



NOAA
FISHERIES

Northeast Fisheries Science Center

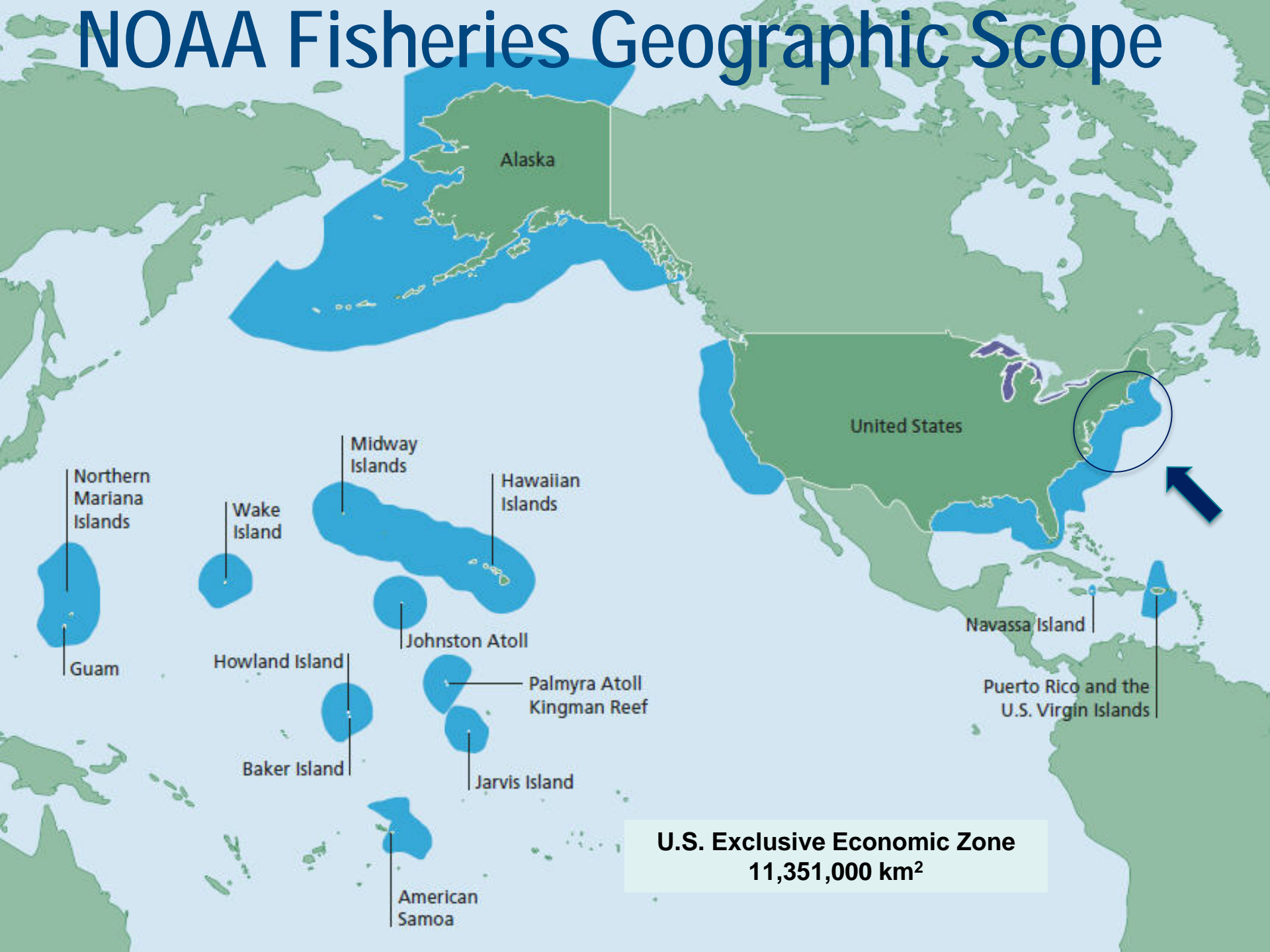
Achieving Co-existence between Fisheries and Offshore Wind Development in the U.S.

Andy Lipsky, NOAA Northeast Fisheries Science Center
Annie Hawkins- Responsible Offshore Development Alliance (RODA)

