Offshore Wind Energy & NOAA Survey Mitigation Updates

Presentation to the New England Fishery Management Council
June 22, 2021

NOAA FISHERIES
Northeast Fisheries Science Center

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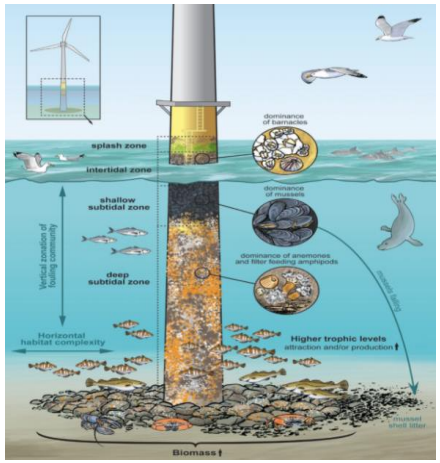
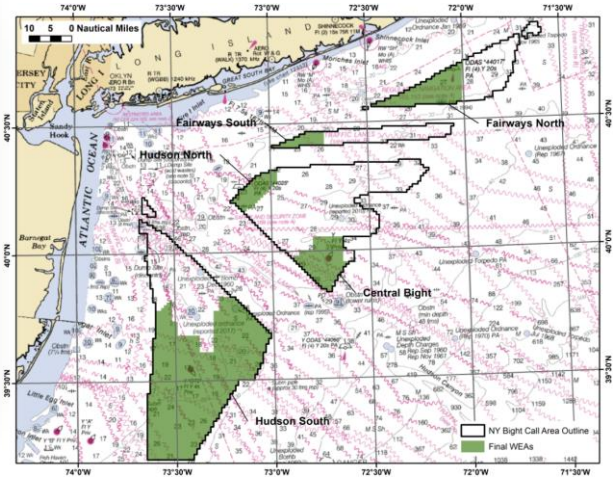


