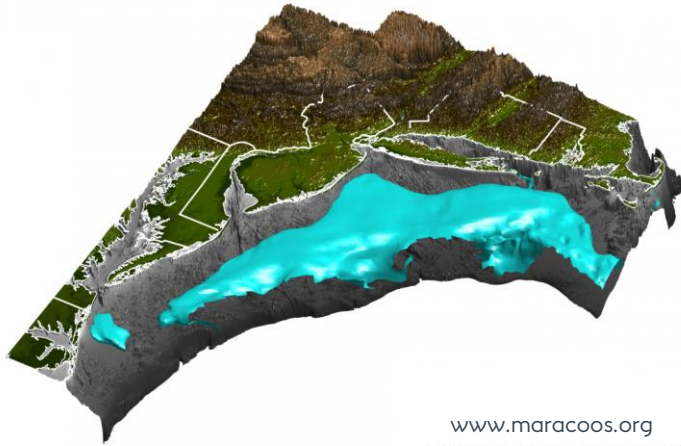


Oceanographic data

Ørsted are collecting detailed oceanographic data during fisheries monitoring surveys across all lease sites.

- Conductivity Temperature Depth (CTD) sensors are being used to collect vertical profiles of the water column at each sampling station.
- Bottom T is being recorded whenever sampling gear is deployed.

ESPRESSO Cold Pool 12° C on Aug 10, 2013 01:00 UTC



www.maracoos.org

Visualized by Dr. Hugh Roarty and Mr. John Kerfoot



www.wateronline.com

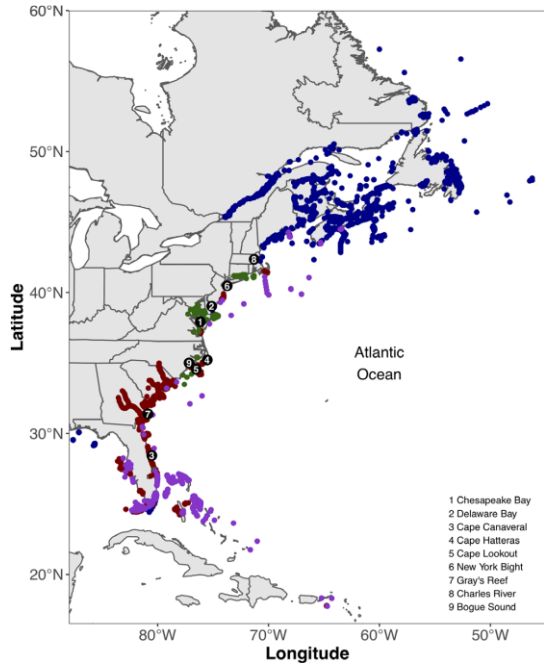
Acoustic telemetry

- Movements of individual animals can be tracked across a range of spatial and temporal scales.
- Prior acoustic telemetry studies in Europe and Japan have investigated movement patterns of commercially important species on offshore wind farms.
- Acoustic telemetry has also been used to evaluate behavior of fish around subsea power cables (EMF).
- BOEM has funded several pre-construction acoustic telemetry studies.