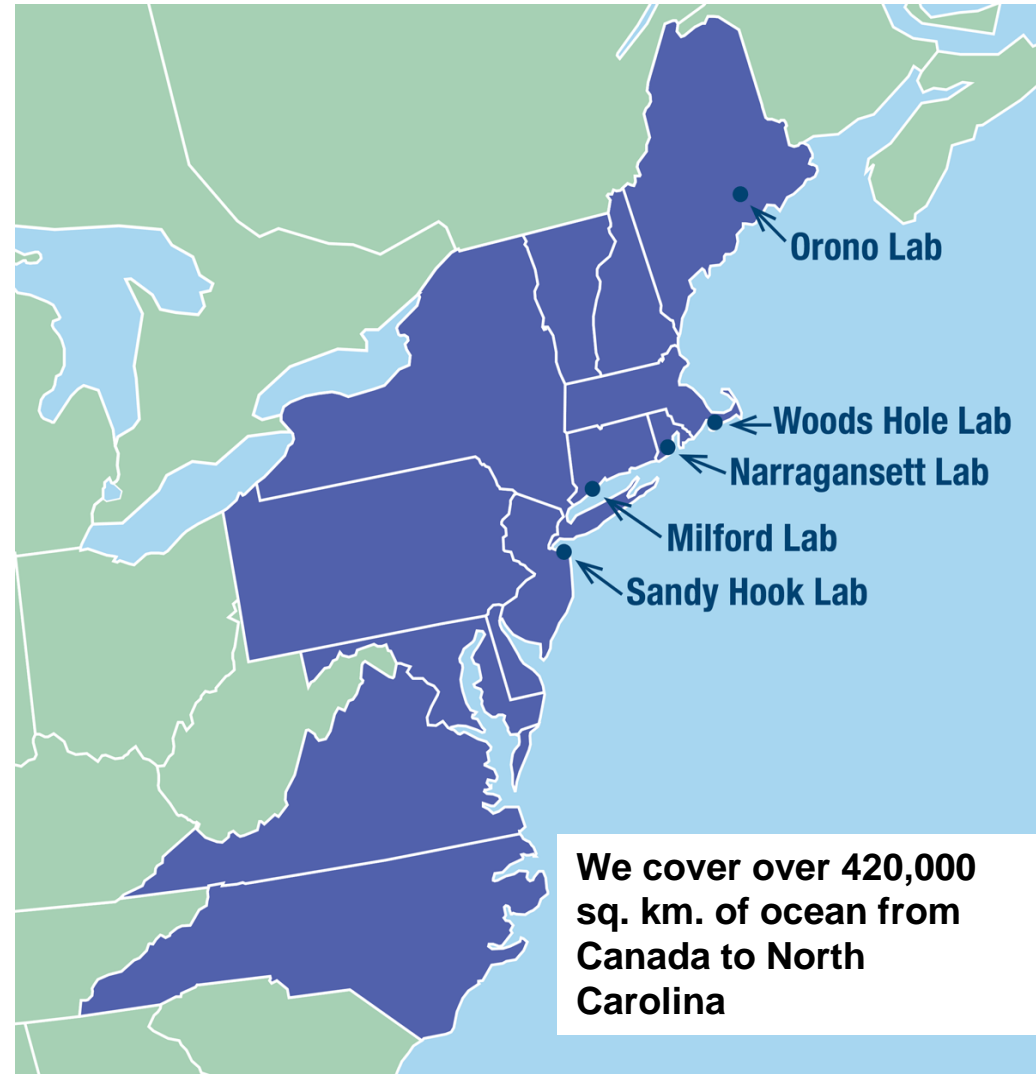
November 13, 2019



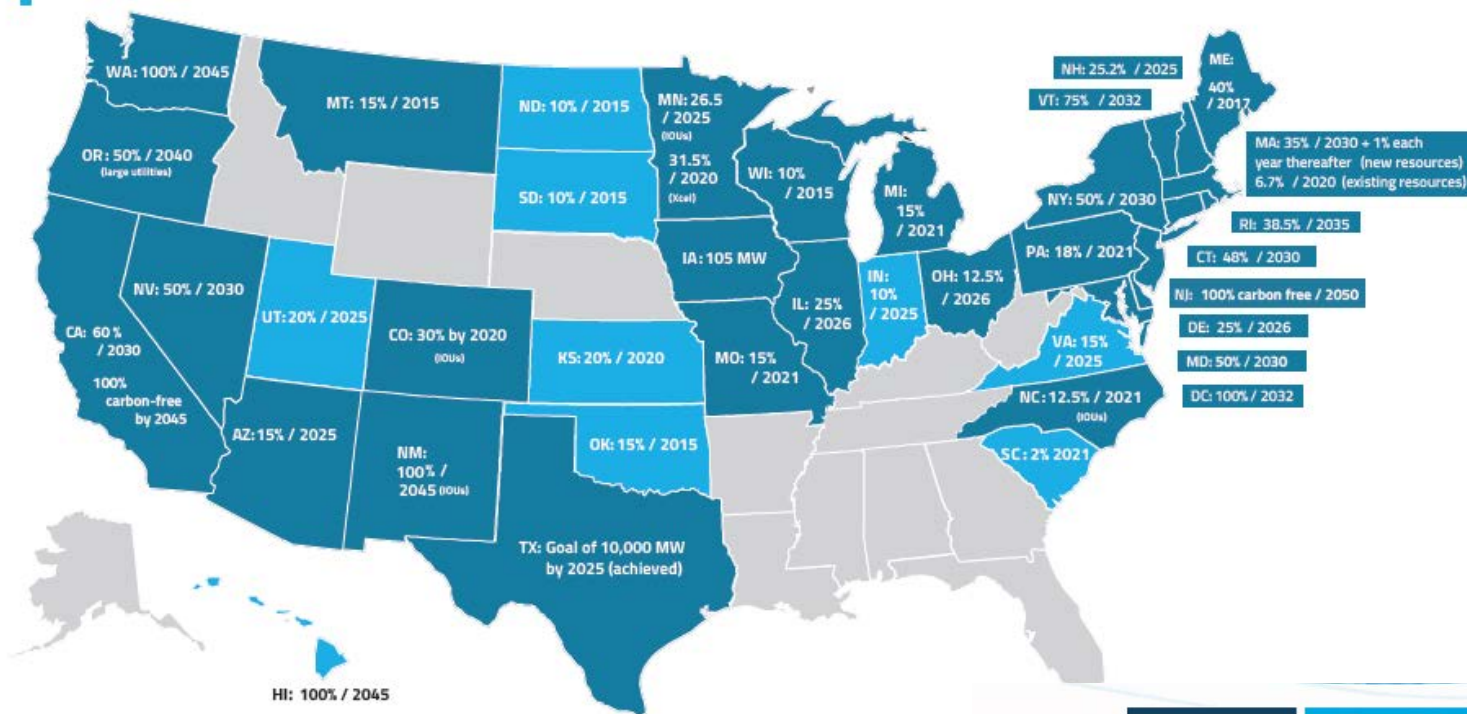
NOAA Fisheries Geographic Scope



NOAA Northeast Fisheries Science Center



State Driven Expansion of Offshore Wind



Renewable portfolio standard
Renewable portfolio goal (voluntary)

ENERKNOL

1

	Renewable Goals *	Offshore Wind Goals (MW)	PPAs/ORECs *** Awarded (MW)	Scheduled Solicitations †
Massachusetts	35% by 2030	3,200	800	800
Rhode Island	38.5% by 2035	1,000 **	430	--
Connecticut	48% by 2030	2,300	300	2,000
New York	70% by 2030	9,000	1,826	--
New Jersey	50% by 2030	3,500	1,100	1,200
Maryland	50% by 2030	2,000	368	--
Virginia	30% by 2030	2,652	12	--
TOTAL	--	23,652 MW	4,836 MW	4,000 MW



NOAA FISHERIES

Rapid Expansion of Offshore Wind

Projected Offshore Wind Development by 2030

1,700
Turbines

8,500
Km of
Cable

Potential Effects on Fisheries

Fisheries
Coastal communities
Habitat
Marine mammals
Data gathering using ships
and aircraft

- 15 leases in the Northwest Atlantic
- Planning Activities in Mid-Atlantic & Gulf of Maine
- Planned Leasing Activities on U.S. Pacific Coast and Hawaii Islands



Understanding Interactions w/ U.S. Fisheries Mission

- What are effects/impacts of construction, operation, and decommissioning on fisheries, protected species, aquaculture, habitats, and ecosystems (including human communities)?
- Can these impacts be mitigated?
- How will components of the complex socio-ecological system adapt?



<http://www.thecolledge.org/jennys-blog/the-scientific-method-the-question>



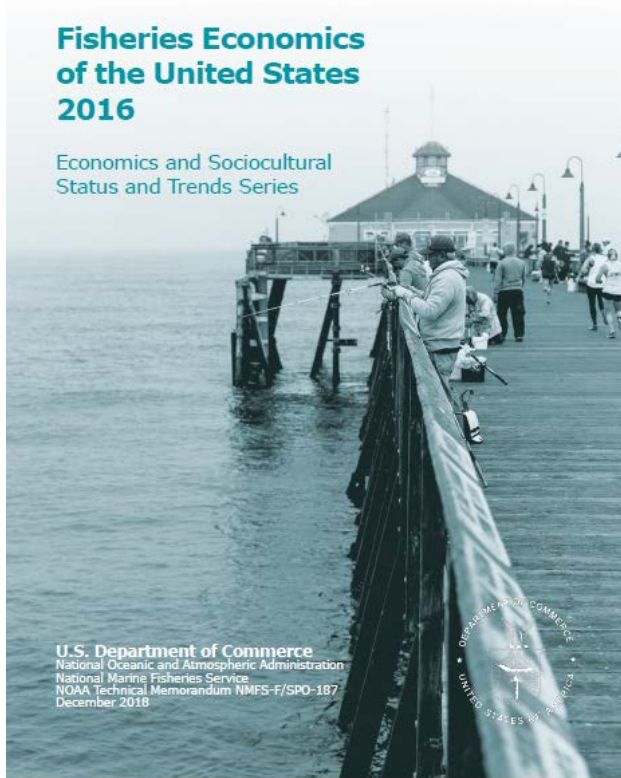
NOAA FISHERIES

Sharing Space: Fisheries Trends in U.S.

