Marine Spatial Planning Data Development Workshop

Virginia, North Carolina, and South Carolina

April 9, 2024 - April 10, 2024
NOAA Beaufort Laboratory, Beaufort, North Carolina

BOEM BUREAU OF OCEAN ENERGY MANAGEMENT

NOAA NCCOS NATIONAL CENTERS FOR COASTAL OCEAN SCIENCE

Marine Spatial Planning Workshop

Virginia, North Carolina, and South Carolina

NOAA's National Centers for Coastal Ocean Science (NCCOS) coordinates with the Bureau of Ocean Energy Management (BOEM) to advance marine spatial planning. This workshop will assist coastal managers, environmental organizations, academia, and industry with planning for future development of the blue economy, including renewable energy.

Workshop Goals

- Learn more about NOAA's marine spatial planning approaches and activities
- Inventory available spatial data for Virginia, North Carolina, and South Carolina
- Document the best available data and identify data gaps
- Increase local capacity and resources for regional ocean spatial planning
- Further develop an engaged community to inform future marine planning efforts

NCCOS

BOEM
Bureau of Ocean Energy Management

Workshop Sessions

1. ***Natural Resources:*** information about protected species and sensitive habitats
1. ***Fisheries:*** active areas for both commercial and recreational fisheries, fishery management areas
1. ***Cultural and Social Resources:*** cultural uses of the environment, archaeological sites
1. ***National Security:*** locations of various military operation areas
1. ***Metocean and Other:*** meteorological and oceanographic data, geological features and seafloor substrate, water depth and slope (bathymetry), and boundaries
1. ***Industries:*** locations of oil and gas resources, key industrial concerns (shipping lanes), fishery independent surveys, weather forecasting, tourism
1. ***Offshore Wind:*** data relevant to siting offshore wind and associated transmission lines

Core Data Questions

1. What are the positive attributes of the data just presented?

1. Conversely, what are the issues or challenges associated with these data?

1. Are you aware of any data that are missing from the list but available? If so, can you provide a lead to acquire these data?

Levels of Engagement

1. Silent generation (individual ideas)
1. Small group discussion (breakout groups)
1. Large group discussion
1. Similar process for folks on Google Meet (with a facilitator)

Siting Offshore Wind

NCCOS | NATIONAL CENTERS FOR COASTAL OCEAN SCIENCE

James.Morris@noaa.gov

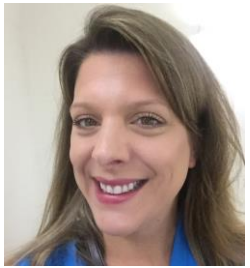
Coastal & Marine Planning Team

NOW HIRING

Federal

Affiliates

Regional Marine Planning Coordinators

U.S. Northeast	Central Atlantic	Carolinas	U.S. Caribbean	Gulf of Mexico	West Coast	Alaska (AQ)
						
Alyssa Randall	Bryce O'Brien	Michelle Hobgood	Jennifer Wright	Joshua Chastain	Jessica Carlton	Drew Resnick

Responsibilities:

- Regional coordinator for spatial planning for all topics (industry and conservation)
- Regional geodatabase development and maintenance
- Data development (new data priorities, refresh)
- Maintain operational regional models
- Participate in research and application development

Program Overview

APPLICATION DEVELOPMENT

OceanReports
CoastalReports
Marine Cadastre
VizSpatial
OceanFinder
Webmappers
Storymaps

OPERATIONAL MODELING

BOEM offshore wind siting
Aquaculture siting
State marine spatial planning
Shipping & transportation
Dept of Defense areas
Conservation area siting

DATA DEVELOPMENT

Data acquisition
Data processing
New data development
Combined data layers

RESEARCH

Model uncertainty
Data / model sensitivity
Model structure
Scenario planning
Forecasting