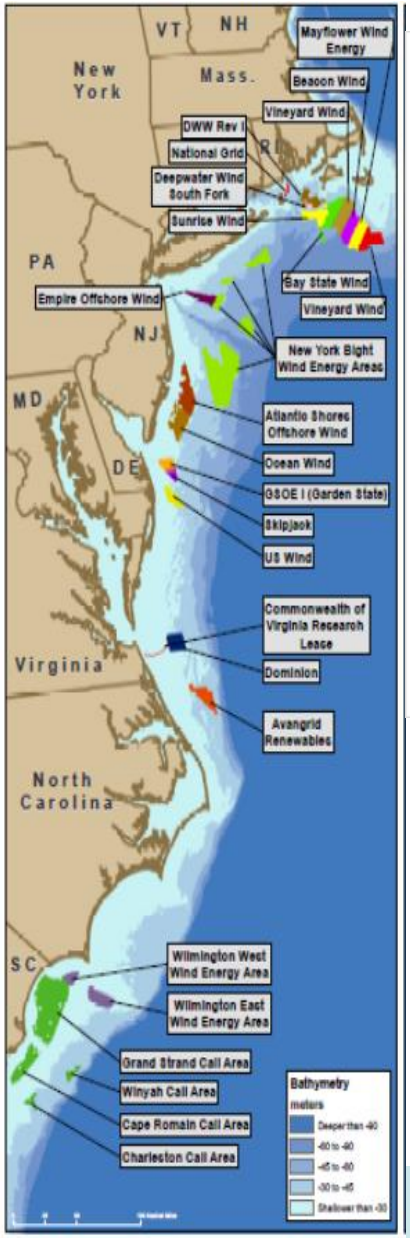
Degraer et al., 2020

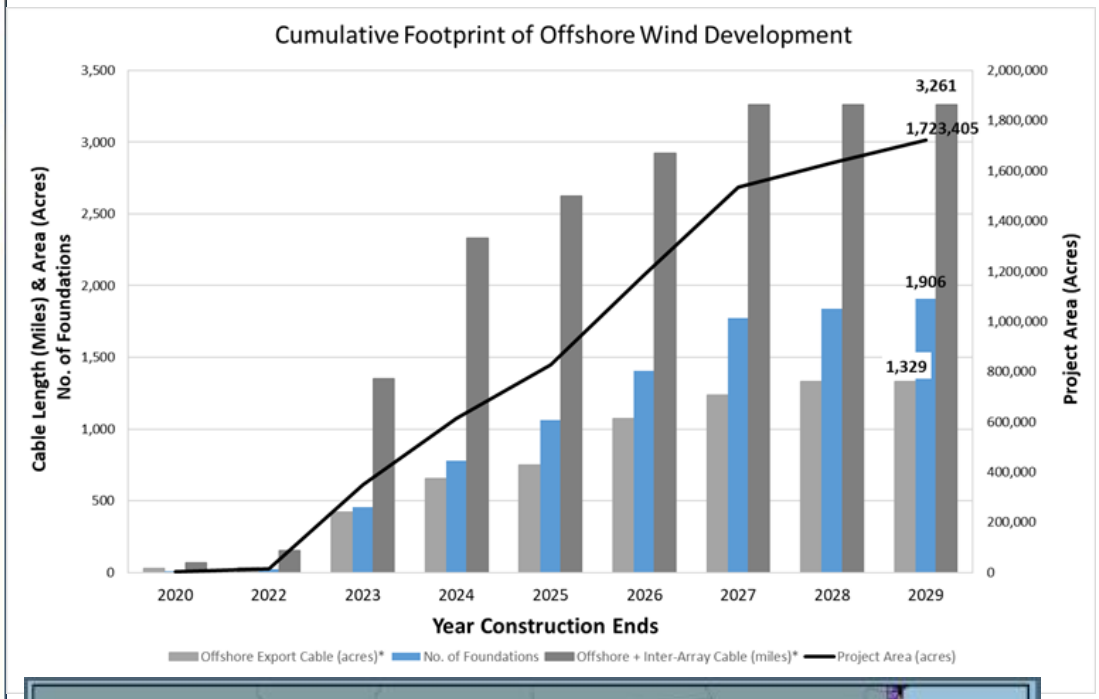


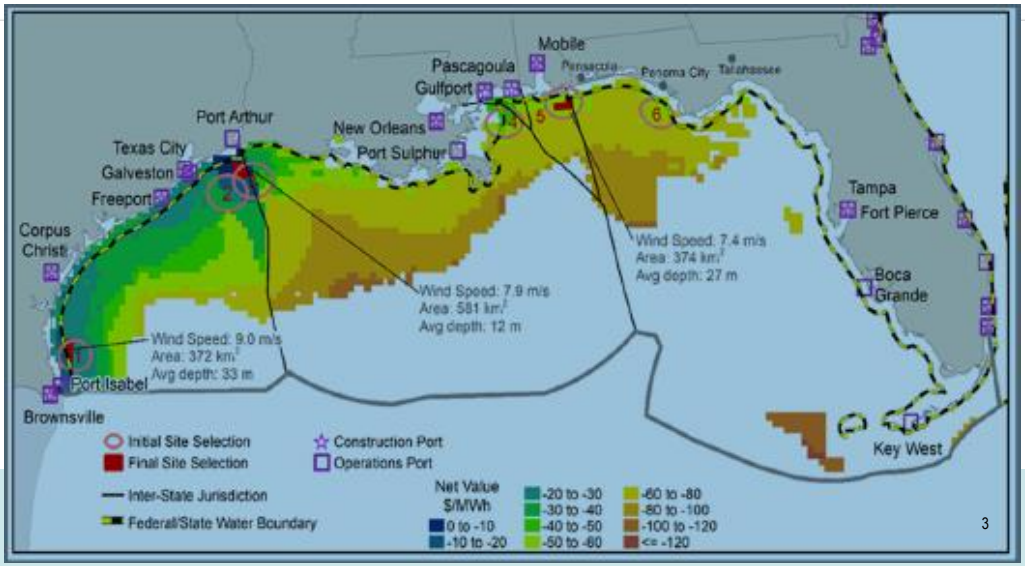
NOAA Fisheries
Offshore Wind Needs

1. Support to Regulatory Process
2. Scientific Support for the Regulatory Process
3. **Address impacts of offshore wind on Federal Surveys & Scientific Advice**
4. Understanding Interactions with NOAA Trust Resources