Commercial and recreational fisheries generated:

- Total sales: \$212 billion
 - NY \$5.5 billion
- Total jobs: 1.7 million
 - MA: 97,000
 - NJ: 52,000

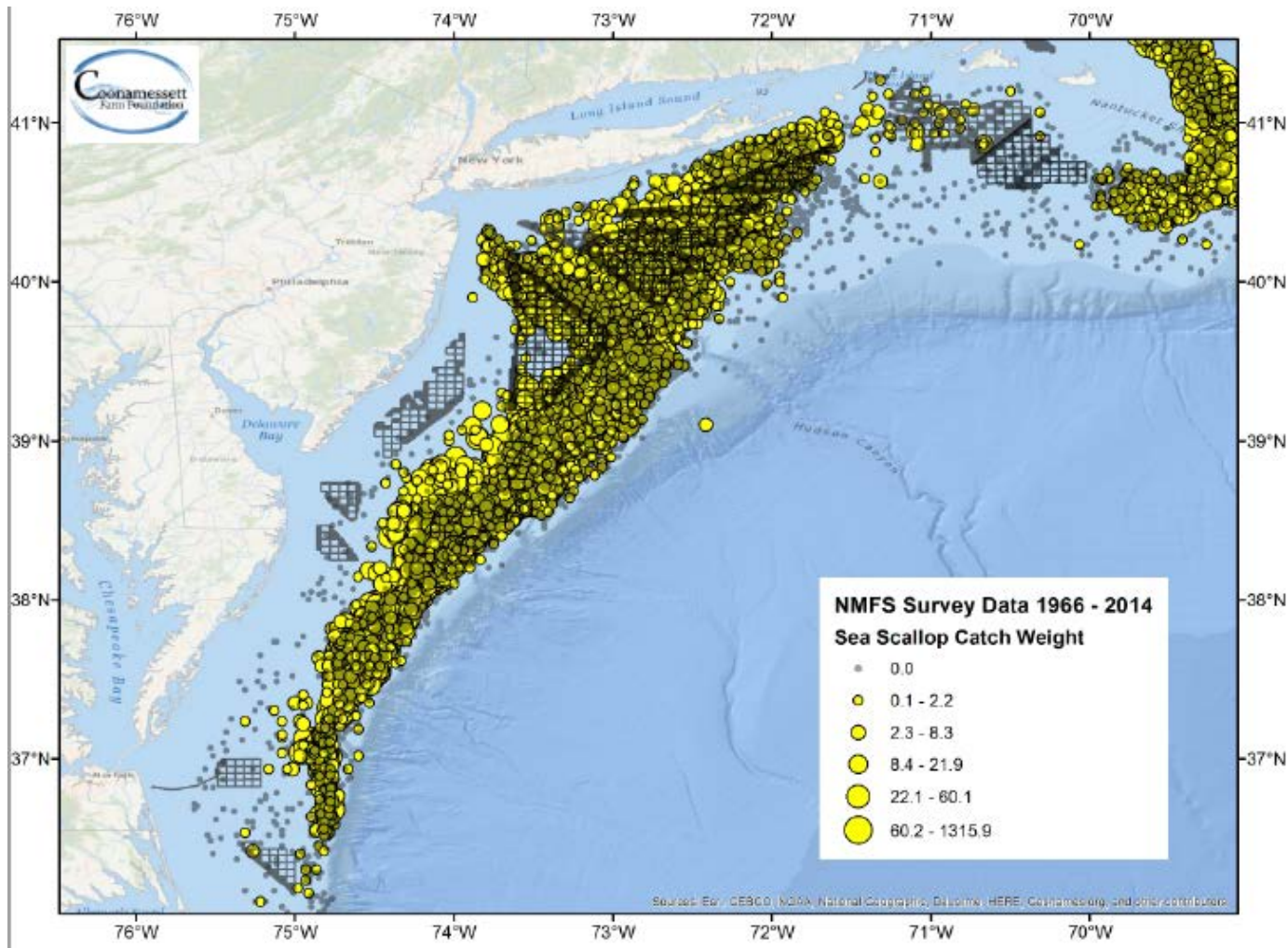
➡ Both economic value and stock status overall improving in New England and Mid-Atlantic-Areas to become largest Wind Energy Developments in the Globe



U.S. Landings Revenue Trend, 2007-2016
(\$ BILLIONS)



