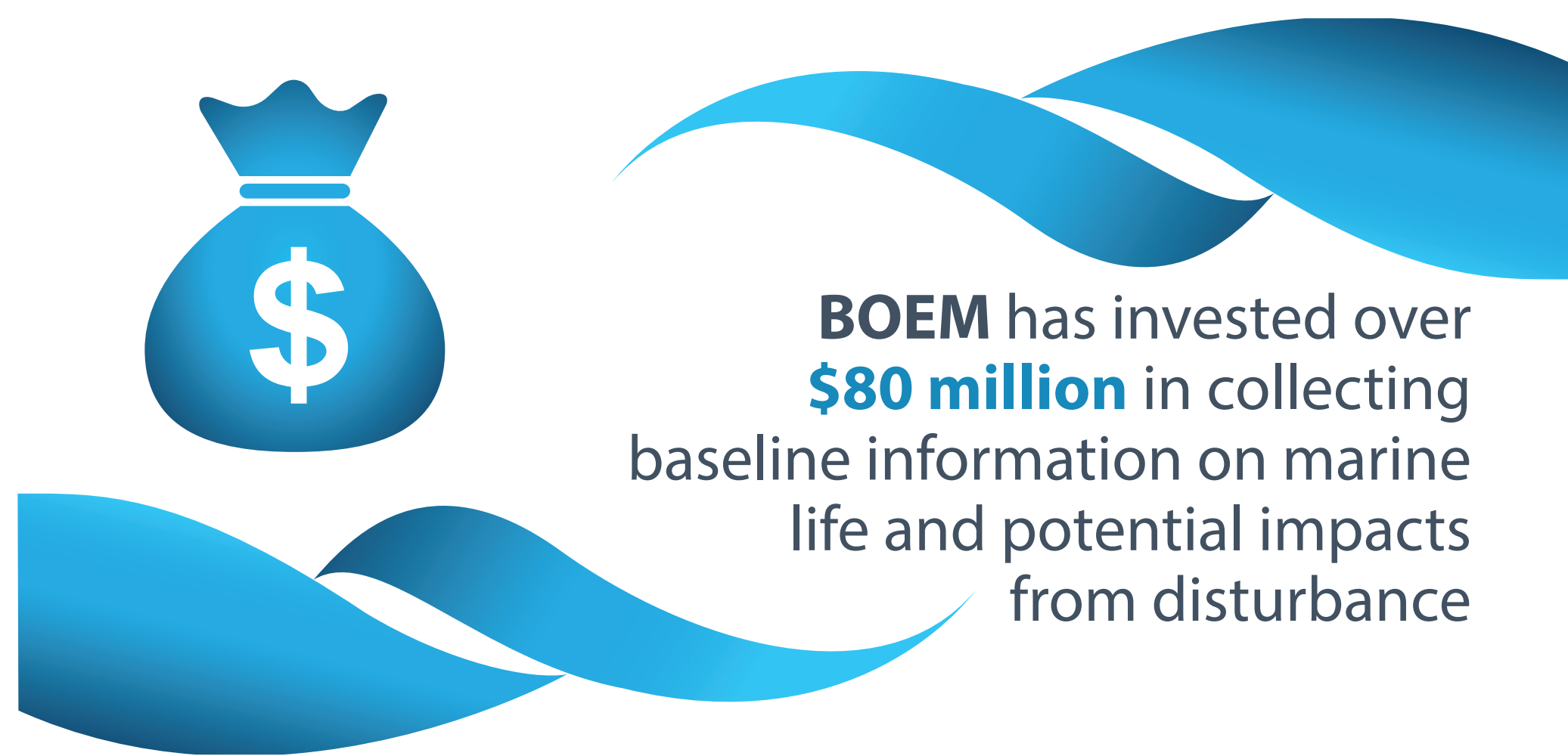


Prepared by: Bureau of Ocean Energy Management, Office of Renewable Energy Programs