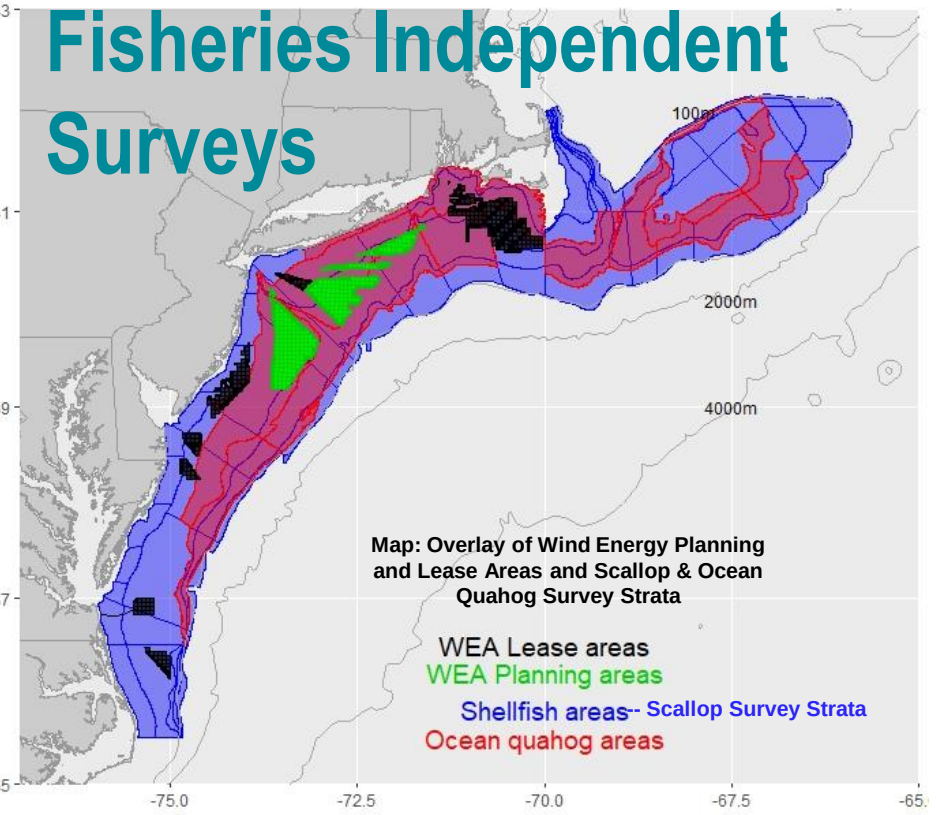
Scientific Support needed for cumulative development







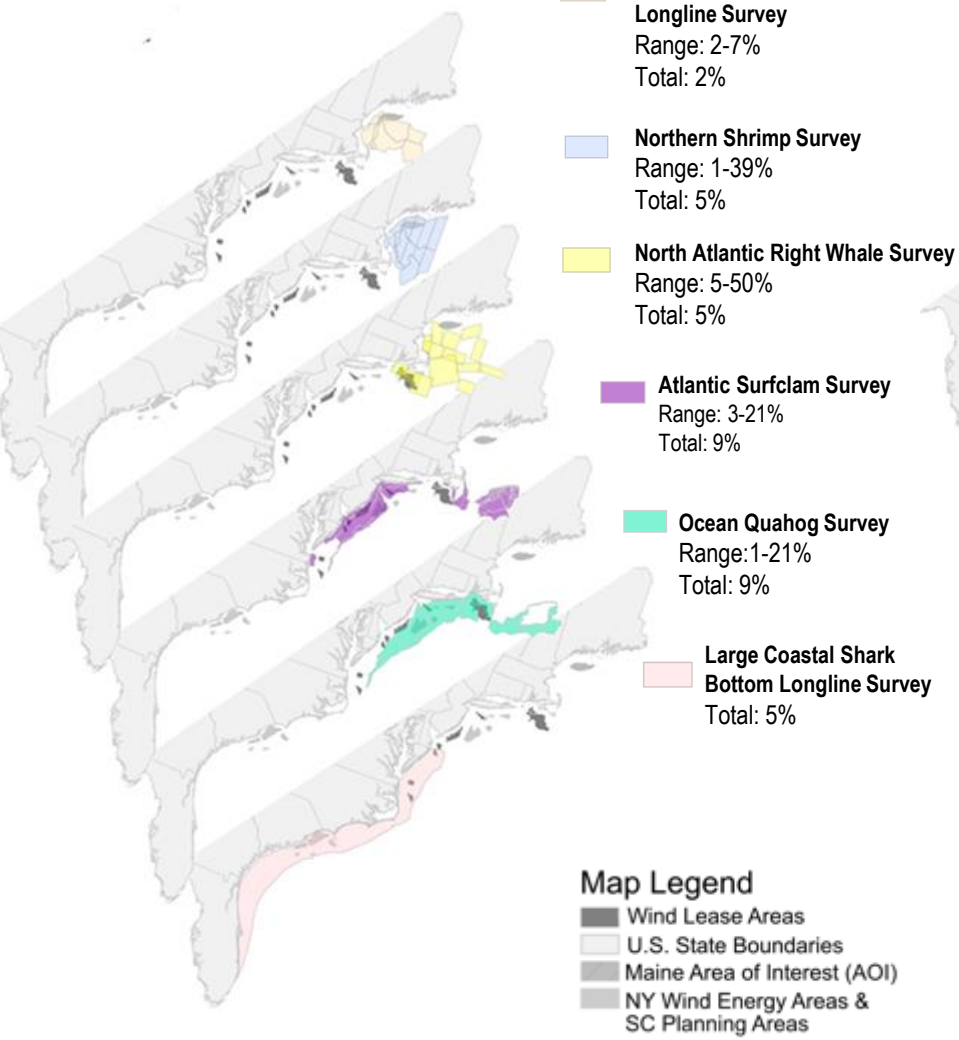
Offshore Wind & Fisheries Independent Surveys