U.S. Offshore Wind Development

~ 50 leases/planning areas on nearly all coastlines

FORBES > BUSINESS > ENERGY

Biden's Offshore Wind Dreams Face Rising Controversy, Opposition

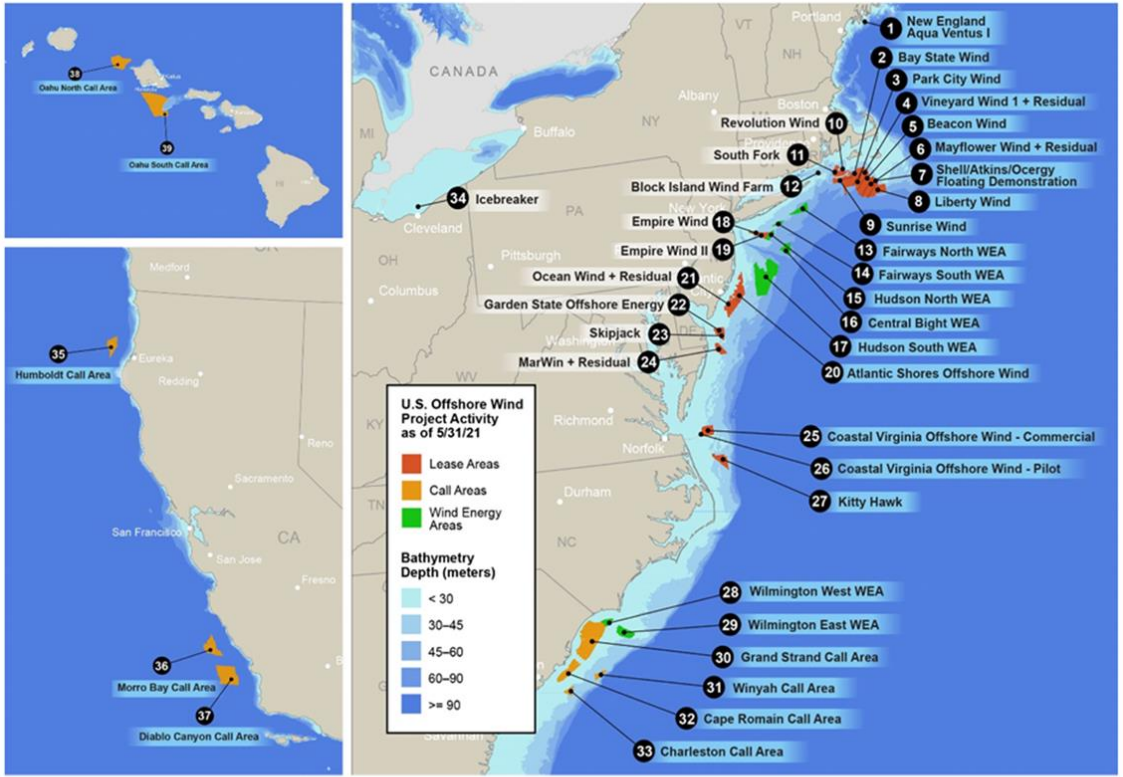


Figure ES-1. Locations of U.S. offshore wind pipeline activity and Call Areas as of May 31, 2021. *Map created by NREL*

Spatial Intelligence Supports NOAA's OSW Mission

- **Protection of Coastal & Marine Resources**
  Environmental reviews and regulatory authorizations to ensure compliance with NOAA trust resource statutes.
- **Interagency & Stakeholder Engagement**
  Multi-scale engagement with State, Tribal, Federal partners and constituents.
- **Environmental Intelligence**
  Data, tools, science, modeling, mapping and services to inform offshore wind siting and decision making.
- **Research & Operations**
  Understand and monitor impacts, provide and improve wind forecasts.

NOAA BOEM Marine Spatial Planning Partnership

National Oceanic and Atmospheric Administration
U.S. Department of Commerce

Home / News & Features

NOAA and BOEM announce interagency collaboration to advance offshore wind energy

HOME | NEWSROOM

BOEM Enhances its Processes to Identify Future Offshore Wind Energy Areas

New Changes in Response to Public Input

09/16/2022

BOEM Bureau of Ocean Energy Management

PERMITTING DASHBOARD
FEDERAL INFRASTRUCTURE PROJECTS

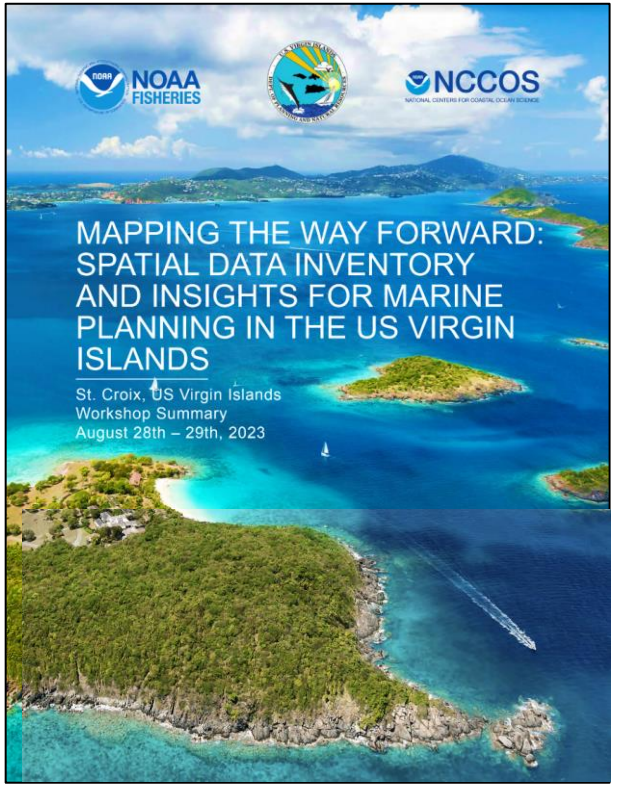
BOEM Bureau of Ocean Energy Management

U.S. DEPARTMENT OF ENERGY
arpa·e CHANGING WHAT'S POSSIBLE

We connect communities with coastal intelligence.