The Bureau of Ocean Energy Management (BOEM), Environmental Studies Program

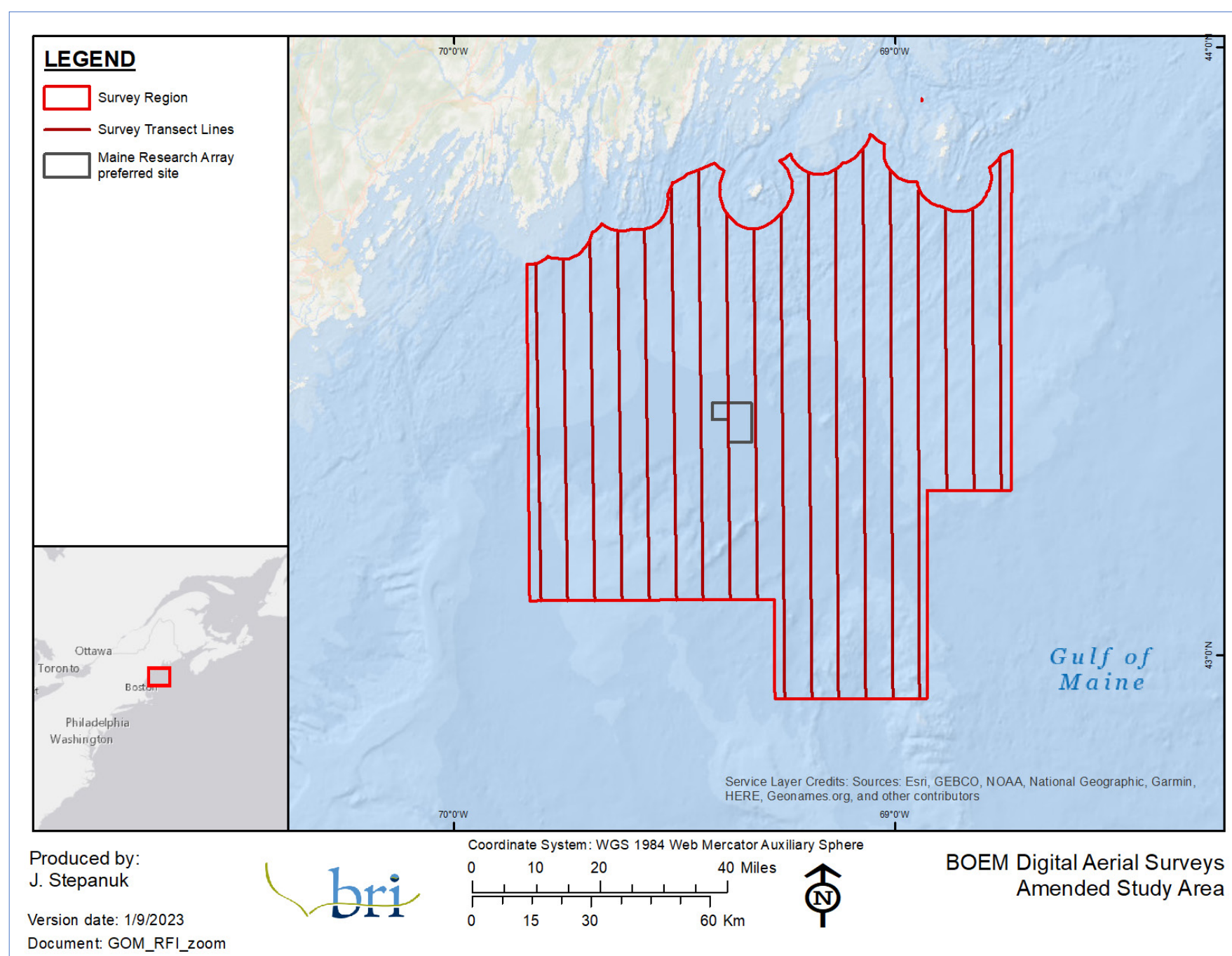
funds scientific research to inform decisions about offshore wind. BOEM has invested more than \$80 million in collecting baseline information about the distribution and abundance of marine life, birds, and bats and potential impacts from development (seafloor disturbance, sound, electromagnetic fields [EMF]). The topics studied are informed through intergovernmental task forces, public meetings, formal information solicitations, and recommendations made in BOEM-funded studies. BOEM identifies priorities during the development of an annual studies plan (see the *2023-2024 Studies Plan at boem.gov*). Selected studies pertaining to marine mammals, sea turtles, birds, bats, fish, and ecosystems are listed. A complete list of studies that are ongoing or completed is available on the BOEM website. BOEM also supports regional ocean data portals where BOEM-funded data and data products are made available to the public.



