




Co-Existence of Sustainable Fisheries & Offshore Wind

Fisheries Science and Fisheries Considerations

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NMFS Regional Wind Team

NEFSC, GARFO, NOAA HQ Staff
MAFMC & NEFMC staff

“Other duties as assigned”



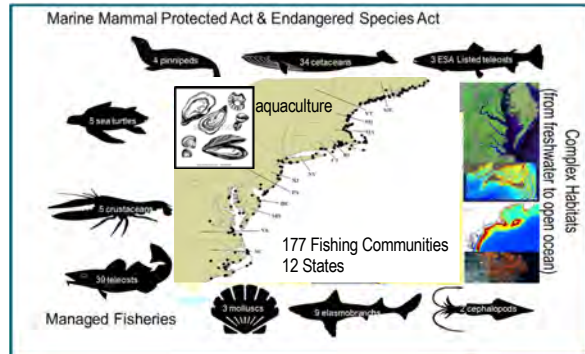
So remember that part about “other duties as assigned?”



NMFS Role

Science

- Fisheries
- Fishing Communities
- Marine Mammals
- Endangered Species
- Essential Fish Habitat
- Aquaculture
- Interactions



Interactions w/ Fisheries

Baseline/Planning Studies

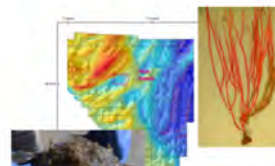
- Fishing revenue studies
- Habitat Characterization
- Marine Mammal Surveys - Atlantic Marine Assessment Program for Protected Species
- Seabird Surveys (on NMFS ecosystem surveys)
- 50+ years of survey effort

Socio-Economic Impact of Outer Continental Shelf Wind Energy Development on Fisheries in the U.S. Atlantic

Volume I—Report Narrative



Habitat Mapping and Assessment of Northeast Wind Energy Areas



Interactions w/ Fisheries

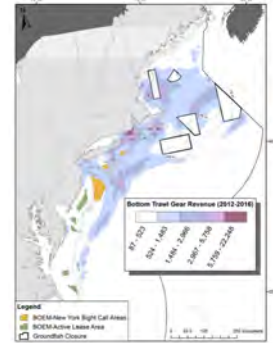
Baseline/Planning Studies

- Model-based predictions of likely fishing concentrations based on observer data and VTR data: and dealer-derived revenue and landings by Fishery

Table 1.9 Most Impacted FMPs Five Year Landings and Revenue, All Call Areas

FMP	Five Year Revenue	Five Year Landings (Pounds)
Sea Scallop, NE	\$268,298,000	23,459,000
Surfclam, Ocean Quahog, Mid-Atlantic	\$47,702,000	6,269,000
Summer Flounder, Scup, Black Sea Bass, Mid-Atlantic	\$9,068,000	5,319,000
No Federal FMP	\$5,863,000	3,288,000
Mackerel, Squid, Butterfish, Mid-Atlantic	\$4,578,000	7,045,000
Total	\$335,509,000	45,381,000

Map 13 - Sum of revenue across all bottom trawl gear, regardless of species FMP (2012-2016)



See: <http://www.mafmc.org/northeast-offshore-wind/>



Interactions w/ Fisheries

Construction & Decommissioning Effects

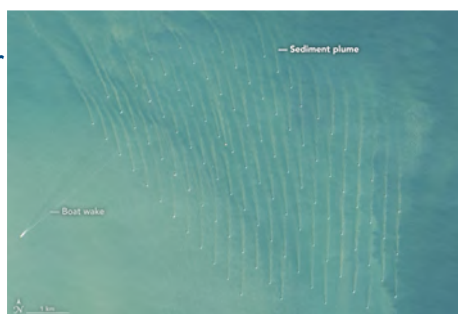
- Seafloor Disturbance
- Sediment Suspension and Deposition
- Dredging / Cabling
- Noise
- Vessel Traffic
- Lighting



Interactions w/ Fisheries

Operational Effects

- Seafloor Disturbance / Scour
- Habitat Conversion
- Noise
- Electromagnetic Fields
- Water Column Disturbance
- Vessel Traffic
- Lighting



<https://earthobservatory.nasa.gov/images/89063/offshore-wind-farms-make-wakes>



Interactions w/ Fisheries

Operational Effects

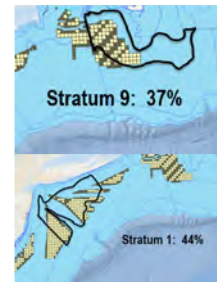
- Displacement & Changes in Fishing Effort
 - Transit and operations
 - Socio-economic impacts on fishing communities
- Displacement of NOAA Fisheries Survey Effort
 - shipbased & aerial
- Safety-at-Sea



Interactions w/ Fisheries Independent Surveys

Nearly all long-term (in some cases 50+ years) fishery-independent surveys will be impacted

- Integrated Benthic/Atlantic sea scallop
- Spring and autumn multi-species bottom trawl
- Surf clam
- Ocean quahog
- EcoMon (plankton, physical oceanography)
- North Atlantic Right Whale

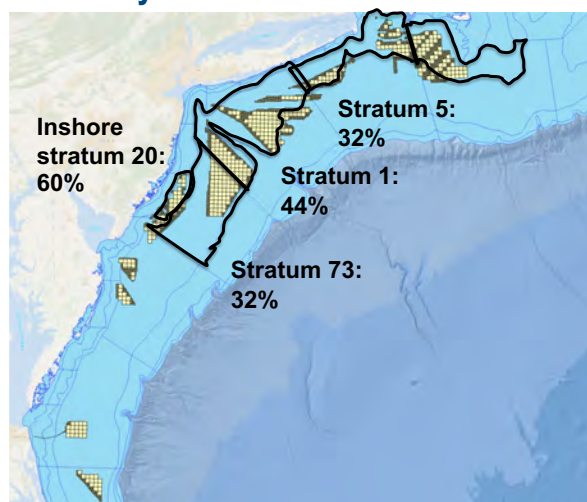


Affected Center surveys

- The actual effects on each survey and associated potential mitigation have yet to be characterized.
- This presentation focuses on bottom trawl survey examples.
- There are several generic issues that apply to many surveys, however.