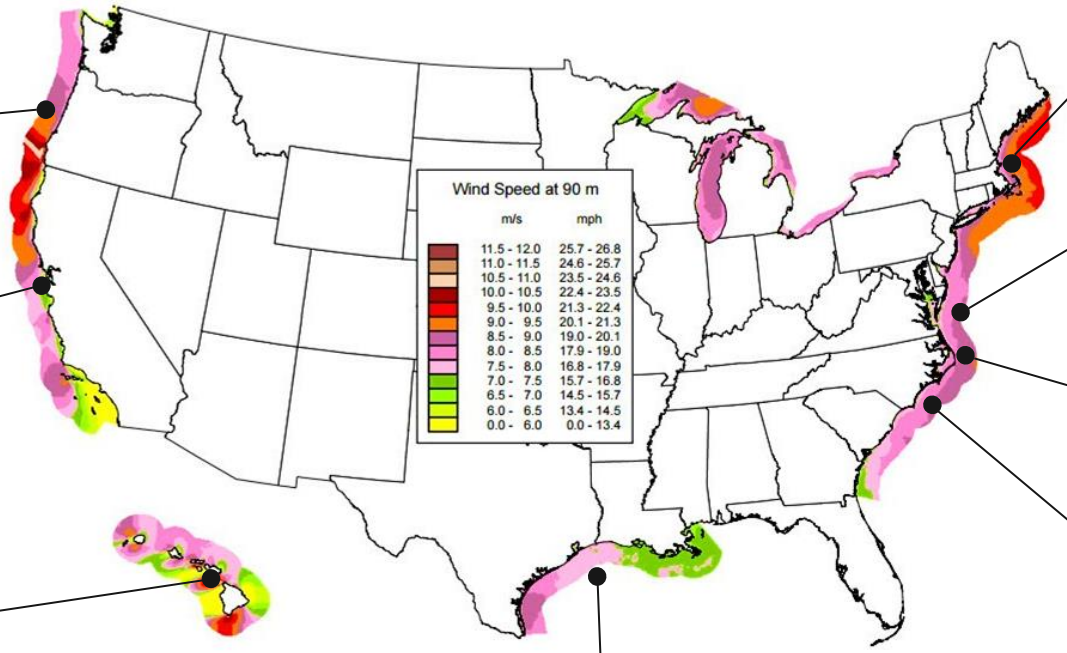
Our hope is that marine spatial planning "…*brings us closer to respectful, sustainable uses of our natural resources…*"

-Dr. Nicole Angeli, Director USVI DFW
USVI Marine Planning Workshop, 2023



NOAA BOEM Spatial Planning

United States - Annual Average Offshore Wind Speed at 90 m



Oregon
Wind energy area siting ✓
Cable siting

California #2
Call area siting
Wind energy area siting
Cable siting

Hawaii
Call area siting
Wind energy area siting
Cable siting

Gulf of Maine
Call area siting ✓
Wind energy area siting ✓
Cable siting

Central Atlantic
Wind energy area siting ✓
Cable siting

Kitty Hawk
Cable siting

Carolina Long Bay
Cable siting

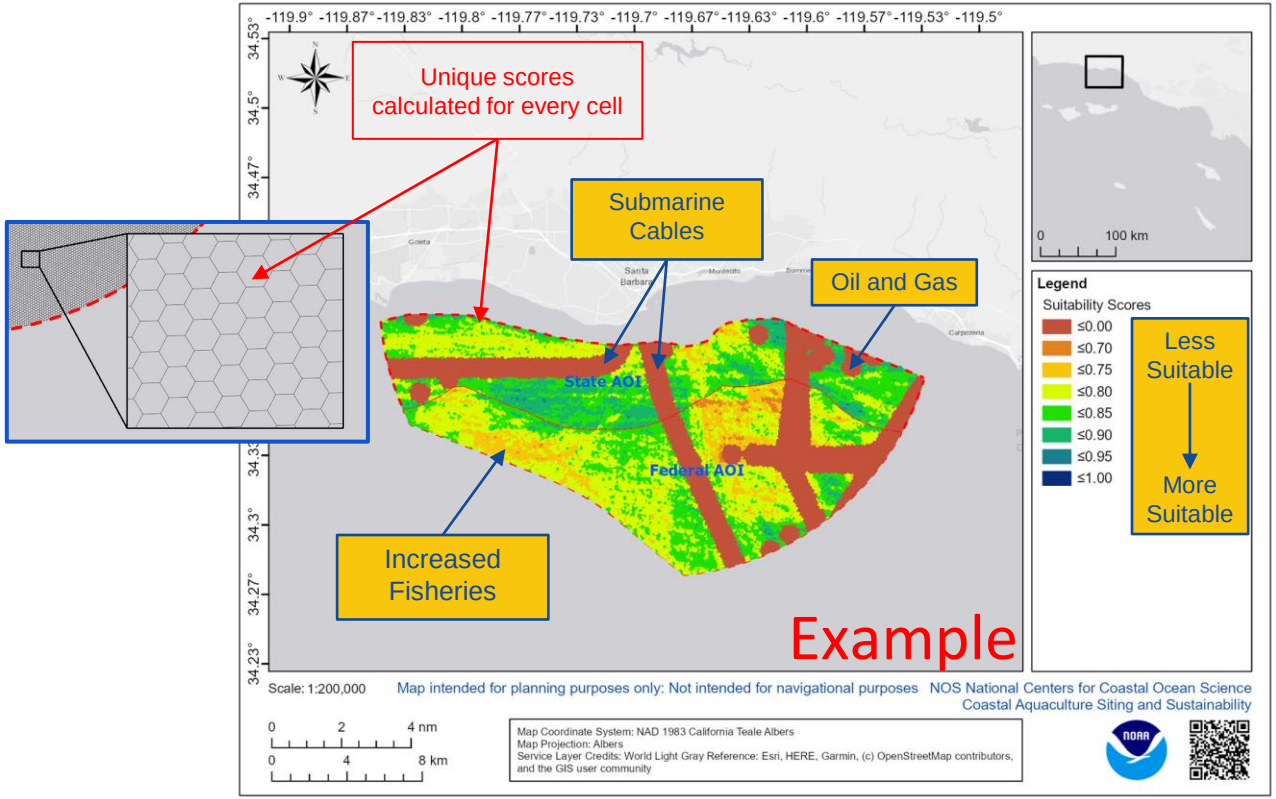
Gulf of Mexico
Wind energy area siting ✓
Cable siting