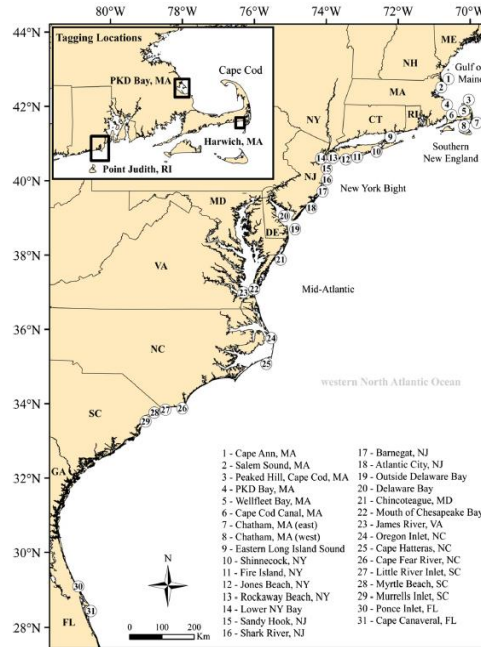


Acoustic telemetry

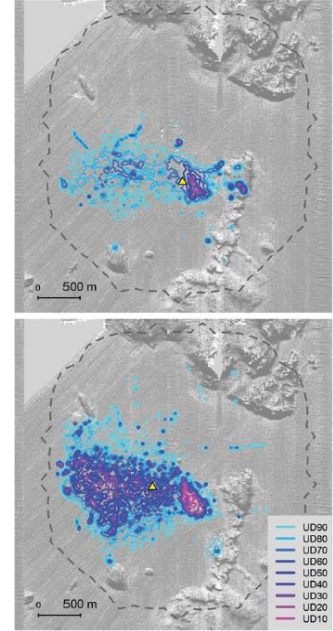
Spatial scales



Bangley et al 2020



Kneebone et al 2014



Dean et al 2014



Acoustic telemetry monitoring Offshore wind farms

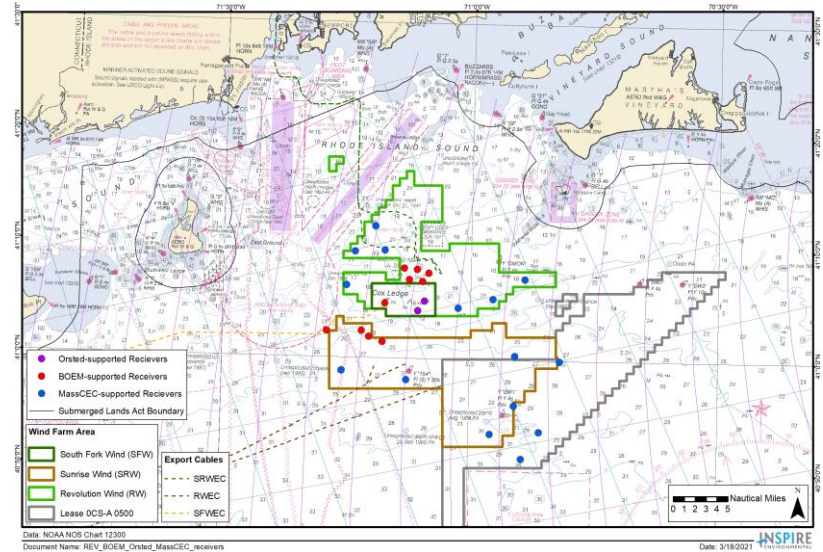
Ørsted is partnering with the New England Aquarium and Inspire Environmental to perform a multi-year acoustic telemetry monitoring project.

Project Timeline

- Winter 2021 – workshop on data sharing.
- Spring 2022 – 36 receivers deployed in Ørsted lease areas. Receiver array will be downloaded and maintained three times per year.
- Spring/Summer 2023 – 50 transmitters deployed each year on HMS species.

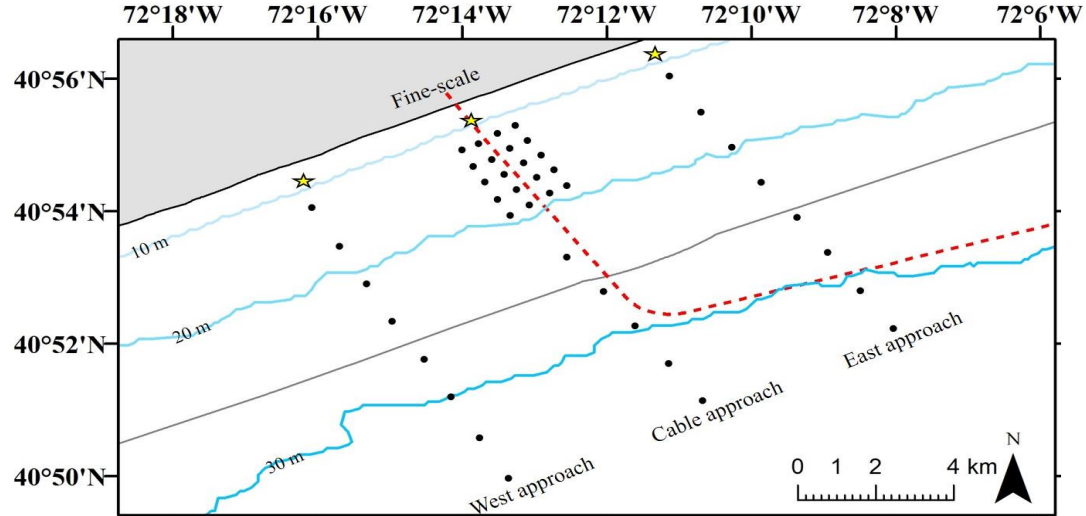
Objectives

- Evaluate changes in presence/absence, movements, and residency over time.
- Evaluate connectivity amongst the Ørsted lease areas in Southern New England.
- Monitor tagged animals across wider spatial scales (other lease sites and locations beyond).