Protected Species Surveys STUDIES TO BEGIN IN 2023

Ecological Baseline Study of the U.S. Outer Continental Shelf off Maine

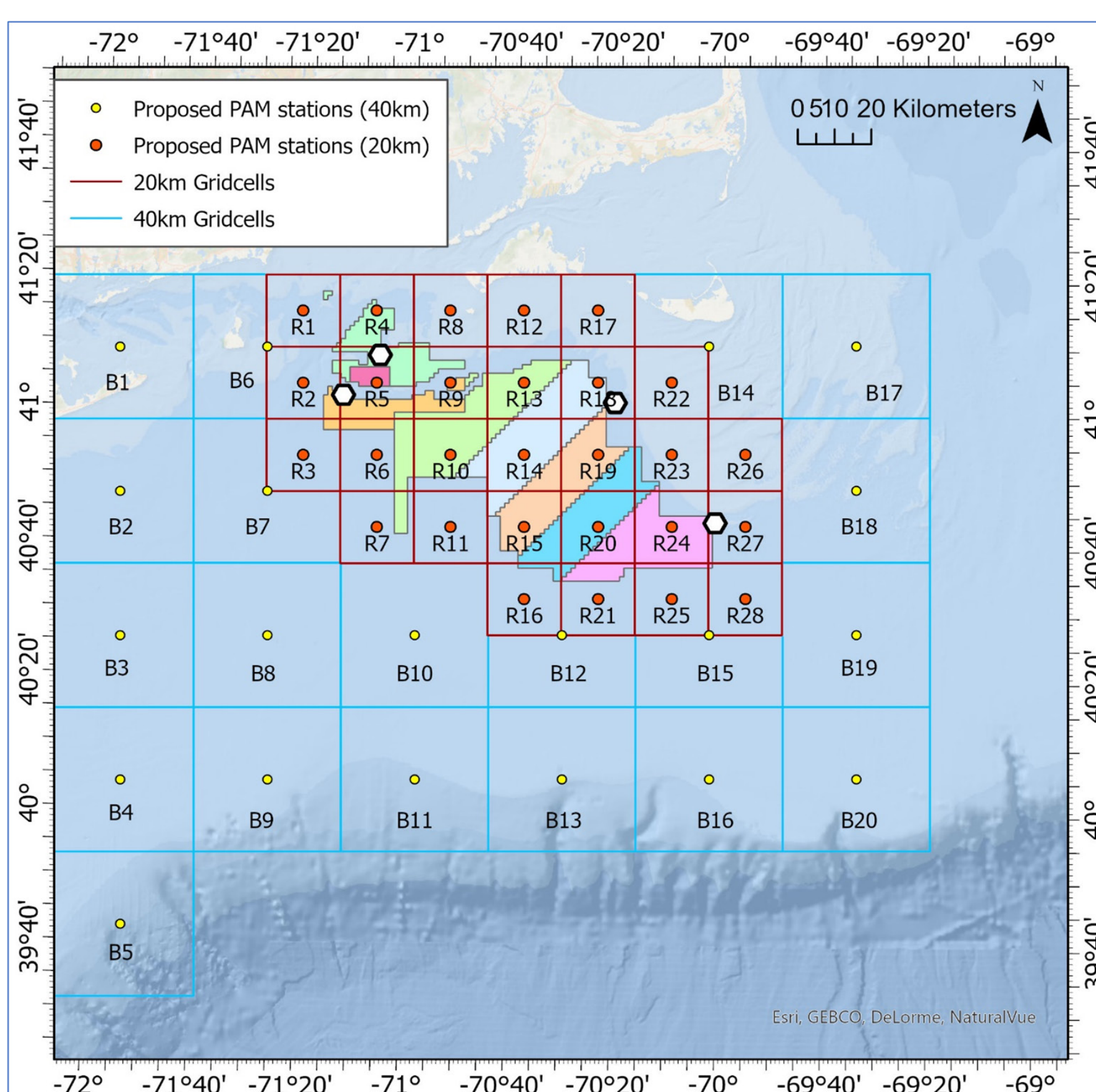
- Conduct ecological baseline surveys with digital video and aerial surveys over the portions of the Gulf of Maine.
- Describe the distribution and abundance of marine seabirds, mammals, sea turtles, and man-made objects.