US Caribbean
OSW Planning

Map credit: NREL

BOEM Bureau of Ocean Energy Management

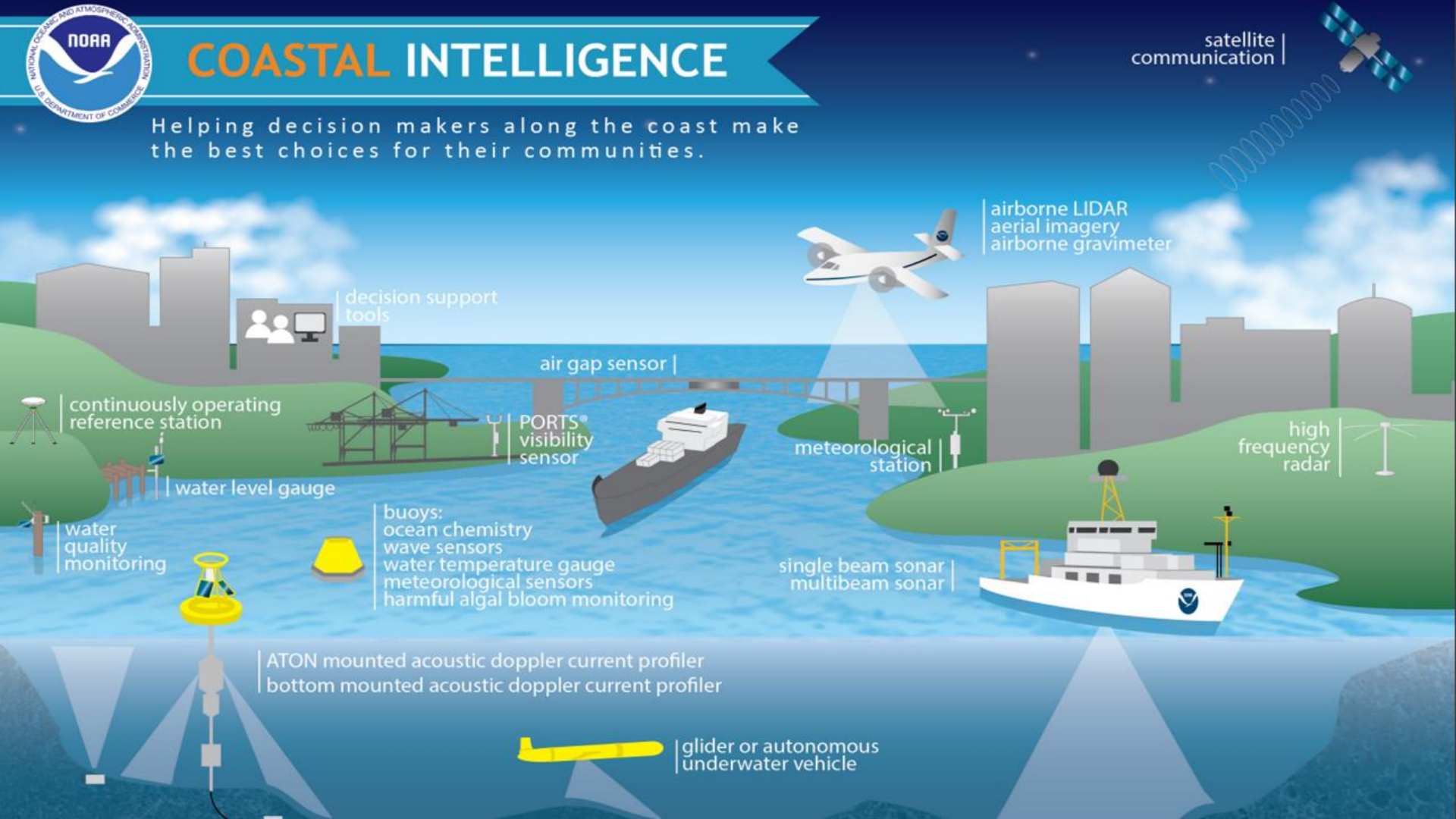
Our Goal: Identify Conflict, Find *Opportunity*