Acoustic telemetry monitoring South Fork Wind export cable

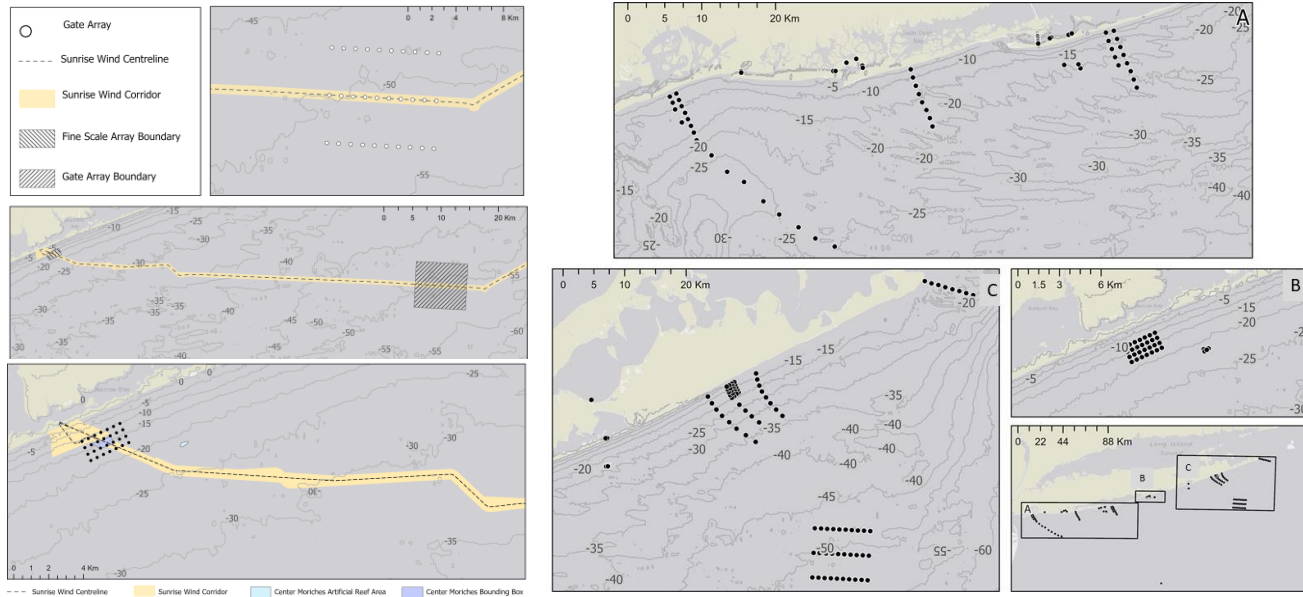
- Focal species are striped bass, winter flounder, summer flounder, black sea bass and winter skates.
- Receivers were deployed in August 2021. Target is to tag 620 individuals from 2021 through 2024.
- Primary objective – Compare movement and behavior over time to evaluate the effects of EMF on targeted species.



Acoustic telemetry

Sunrise Wind export cable

- Sunrise Wind will partner with researchers at Stony Brook University, Cornell Cooperative Extension and the Shark Research and Education program at the South Fork Natural History Museum to execute a multi-year acoustic telemetry study along the SRW export cable.



Conclusions

- Many stakeholder groups have an interest in fisheries monitoring activities, which can lead to competing objectives.
- Fisheries monitoring guidance documents in the U.S. have some specificity, but are not prescriptive.
- Monitoring requirements for developers in mature markets are typically detailed, and prescriptive, which drives consistency amongst projects.
- Trade-offs exist between standardization and innovation.
- Approaches to monitoring may need to be re-evaluated periodically, as the regulatory landscape changes (e.g., protected species), and as lessons are learned from early projects (e.g., risk retirement).
- Ørsted is working to promote consistency in monitoring approaches across its lease sites wherever practicable.
- There have been several efforts to promote consistency in monitoring approaches amongst developers.



Thank you

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