Challenges: Fisheries & Wind Overlaps



U.S. Scallop Fishery is one of the Top Fisheries in the U.S

\$500M in Landings Annually

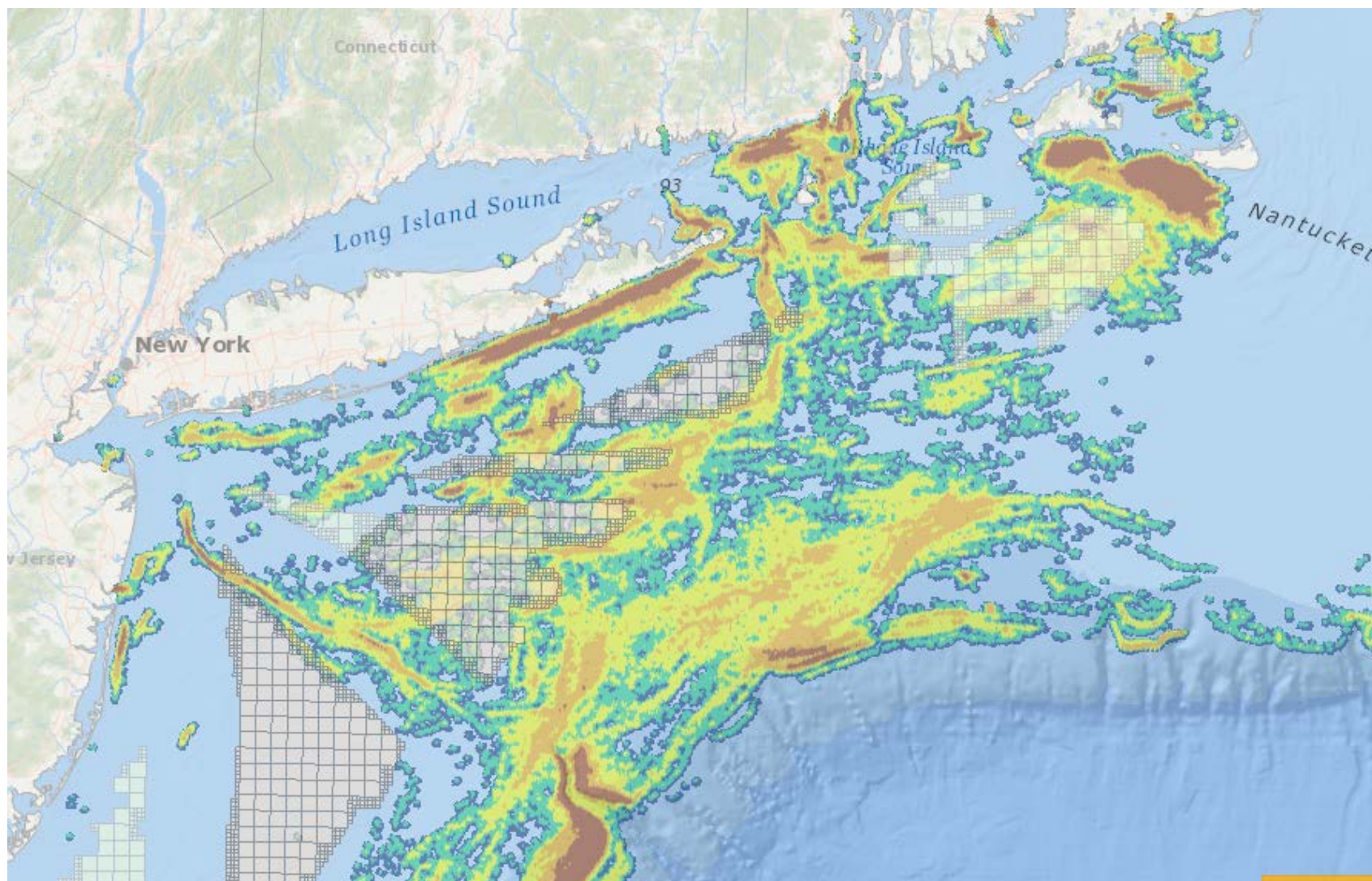
NMFS scallop survey 1966-2014



NOAA FISHERIES

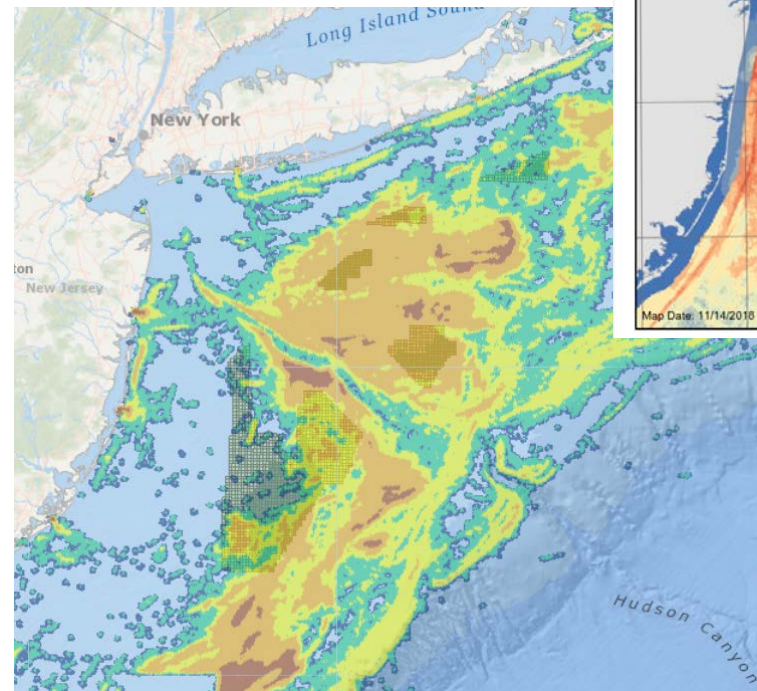
Challenges: Fisheries & Wind Overlaps

Squid VMS 2015-2016 (<4 knots)