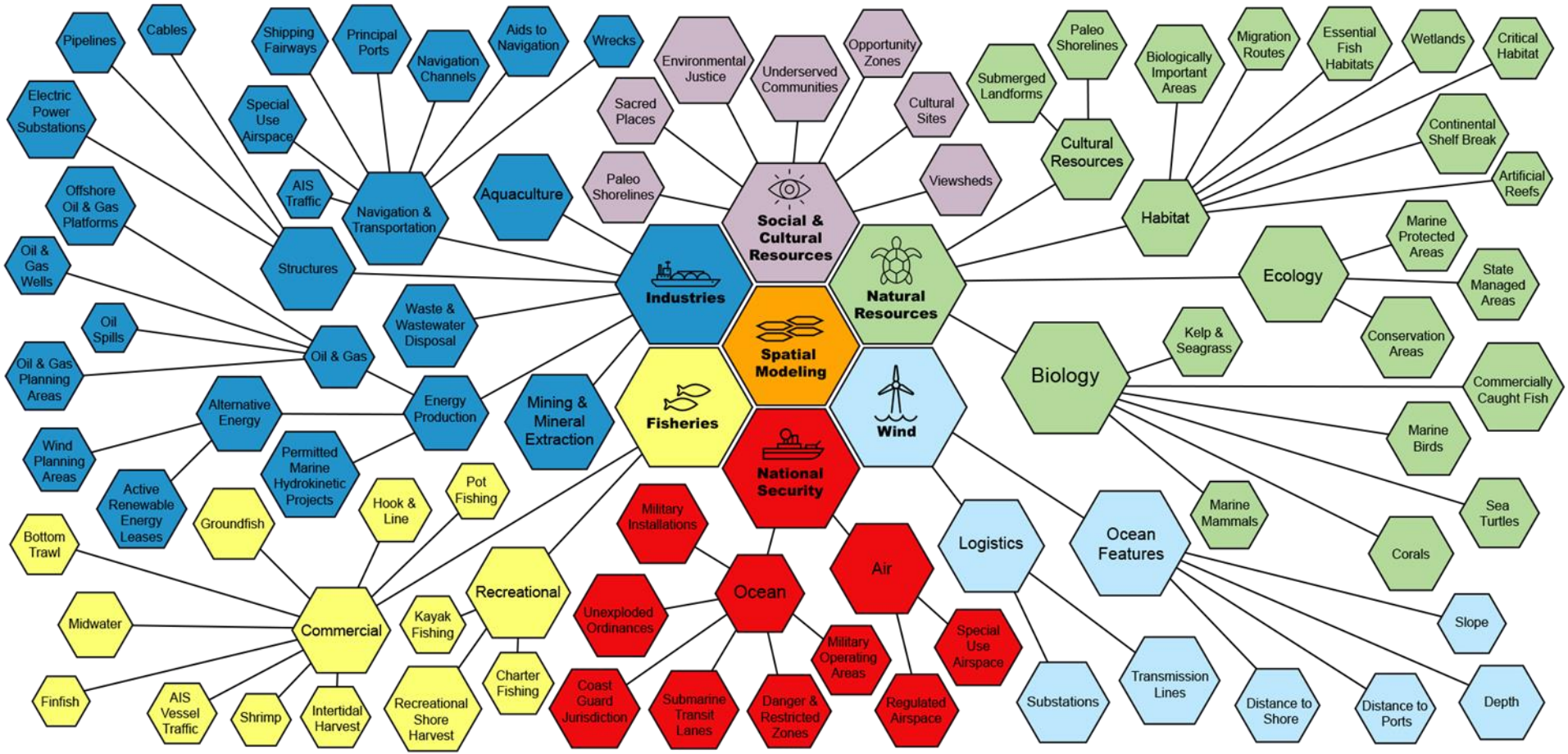
A **spatial suitability model** weights locations relative to each other based on given criteria.

COASTAL INTELLIGENCE

Helping decision makers along the coast make the best choices for their communities.



Ecosystem Models Require an Ocean of Data



Many Sources of Data

MarineCadastre.gov
An Ocean of Information
A joint BOEM and NOAA initiative providing authoritative data to meet the needs of the offshore energy and marine planning communities.