Represents 394 Years of Total Survey Effort
Underpin fisheries valued at $27B/year commercial fisheries & $6.5B recreational fisheries (NMFS, 2018)

Survey	Year Started	Survey Design	Major Applications
Autumn Bottom Trawl Survey	1963	Random Stratified Design - North Carolina to Nova Scotia (bottom trawl)	abundance; length, age, sex, weight, diet, maturity samples, distribution, EcoMon
Spring Bottom Trawl Survey	1968	Random Stratified Design - North Carolina to Nova Scotia (bottom trawl)	abundance; length, age, sex, weight, diet, maturity samples, distribution, components of Ecosystem Monitoring survey
Scallop Survey	1979	Random Stratified Design (dredge); line transect (HabCam)	biomass, abundance, distribution, size and sex of sea scallops and other benthic fauna
Atlantic Surfclam and Ocean Quahog Surveys	1980	Random Stratified Design (hydraulic dredge)	biomass, abundance, distribution, size and sex of Atlantic surfclam and ocean quahog
Northern Shrimp Survey	1983	Random Stratified Design (commercial shrimp trawl)	biomass, abundance, length
Gulf of Maine Cooperative Bottom Longline Survey	2014	Randomly Stratified Design (bottom longline)	abundance, biomass, length, age, sex, weight, maturity samples, distribution, habitat data
Ecosystem Monitoring Survey	1977	Random Stratified Design (linked to Trawl Survey Design); fixed stations embedded in design (plankton and oceanographic sampling)	Phyto/nkton, zooplankton, ichthyoplankton, carbonate chemistry, nutrients, marine mammals, sea birds
North Atlantic Right Whale Aerial Surveys	1998	Aerial line transects	Right Whale population estimates; dynamic area management
Marine mammal and sea turtle ship-based and aerial surveys	1991	Line transects for ship and aerial surveys. biological and physical oceanography sampling	Abundance and spatial distribution of marine mammals, sea turtles, and sea birds
Large Coastal Shark Bottom Long-line Survey	1986	Fixed station design in US continental shelf waters from Fl to DE with stations ~ 30 nm apart	Abund., distribution, migrations (tagging), and bio-sampling for assessment, EFH designations, and life history studies
Coop. Atlantic States Shark Pupping and Nursery Longline/Gillnet Survey	1998	Random stratified and fixed station (longline and gillnet) surveys in estuarine and nearshore waters from Florida to Delaware	Abundance, distribution, migrations (tagging), and bio-sampling for assessment, EFH, and life history studies