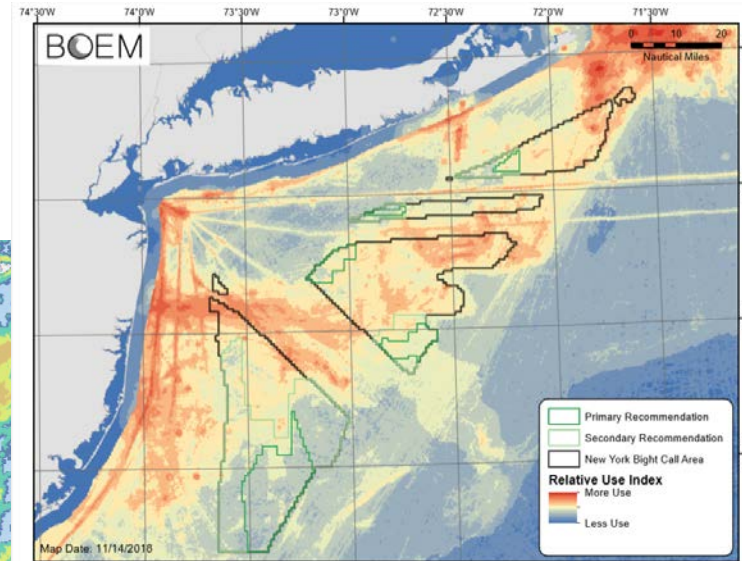


Challenges: Fisheries & Wind Overlaps

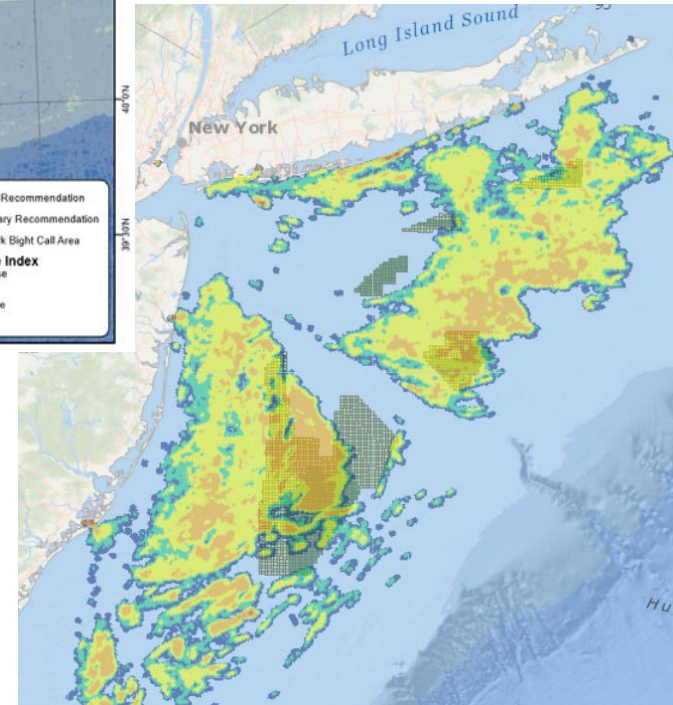
Scallop 2015-2016 VMS



Relative Fisheries Use Index



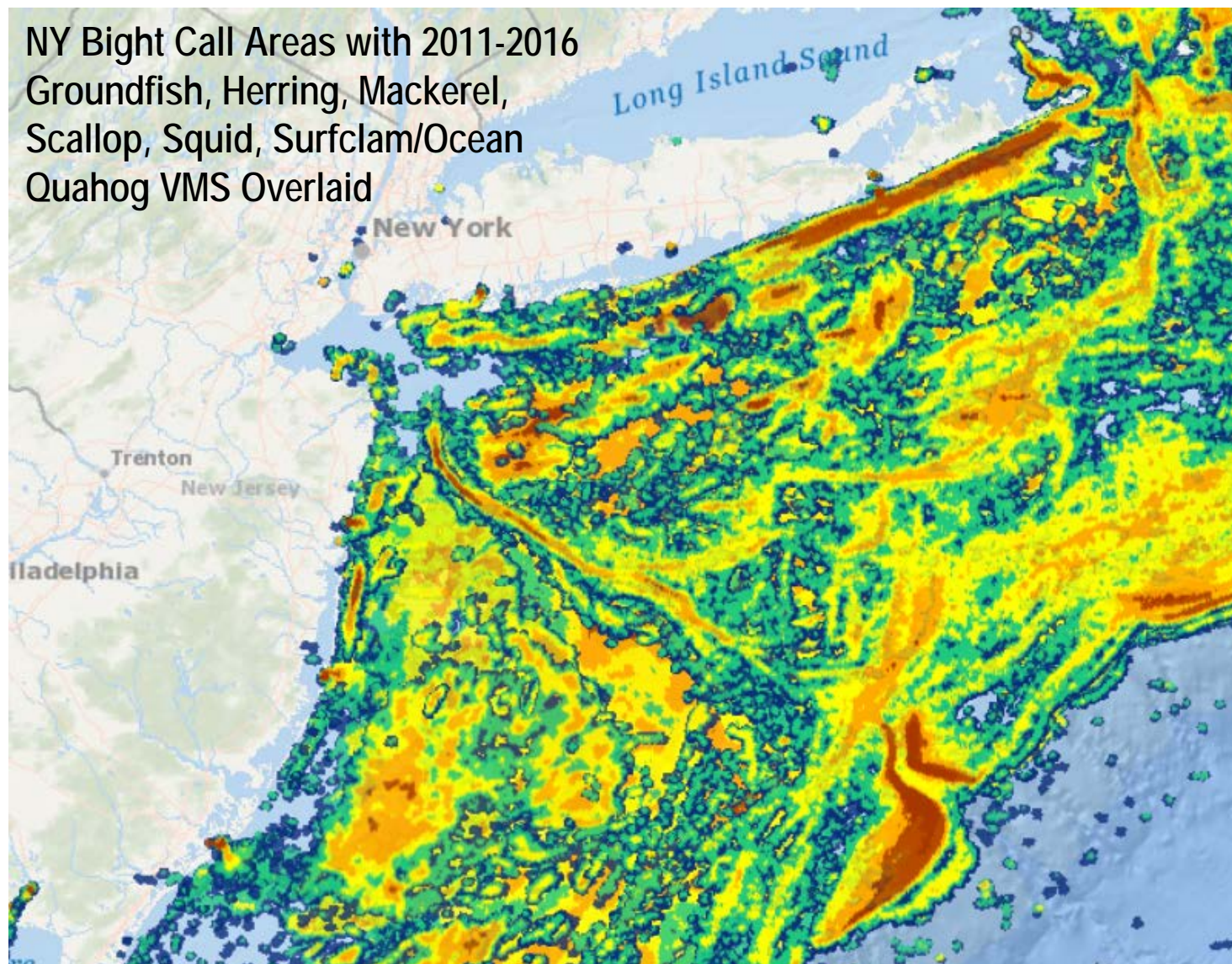
Surfclam/quahog 2012-2014 VMS



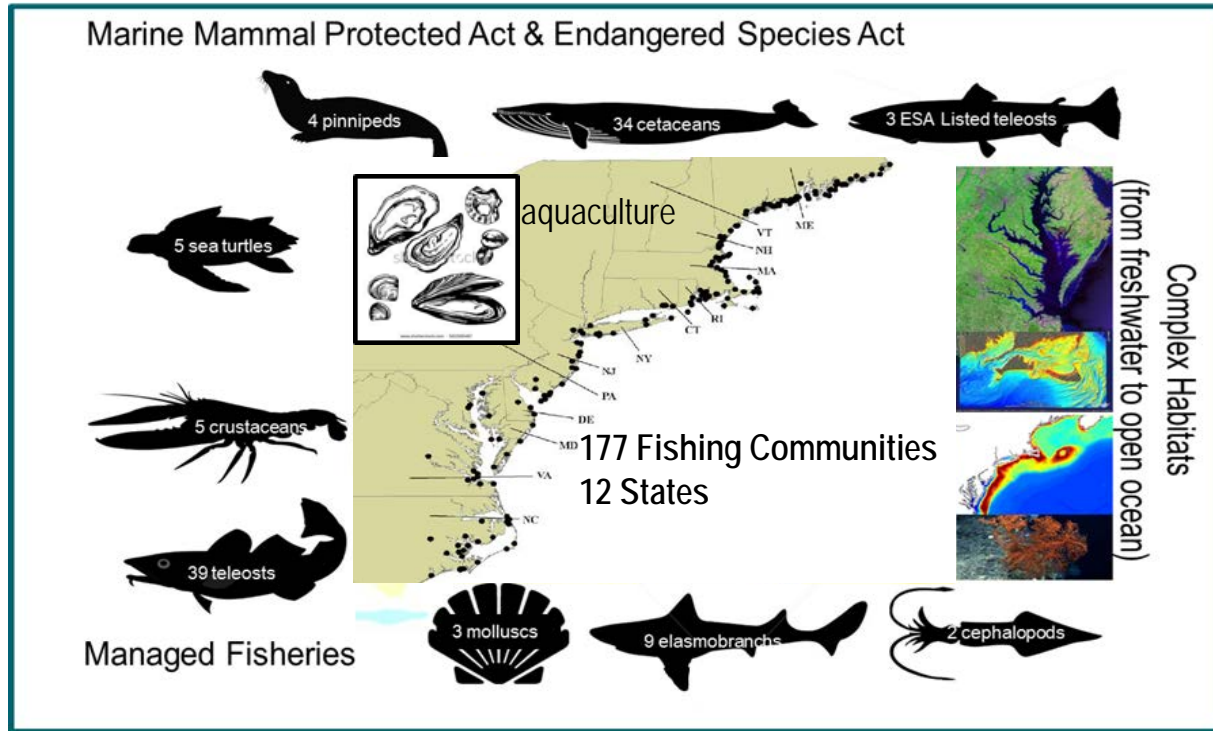
The importance of an area is highly specific to the most impacted fisheries, ports, and gear types