BOEM
Bureau of Ocean Energy Management

EPA

USGS
science for a changing world

NREL
NATIONAL RENEWABLE ENERGY LABORATORY

NORTHEAST OCEAN DATA

WEST COAST OCEAN DATA PORTAL

DEPARTMENT OF DEFENSE · UNITED STATES OF AMERICA

UNITED STATES NAVY

NATIONAL WEATHER SERVICE

NASA

BSEE

U.S. FISH & WILDLIFE SERVICE
DEPARTMENT OF THE INTERIOR

PACIFIC FISHERY MANAGEMENT COUNCIL

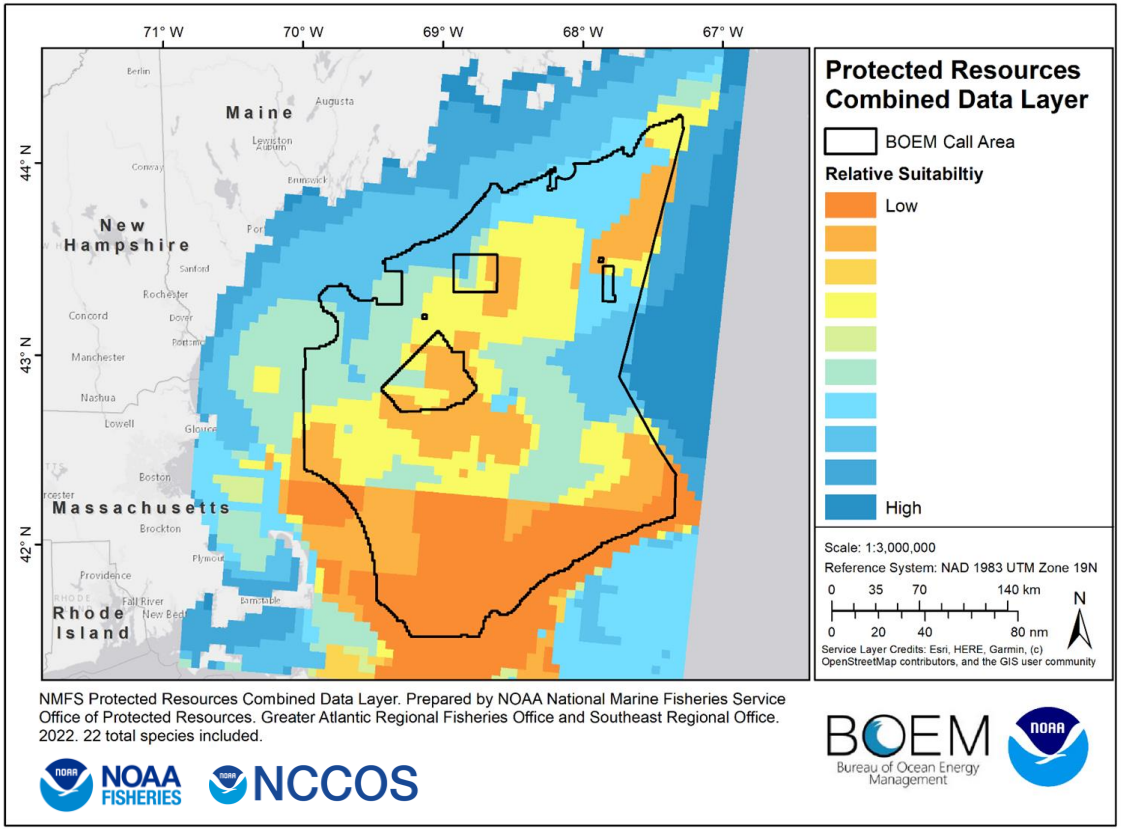
NOAA
OFFICE FOR **COASTAL MANAGEMENT**

NOAA
NOAA FISHERIES

State Agencies

Bio-ORACLE
Marine data layers for ecological modelling

New Ocean Intel for Conservation



NMFS Protected Resources Combined Data Layer. Prepared by NOAA National Marine Fisheries Service Office of Protected Resources. Greater Atlantic Regional Fisheries Office and Southeast Regional Office. 2022. 22 total species included.

NOAA FISHERIES | NCCOS

BOEM Bureau of Ocean Energy Management | NOAA

Species Common Name	Status and Trend	Score (0-1)
Atlantic white-sided dolphin	Protected; low use area	0.9
Bottlenose dolphin	Protected; unknown/declining	0.6
Harbor porpoise	Protected; unknown/declining	0.7
Pilot whale	Protected; unknown/declining	0.7
Risso's dolphin	Protected; unknown/declining	0.7
Short-beaked common dolphin	Protected; unknown/declining	0.7
Seals	Protected; increasing/stable	0.8
Blue whale	Endangered; unknown/stable	0.2
Fin whale	Endangered; unknown/stable	0.2
Humpback whale	Protected; increasing/stable	0.8
Minke whale	Protected; unknown/declining	0.7
North Atlantic right whale	Endangered; declining	0.1
Sei whale	Endangered; unknown/stable	0.2
Sperm whale	Endangered; unknown/stable	0.2
Atlantic Salmon (Gulf of Maine DPS)	Endangered; low use area	0.5
Atlantic sturgeon (All DPSs)	Endangered; unknown/stable	0.2
Giant manta ray	Threatened; unknown/declining	0.4
Shortnose sturgeon	Endangered; low use area	0.5
Green sea turtle	Threatened; increasing/stable	0.5
Kemp's ridley sea turtle	Endangered; unknown/stable	0.5
Leatherback sea turtle	Endangered; declining	0.1
Loggerhead sea turtle (NW Atlantic, NW Atlantic Ocean DPSs)	Threatened; increasing/stable	0.5

How do we build the regional spatial model?

Click here to watch our “Where Can Offshore Wind Turbines Go” video

NORTHEAST OCEAN DATA
Maps and Data for Ocean Planning in the Northeastern United States