Northeast NMFS Survey Interactions with Offshore Wind



Gulf of Maine Cooperative Bottom Longline Survey
Range: 2-7%
Total: 2%

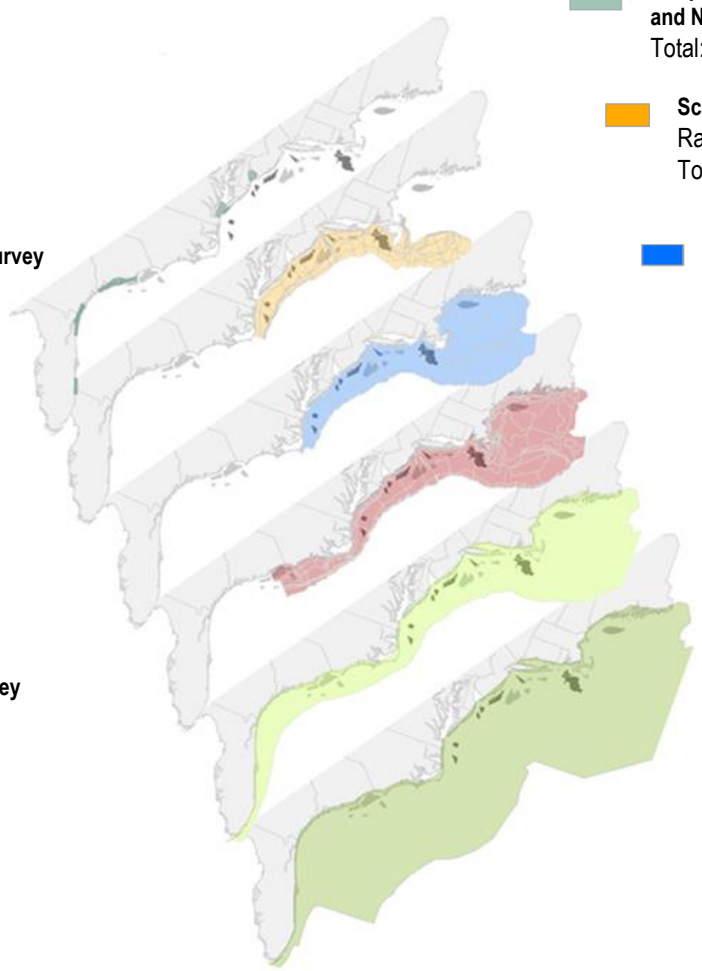
Northern Shrimp Survey
Range: 1-39%
Total: 5%

North Atlantic Right Whale Survey
Range: 5-50%
Total: 5%

Atlantic Surfclam Survey
Range: 3-21%
Total: 9%

Ocean Quahog Survey
Range:1-21%
Total: 9%

Large Coastal Shark Bottom Longline Survey
Total: 5%



Cooperative Atlantic States Pupping and Nursery (COASTSPAN)
Total: <1%

Scallop Survey
Range: 1-96%
Total: 7%

Ecosystem Monitoring Survey
Range: 1-37%
Total: 5%

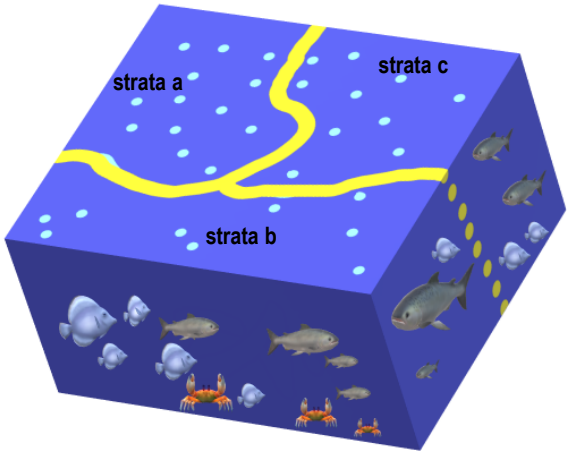
Bottom Trawl Survey
Range: 1-76%
Total: 5%

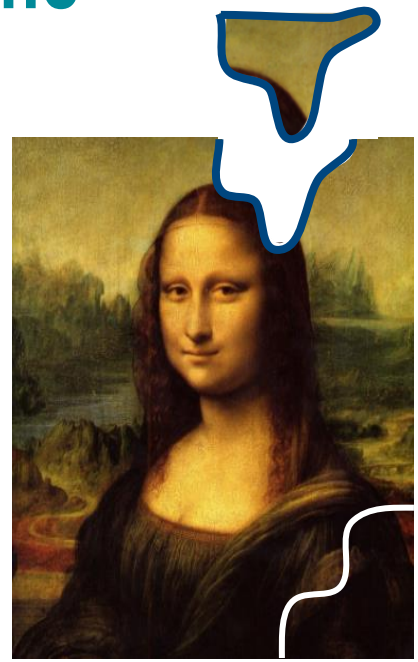
Protected Species Abundance Surveys
Aerial
Total: 3%
Shipboard + Aerial
Total: 2%