Multi-species Bottom Trawl Survey Example Effects on Survey Strata



Types of implications for trawl surveys and other NEFSC long term monitoring programs in general

1. Vessel operations/access
2. Statistical survey design and estimation

Goals:

- Maintain historical time series
- Maintain quality of information flow for stock and ecosystem assessments

Vessel Operation Impacts

- Cabling would likely further reduce trawlable bottom (un- or under-buried) both inside and outside these areas.
- Any attraction of fixed gear or recreational effort to areas could also reduce trawlable habitat.
- Navigational considerations, such as new transit lanes, from Coast Guard still under development



Statistical survey design

- We currently select station locations randomly within a stratum.
- Random site selection will no longer be possible: sites near turbines (or potentially within entire wind energy areas) will be systematically eliminated.
- The area occupied by turbines (or entire wind energy areas) will increase over time.



Statistical survey design

- If new survey type is required, calibration will be required to maintain a standardized time series, or there will be a gap until new series are established.
- If new survey type is required, peer review of survey design and associated transition and calibration processes would be required.



Data gaps

Identification of :

- Modified gear and vessel configurations to meet operational constraints
- Alternative technologies
- Complementary survey design
- Calibration between standard and new survey to maintain 56 year old standardized time series
- Similar issues with other regional surveys (scallop, surf clam, ocean quahog, cetacean, plankton)



Potential impacts would include (but are not limited to)

- Reductions in precision of fishery-independent survey indices in stock assessments.
- Reductions in accuracy due to potential changes in availability.
- Reductions in precision when calibrations are required (new vessels, gear types, protocols, statistical designs).
- Reductions in sampling efficiency as vessel transit times increase and/or sampling vessel size decreases.

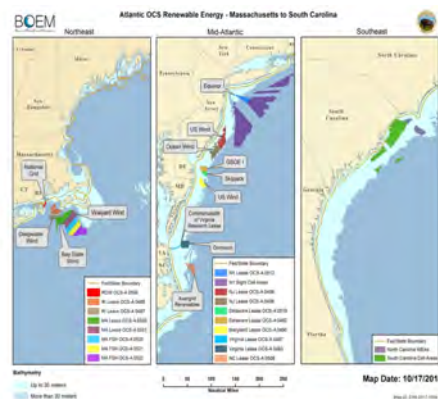
(“Wind Farm Effects that will Impact NEFSC Survey Operations and Concomitant Stock Assessments Impacts Draft Breakout Group Summary”. November, 2018)



Interactions w/ Fisheries

Cumulative Impacts

- Multiple projects constructed and operated simultaneously and sequentially for 20+ years
- What are cumulative ecosystem effects?



Key Challenges

- Committing staff without dedicated resources - NEFSC-GARFO-HQ Wind Team
- Unable to be responsive to requests - receive requests almost weekly from developers, fishing industry, and BOEM for data, analyses, and information - doing best we can
- Pace & scale of pending development



Key Challenges

- Addressing impacts to NMFS surveys & assessments
 - Time and resources to design supplemental surveys to integrate into assessments and existing time series
 - Peer-review process for design, calibration, and implementation
- Effectively engaging commercial and recreational fishing industry in the process
- Research and monitoring to address cumulative impacts on NOAA trust resources



Key Opportunities

Joint MOU NOAA, BOEM, and RODA (Responsible Offshore Development Association)

“NOAA/NMFS, BOEM, and RODA (Parties) have a mutual interest in the responsible planning, siting, and development of offshore wind power ... in a way that considered impacts to the fishing industry, fisheries resources, protected resources, and the marine habitats upon which fishery resources depend”



National Fisherman
BECOME A SUBSCRIBER OF YOUR HERITAGE
Power of science: Alliance will call for fisheries-focused wind power research



Key Opportunities

Responsible Offshore Science Alliance (fishing industry and wind developers)

Topic 1

Topic 2

Topic 2

Topic 3


Dev 1

Topic 2


Dev 3

Dev 2

- How to involve states and other feds?



Regional Framework					
Dev 1	Dev 2	Dev 3	Topic 1	Topic 2	Topic 3



Conclusions

- Offshore wind development is going to interact with the NOAA Fisheries mission for decades (nationally)
- Fisheries and fishing communities will be effected –Impacts uncertain
- Habitat, protected species and ecosystem processes will be effected—Impacts uncertain



Conclusions

- Opportunity to collaborate with fisheries managers, fishing industry and wind developers to improve science, management, and operations
- Opportunity to develop a regional science framework to evaluate cumulative impacts and to strengthen *our* regional science and management
- Opportunity to implement coexistence through an Ecosystem Based Fisheries Management approach