POWERON - Passive Acoustic Monitoring

Monitoring in Support of the Partnership for an Offshore Wind Energy Regional Observation Network to assess potential impacts to marine mammals and cod in wind energy areas.

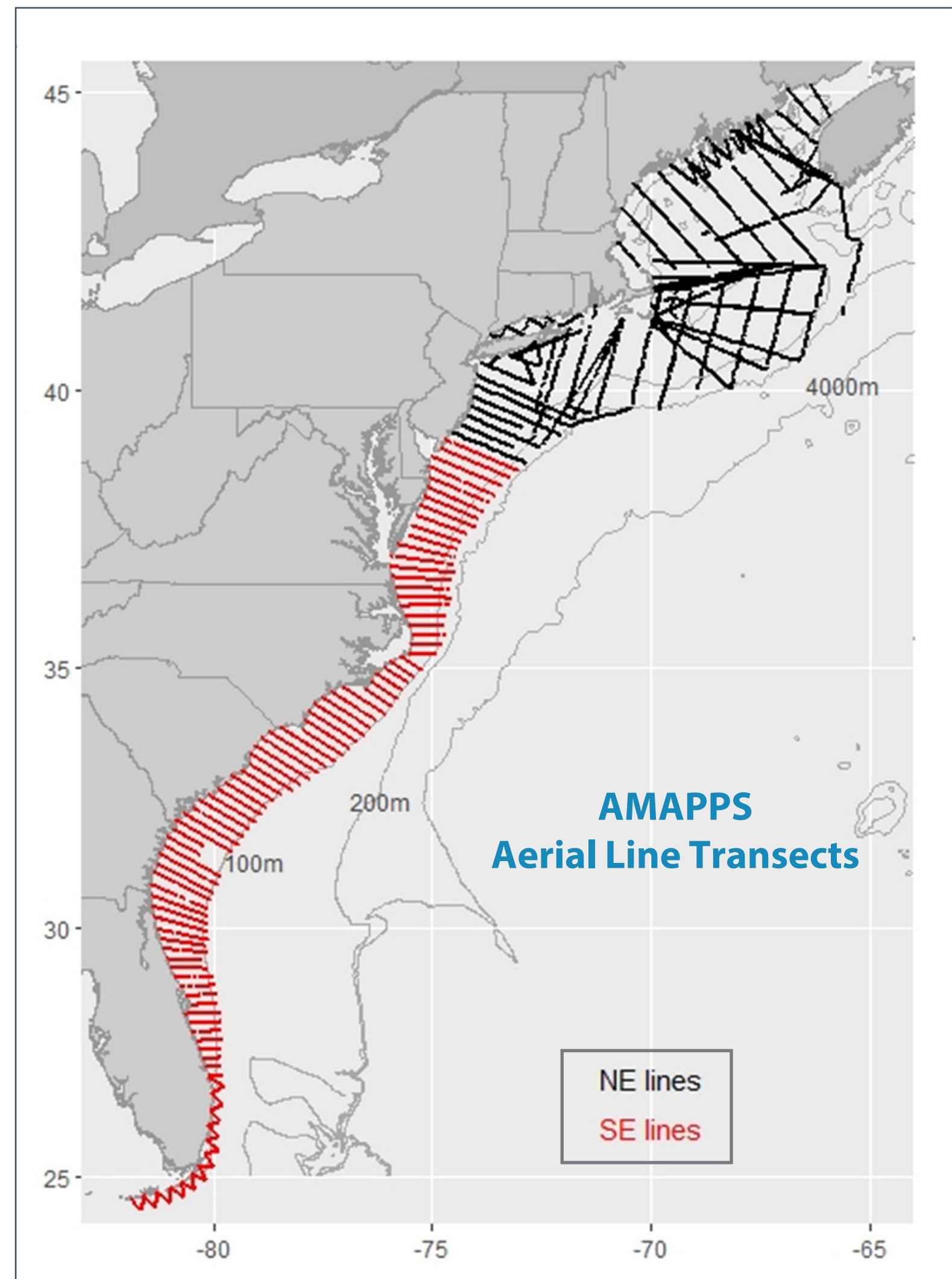
- BOEM is encouraging seeking regional collaboration among research partners to conduct regional monitoring and data analysis in the Atlantic.