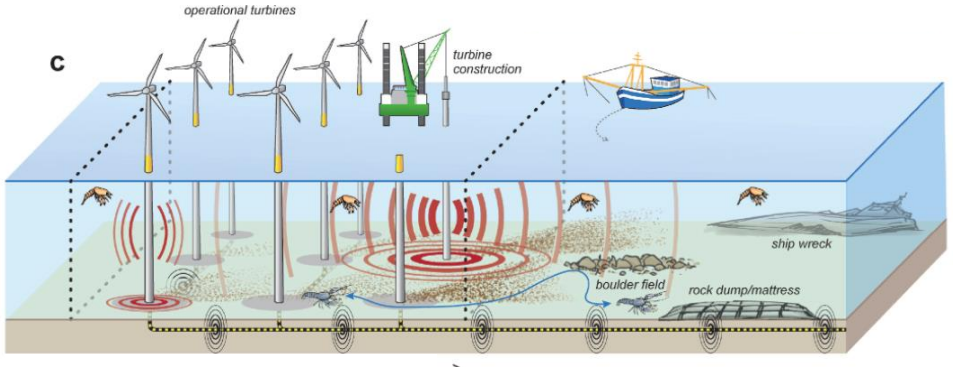
Range= Minimum and maximum overlap with survey strata
Total = Percent overlap of wind development with total survey area

Wind Energy Actuates Impacts to Scientific Surveys in Four Ways:

1. **Preclusion**- displacement by infrastructure
2. **Impacts to Statistical Survey Design**
3. **Habitat Change** that affect species distribution, abundance, and vital rates within and outside wind energy areas
4. **Impacts to sampling** outside of developments by wind energy-induced transit effects that can result in lost sampling time







Gill Methratta al., 2020

Implications of NOAA Fisheries Survey Disruptions

American Public
- Adverse impacts on fishermen and fishing communities and American public who consume seafood and expect recovery and conservation of endangered species and marine mammals

Commercial/Recreational Fishermen & Fishing Communities
- Increase uncertainty in estimates of abundance—through application of the precautionary approach—impacting setting of quotas,
- Increase in more precautionary protected species management measures

Protected Species
- Greater uncertainty in protected species assessments/recovery programs

Non-fishing Sectors-Shipping & Energy
- Uncertainty in protected species information and stock assessments

Federal Agencies
- Harm caused by the need to include more precautionary mitigation measures, e.g., Incidental Take Statements (ITA) through ESA Biological Opinions and MMPA ITAs

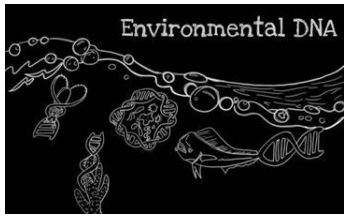
Climate Science
- Disruptions of 60+ year time series decreases ability to understand and mitigate the effects of climate change, impacting American Public

Implementing a Federal Survey Mitigation Program

1. **Evaluate survey designs**: Evaluate and quantify effects and impacts of proposed project-related wind development activities on scientific survey operations and on provision of scientific advice to management.

2. **Identify and develop new survey approaches**: Evaluate or develop appropriate statistical designs, sampling protocols, and methods, while determining if scientific data quality standards for the provision of management advice are maintained.

3. **Calibrate new survey approaches**: Design and carry out necessary calibrations and required monitoring standardization to ensure continuity, interoperability, precision, and accuracy of data collections.