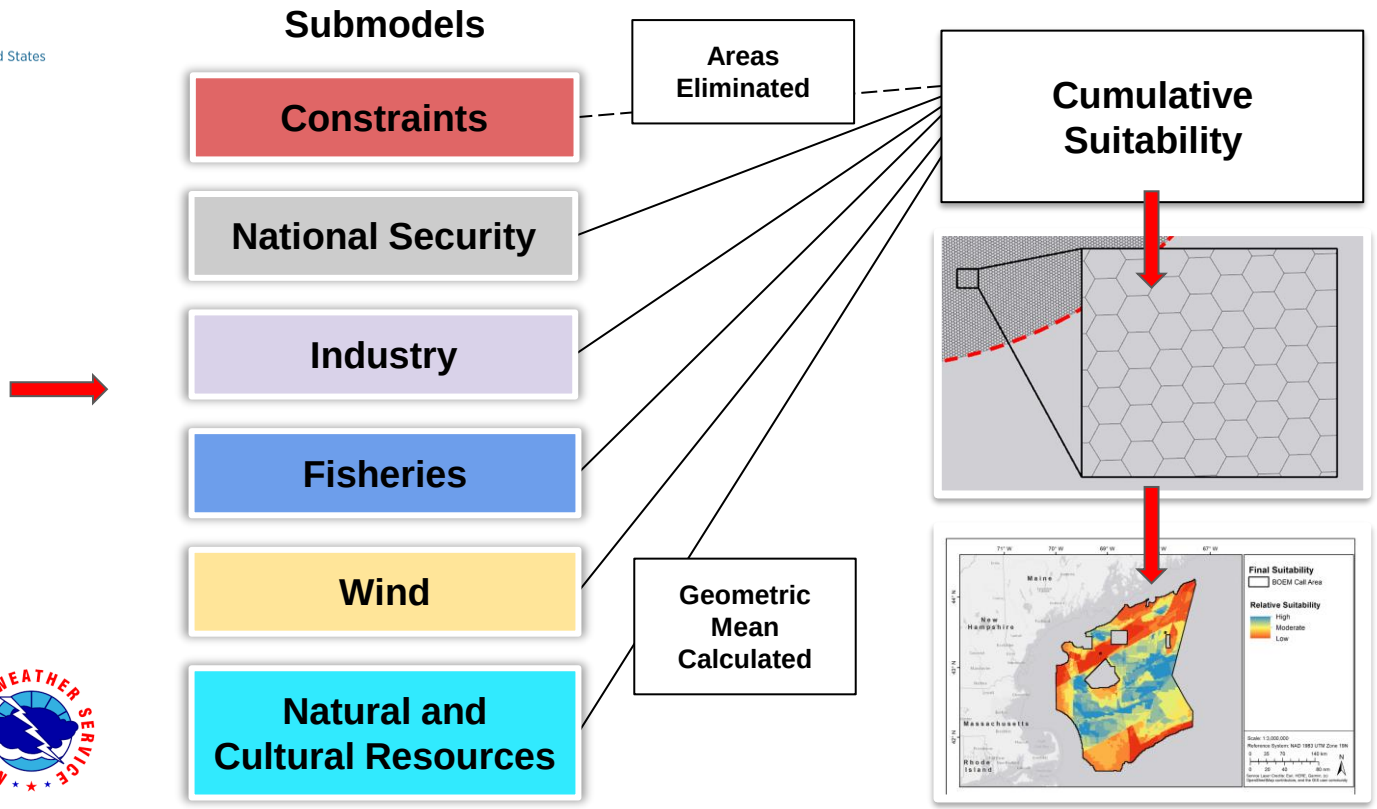
MarineCadastre.gov
An Ocean of Information
A joint BOEM and NOAA initiative providing authoritative data to meet the needs of the offshore energy and marine planning communities.

NOAA FISHERIES

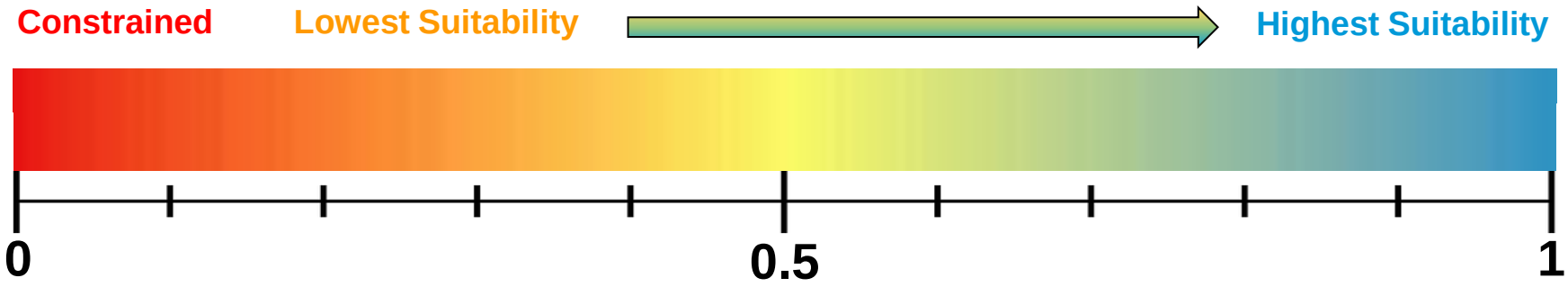
BOEM
Bureau of Ocean Energy Management

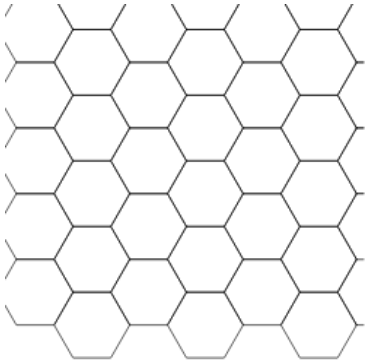
NCCOS

State Agencies

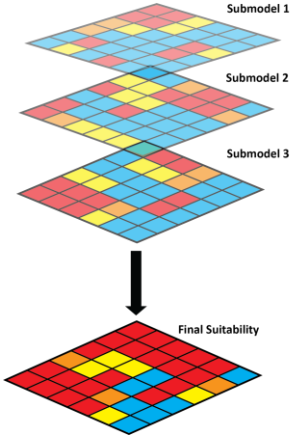


Scoring Data Layers





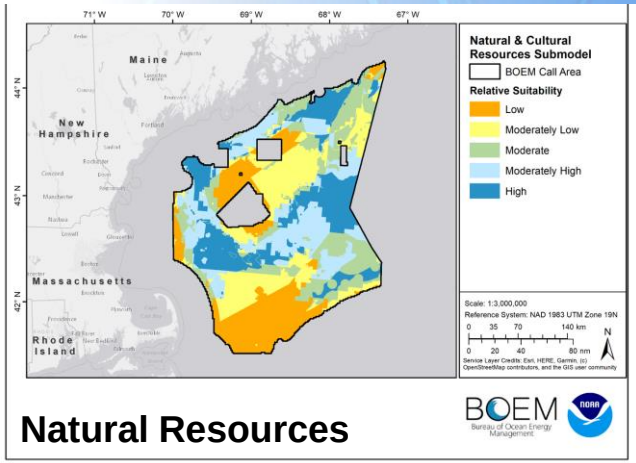
Scores are assigned to each grid cell for each separate data layer