Study area for the POWERON effort in the Massachusetts and Rhode Island Wind Energy Areas to understand potential pre- and post construction impacts.

Atlantic Marine Assessment Program for Protected Species III (AMAPPS)

- Continuation of the Atlantic Marine Assessment Program for Protected Species (AMAPPS) which focuses on collecting seasonal data on the abundance, distribution, and behavior of marine mammals, sea turtles, and seabirds throughout the U.S. Atlantic.



Noise, Habitat, and Ecosystems

Zooplankton Ecology of the Gulf of Maine

- Monitoring of zooplankton that are a critical food source for marine mammals.

Behavioral Effects of Sound Sources from Offshore Renewable Energy Construction on the Black Sea Bass and Longfin Inshore Squid: A Field Study (Ongoing)

- Examining the effects of offshore windfarm construction noise on two key commercially and ecological important taxa, squid and black sea bass, using field-based controlled exposures.

Behavioral Response of Sea Turtles from Controlled Exposures to a Mobile Impulsive Sound Source (Ongoing)

- Identifying the relationship between noise exposure level and behavioral responses in sea turtles.

Electromagnetic Field (EMF) Impacts on Elasmobranch (shark, rays, and skates) and American Lobster Movement and Migration from Direct Current Cables (Completed)

- Field measurements and modeling of electromagnetic fields (EMF) from high voltage direct current (HVDC) cables and field observations of response to the fields by the American lobster and little skate.



Birds and Bats

Transparent modeling of collision risk for three federally-listed bird species to offshore wind development (Ongoing)

- Developing a new modeling approach to evaluate the risk of collision of birds with offshore wind turbines.

Compendium of Avian Occurrence information for The Continental Shelf Waters Along The Atlantic Coast of The United States: Final Report and Database

- Provides a synthesis of observations of seabirds and shorebirds along the Atlantic Coast for 177 species including maps of sightings per unit effort to assess risk from offshore wind development.

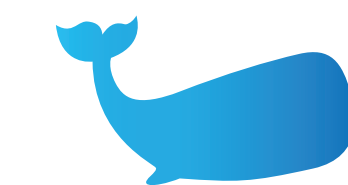
Information Synthesis on the Potential for Bat Interactions with Offshore Wind Facilities (Completed)

- Synthesis of observations of bats in the offshore environment along the Atlantic coast with emphasis on locations off Maine.

Anticipating Shifts in Marine Bird Distributions for Planning, Leasing, and Assessment of Energy Development on the Outer Continental Shelf (Ongoing)

- Using historical distribution data to predict future shifts in bird distribution patterns.

Other Assessment Tools



Large Whales

Risk Assessment to Model Encounter Rates between Large Whales and Vessel Traffic from Offshore Wind Energy on the Atlantic OCS; Vessel Risk Calculator: Graphical User Interface User's Manual ; Vessel Risk Calculator (Completed)

- Determining risk of vessel strikes for large whales.
- Tool expansion planned.

Visual Simulation of Whales and Renewable Energy Moorings and Cables Acoustic (Ongoing)