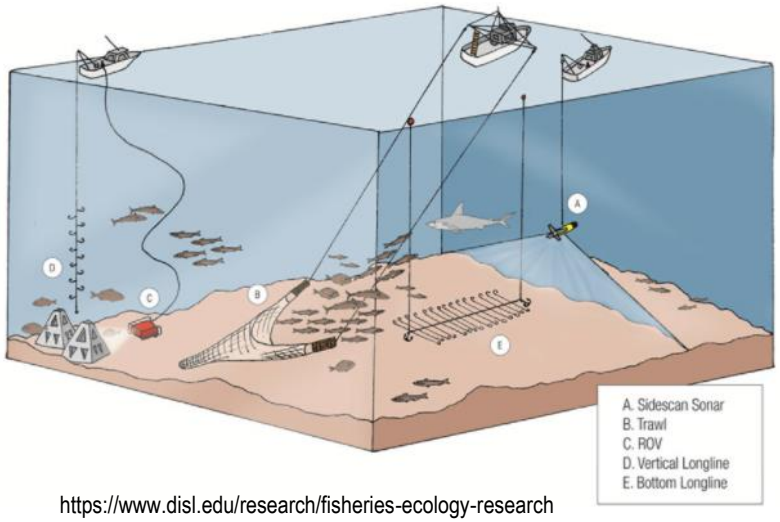


Implementing a Federal Survey Mitigation Program

4. Develop interim provisional survey indices: Develop interim indices from existing data sets to partially bridge the gap in data quality and availability between pre-construction, and operational periods while new approaches are being identified, tested or calibrated.

5. Wind energy monitoring to fill regional scientific survey data needs: Apply new statistical designs and carryout samplin methods to effectively mitigate survey impacts due to offshore wind activities from operations for the 30 year operational life-span of project developments.

6. Develop and communicate new regional data systems: New data collections will require new data collection, analysis, management, dissemination and reporting systems. Changes to surveys and new approaches will require substantial collaboration with fishery management, fishing industry, scientific institutions and other partners.



https://www.disl.edu/research/fisheries-ecology-research

Northeast Surveys: Status of Survey Mitigation Steps

NOAA Fisheries Survey Time Series	1.Evaluate designs & impacts	2. Design New methods	3. Calibrate New/Existing Surveys	4.Bridge Solutions	5. Conduct New Surveys	6. Comms. & Data
Fall BTS	Started	Initial	No	No	No	Initial
Spring BTS	Started	Initial	No	No	No	No
EcoMon	No	No	No	No	No	No
Scallop	Started	Grant?	No	No	No	No
Shellfish- (clams)	No	No	No	No	No	No
Right Whale-Air	**Initial**	Pending Grant	Pending Grant	No	No	No
Marine Mammal/sea Turtle Ship/Air	No	No	No	No	No	No
Atlantic Shark Bottom Long-Line	No	No	No	No	No	No
GOM Bottom Long Line	No	No	No	No	No	No
GOM Shrimp Survey	No	No	No	No	No	No
Atlantic Shark COASTPAN	No	No	No	No	No	No

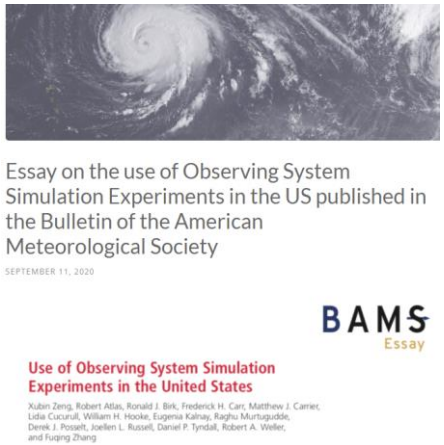
Development of an Adaptation strategy for Multi-Species Bottom Trawl

- **Determine effects of wind development on survey data, stock assessments and management measures.**
  - Principal Investigator: Phil Politis
  - Evaluate range of impacts (eg. Eliminate all observations from WEAs and recalculate abundance indices)
  - Must look at over 40 assessed stocks for bottom trawl survey

- **Identify potential combination(s) of sampling methodologies and statistical designs for inside WEAs**
  - Results should be able to be incorporated with historical and existing sampling for continuity of time-series

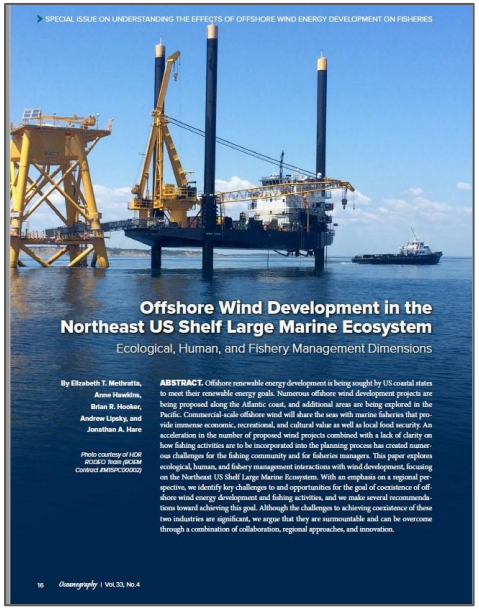
- **Observing System Simulation Experiments (OSSE)** and/or other modeling approaches
  - Interagency Agreement with Bureau of Ocean Energy Management
  - **Stakeholder workshops in 2021**
    - Steering Committee to be engaged for participant selection
    - Identify impacts of offshore wind energy development on fisheries
    - Impacts on stock assessment and management advice
    - Define the objectives and questions that OSSE needs to answer
    - Design analytic and empirical framework