Challenges: Fisheries & Wind Overlaps

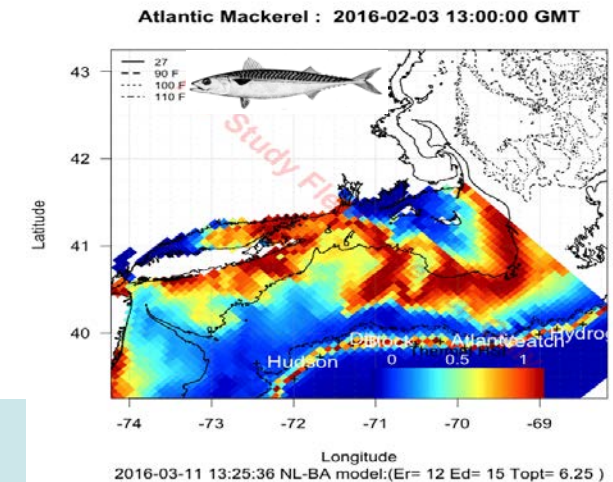
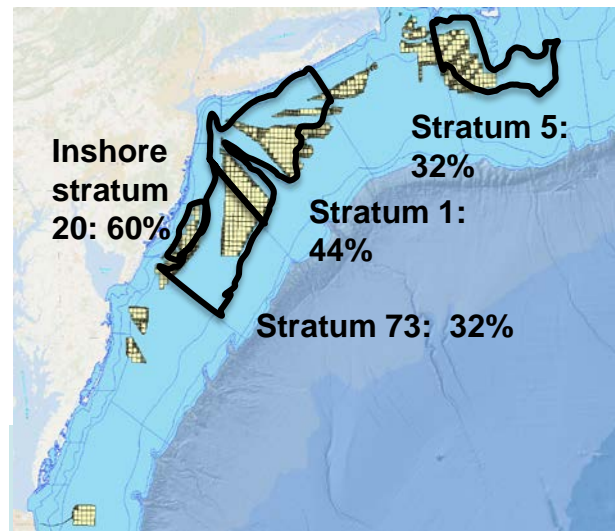
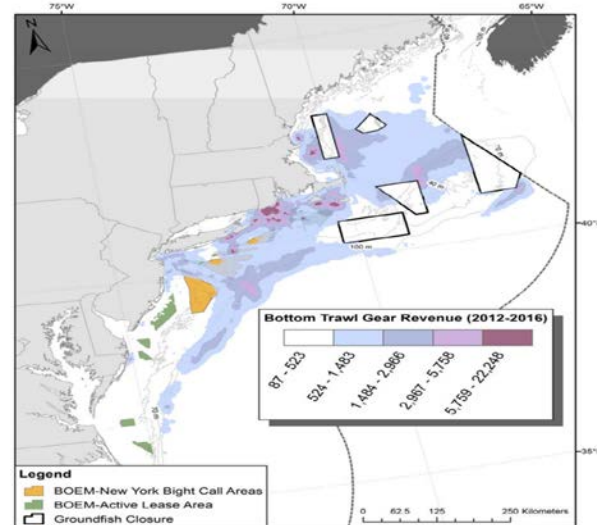
NY Bight Call Areas with 2011-2016
Groundfish, Herring, Mackerel,
Scallop, Squid, Surfclam/Ocean
Quahog VMS Overlaid



Interactions of Wind on U.S. Fisheries Scientific Enterprise



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



Identified Research Needs: Effects on Fisheries

Pre-construction (now)

Construction (soon)

Operation (20-30 yrs)

Decommissioning (20+ yrs)

Acoustic surveys

Seafloor Disturbance

Water Column Disturbance

Vessel Traffic

Construction Noise

Lighting

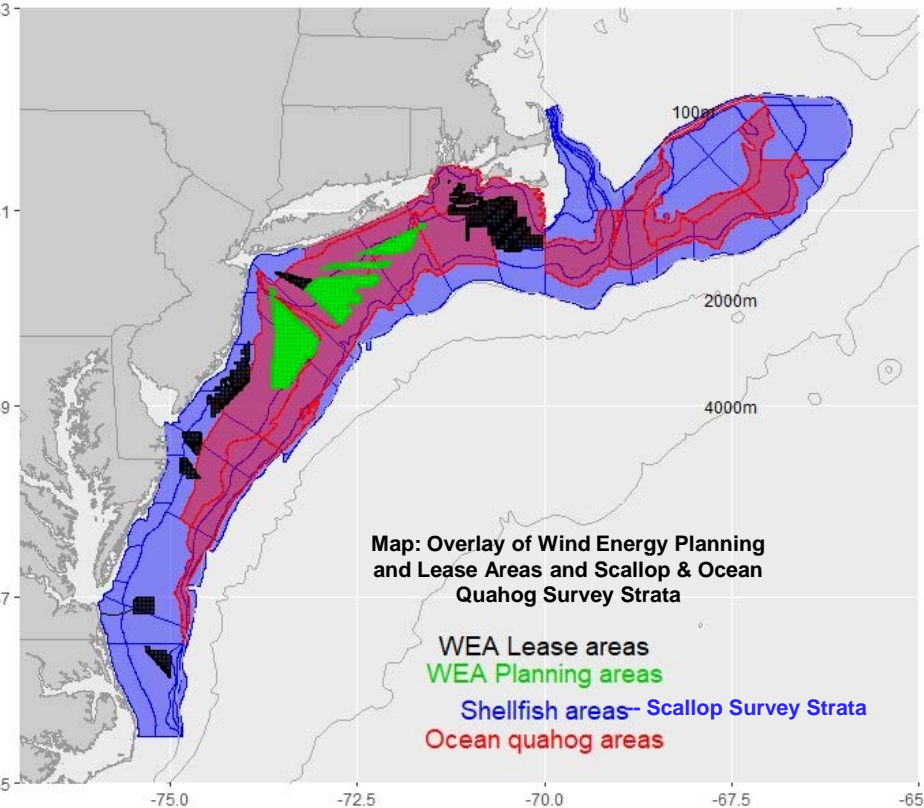
Displacement of Fishing

Habitat Conversion

Lighting & Vessel Safety



Impacts on Scientific Surveys



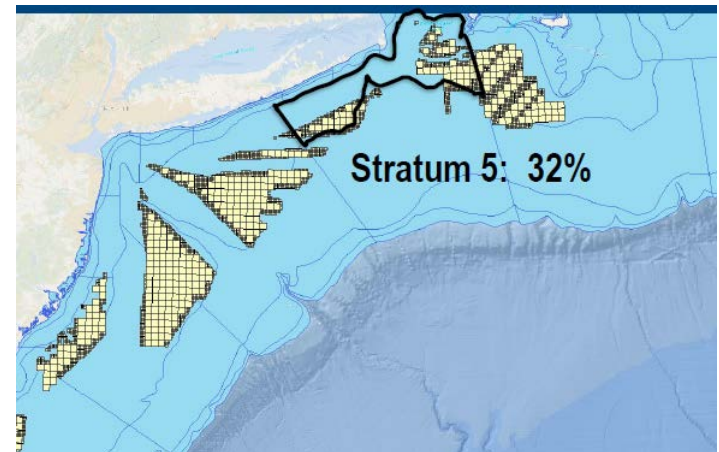
Survey	Year Started	Survey Design	Major Applications
Autumn Bottom Trawl Survey	1968	Random Stratified Design - North Carolina to Nova Scotia (bottom trawl)	abundance; length, age, sex, weight, diet, maturity samples, distribution, components of Ecosystem Monitoring survey
Spring Bottom Trawl Survey	1963	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
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. Plus opportunistic biological and physical oceanographic sampling from shipboard surveys	Abundance and spatial distribution of marine mammals, sea turtles, and sea birds