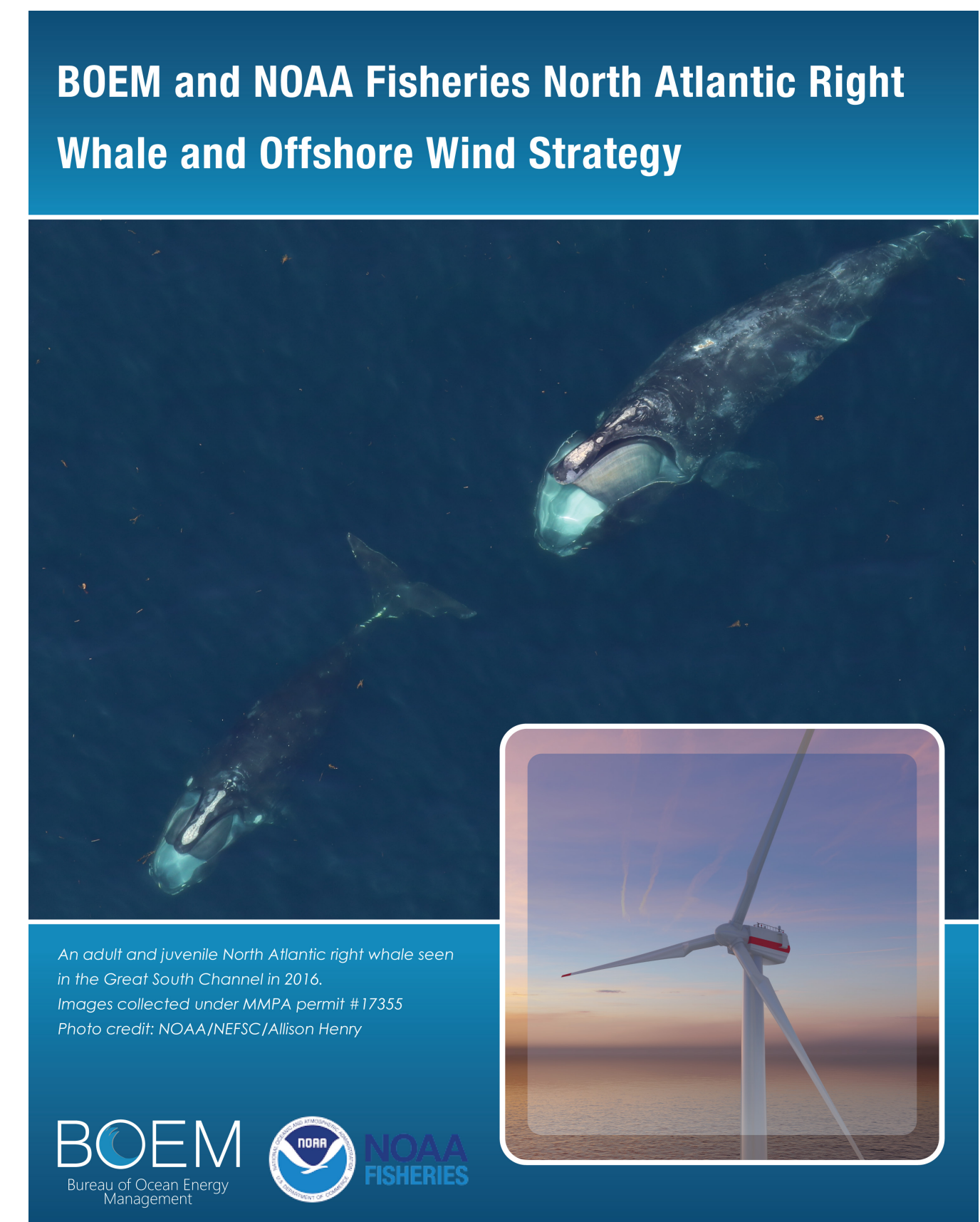
- Characterizing the interaction of whales with mooring lines and cables.

Floating Offshore Wind Turbine Development Assessment (Completed)

- Assessment of the technological, environmental, and financial issues related to the development of floating offshore wind turbines on the Outer Continental Shelf.

North Atlantic Right Whale Offshore Wind Strategy (Ongoing)

- Develop mitigation and decision support tools.
- Identify research and monitoring needs, support, and conduct research to better understand the impacts on right whales.
- Collaboration, communication, and outreach with a multi-agency team to carry out the strategy.



Cumulative Impacts

Impacts Assessing Population Effects of Offshore Wind Development on North Atlantic Right Whales (Ongoing)

- Using modeling to assess the effects from offshore wind development on the North Atlantic Right Whale.

National Environmental Policy Act Documentation for Impact-Producing Factors in the Offshore Wind Cumulative Impacts Scenario on the North Atlantic Outer Continental Shelf

- Providing a framework for the evaluation of cumulative effects in environmental assessments.



Best Management Practices and Data Standards

- Workshop Summary on Satellite and GPS Tracking of Avian Species.
- Workshop I Summary on Passive Acoustic Monitoring and Marine Mammals (June 2-3, 2021)
- Workshop II on Passive Acoustic Monitoring and Marine Mammals (March 7-9, 2022)
- Final Report on Best Management Practices and Mitigation Measures (Completed)