- **Build Model, evaluate alternatives, identify survey adaptation actions**



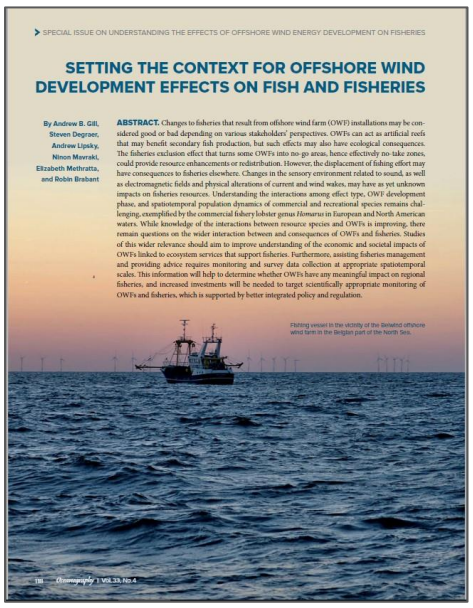
CINAR
Cooperative Institute for the North Atlantic Region

Peer-Reviewed Papers on Offshore Wind - Fisheries Science Topics



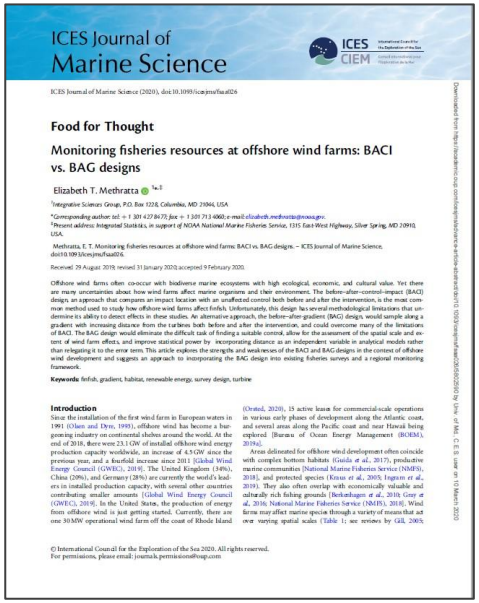
Methratta et al. 2020. *Oceanography* 33:16–27.

Ecological, human, and management dimensions of OW in the NE U.S.



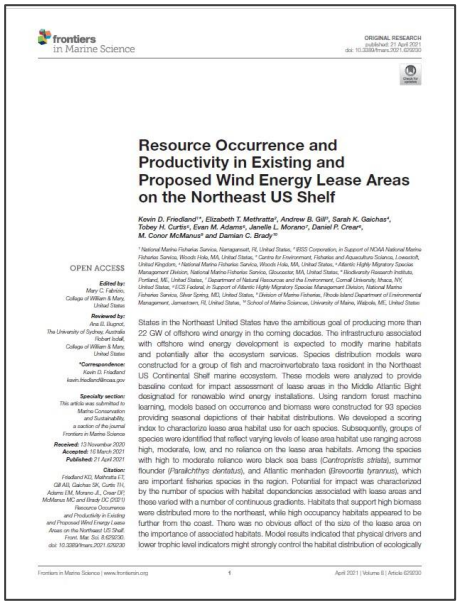
Gill et al. 2020. *Oceanography* 33:118–127.

Ecological, societal, management, and regulatory dimensions of OW with European and U.S. perspectives



Methratta 2020. *ICES Journal of Marine Science* 77: 890–900.

Exploring the pros and cons of BACI and BAG experimental designs in the context of OW



Friedland et al. 2021. *Frontiers in Marine Science* 8:629230.

Fisheries resource occurrence in the NE U.S. Shelf wind energy areas

Questions