**277 Years of Combined Survey Effort
Support Fisheries that contribute
\$14 Billion Annually to U.S. GDP**

Interactions w/ NOAA Fisheries Mission

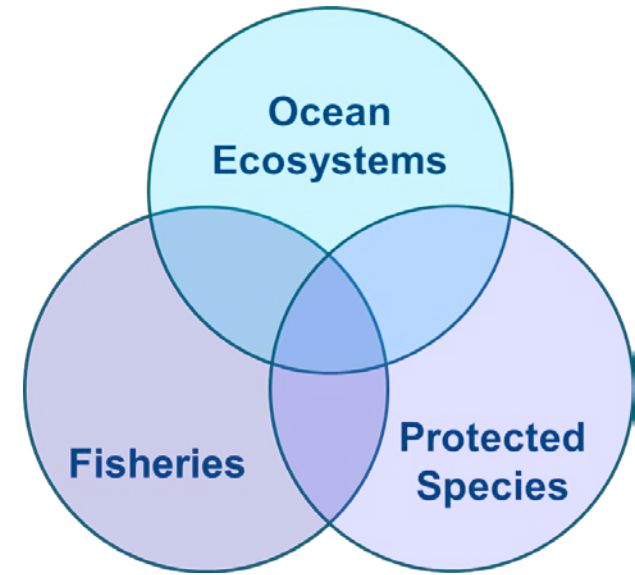
Survey Issues

- Outside wind energy area
- Inside wind energy area
- Calibration / Detectability
- Statistical survey design
- Assessments
- Initiated Center WG - first order evaluation
- Will work with partners and stakeholders to address



Key Challenges in Summary

- Pace & scale of pending development
- Addressing impacts to Scientific 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
- Collaborative Research and monitoring to address cumulative impacts



Opportunities: Partnering with Fishing Industries- RODA

Responsible Offshore Development Alliance

- 14 States on Atlantic & emerging Pacific Coast
- 30 Federal and State-permitted fisheries
- Atlantic fishing associations, dealers, processors, and over **130 vessels**



2019 Memorandum of Understanding with NOAA/NMFS & BOEM

- Identifies **areas of mutual interest** between agencies and RODA
- Promotes **engagement of commercial fishing industry** in offshore wind development process
- Commits to **incorporate fishing expertise** in planning and development
- Support development of **regional research and monitoring** efforts



col·lab·o·ra·tion

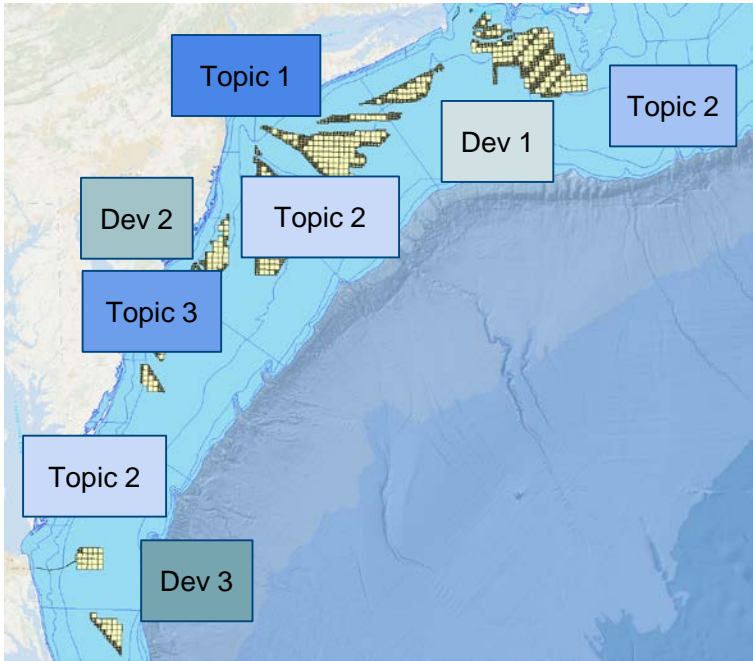
noun

Two or more people working together
towards shared goals



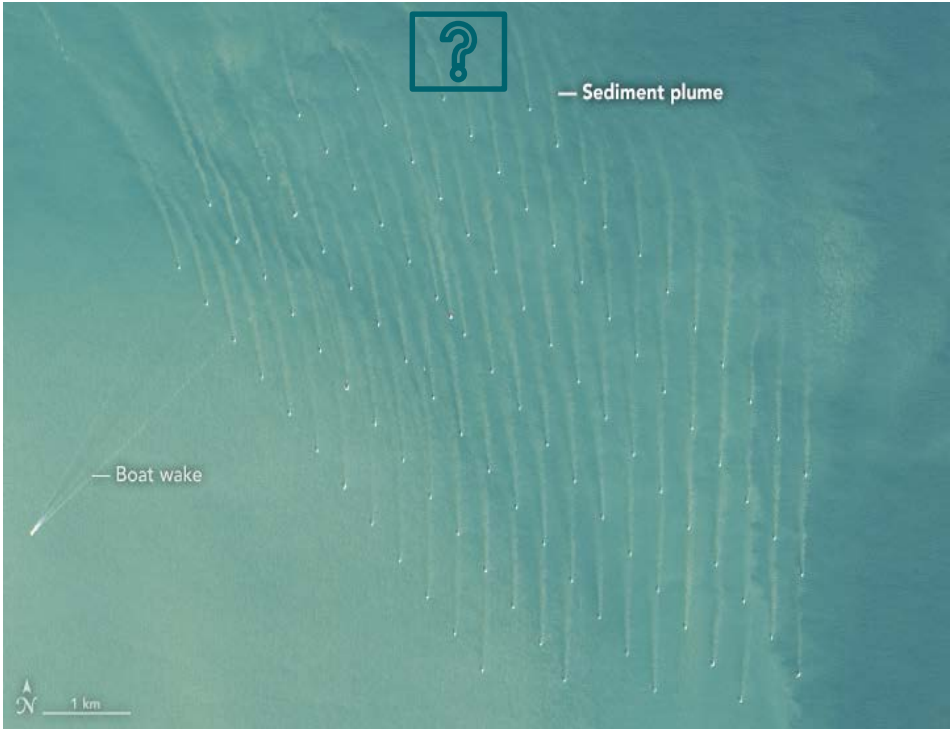
NOAA FISHERIES

Collaboration Opportunities



Responsible Offshore
Science Alliance

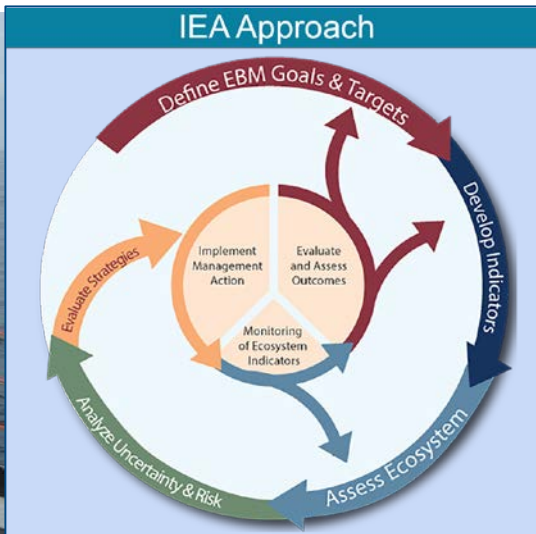
Regional Framework					
Dev 1	Dev 2	Dev 3	Topic 1	Topic 2	Topic 3



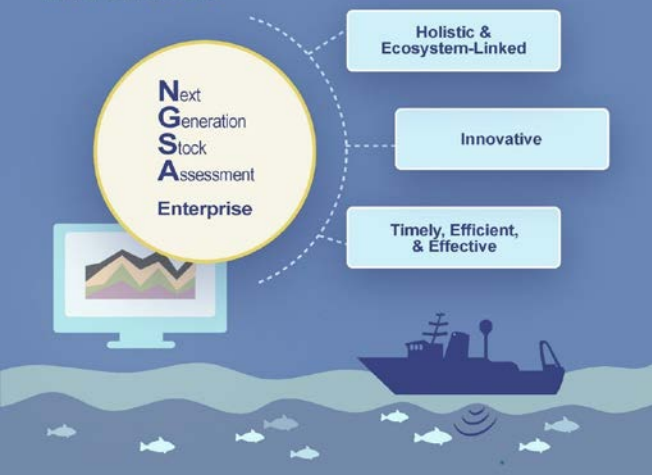
<https://earthobservatory.nasa.gov/images/89063/offshore-wind-farms-make-wakes>



NOAA FISHERIES



NOAA Fisheries



Innovation



NOAA FISHERIES

Opportunities: Trans-Atlantic Collaboration

Working Group on Marine Renewable Energy

Affiliation: HAPISG

Chair: Marijke Warnas

The Working Group on Marine Renewable Energy (WGMRE) coordinates the flow of science between certain working groups and its application in relation to offshore energy installations.

WGMRE's remit includes correlating the science from groups on specialist topics such as seabirds, benthic ecology, and fish ecology and its application in planning, consenting and regulatory processes in relation to tidal (in-stream and barrage), wave and offshore wind energy.

Print it Send to f t in Share it



© Kovalenko Inna, Fotolia

LINKS

- > [View all members of this group](#)
- > [WGMRE Terms of Reference](#)



Reviews in Fisheries Science & Aquaculture



ISSN: 2330-8249 (Print) 2330-8257 (Online) Journal homepage: <https://www.tandfonline.com/loi/brfs21>

Meta-Analysis of Finfish Abundance at Offshore Wind Farms

Elizabeth T. Methratta & William R. Dardick

To cite this article: Elizabeth T. Methratta & William R. Dardick (2019) Meta-Analysis of Finfish Abundance at Offshore Wind Farms, Reviews in Fisheries Science & Aquaculture, 27:2, 242-260

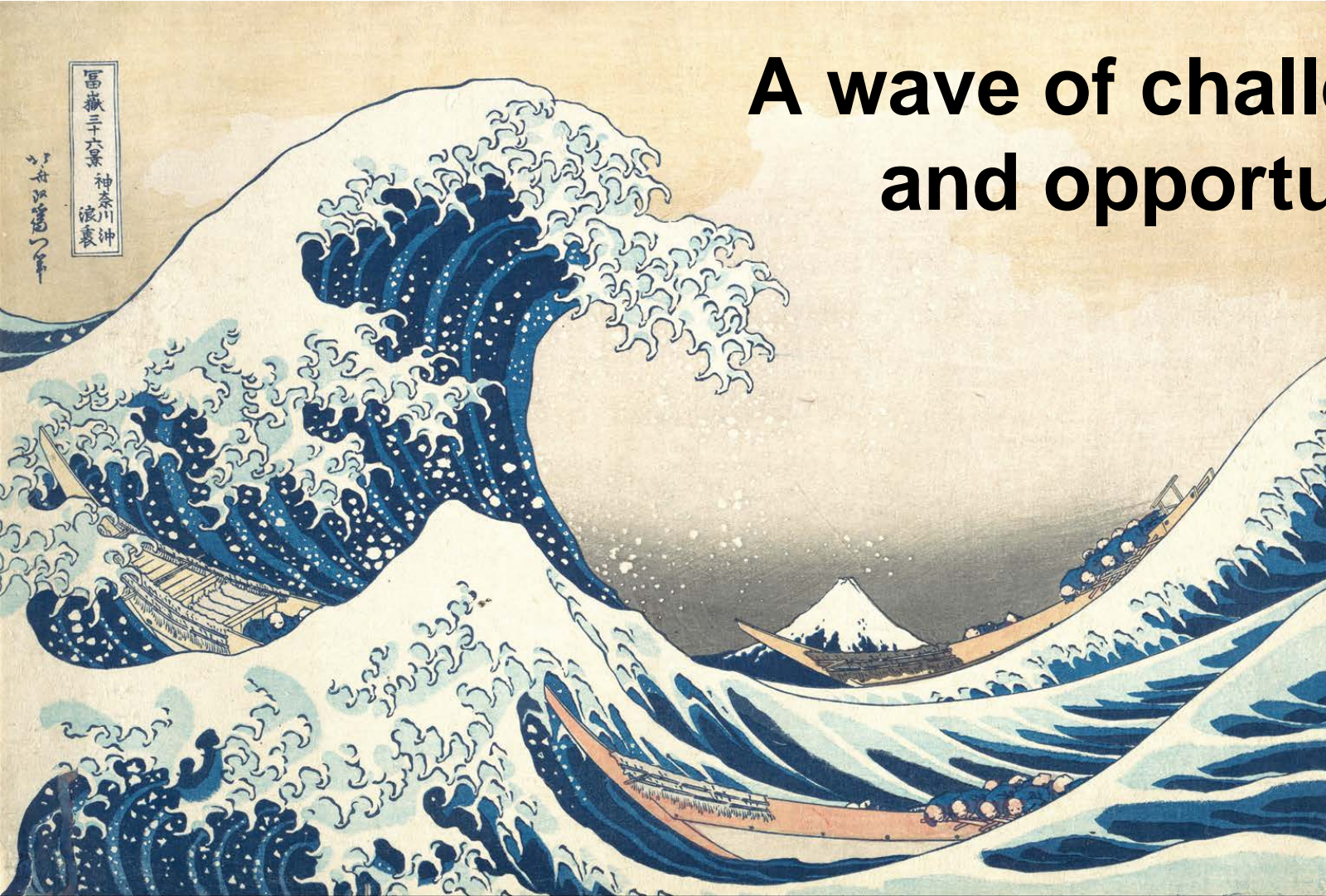
To link to this article: <https://doi.org/10.1080/23308249.2019.1584601>

Thanet Fishermens Association and Wind Farms

Merlin Jackson and John Nichols



A wave of challenges and opportunities



NOAA FISHERIES