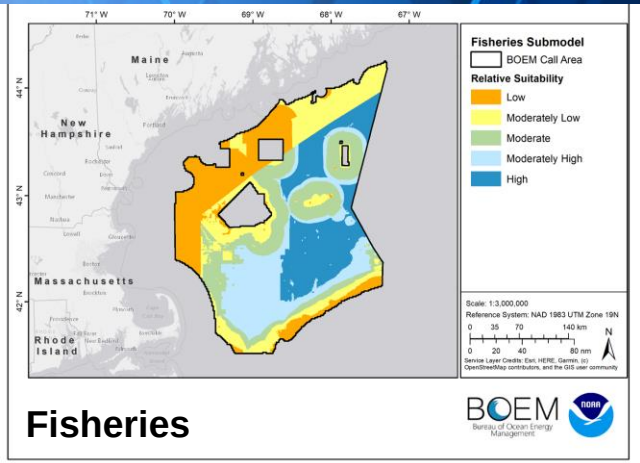
Cumulative scores for each submodel are calculated

The geometric mean of all submodels is calculated to determine final suitability

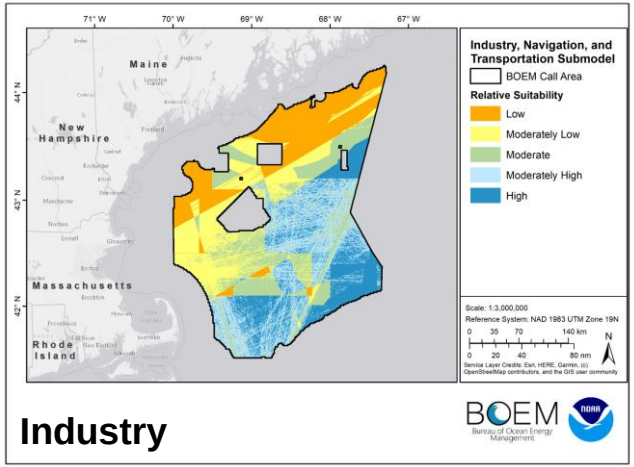
Submodel suitability results: Gulf of Maine



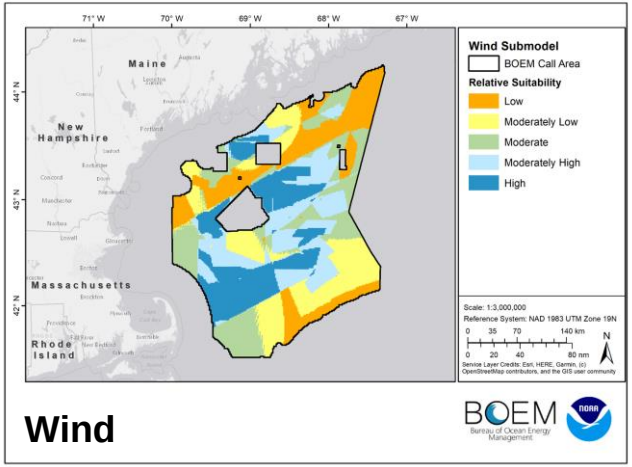
Natural Resources



Fisheries

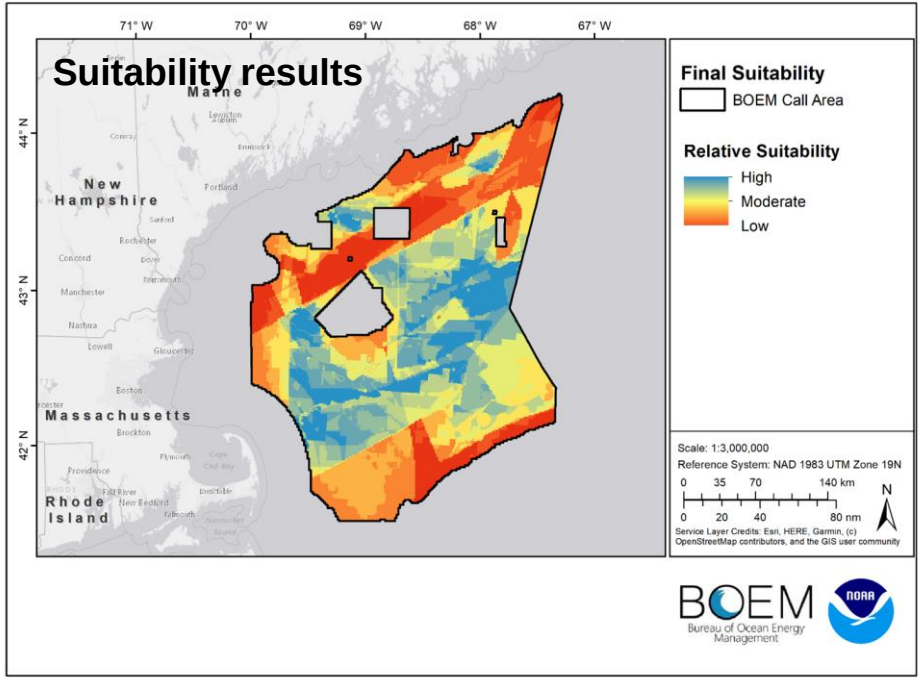


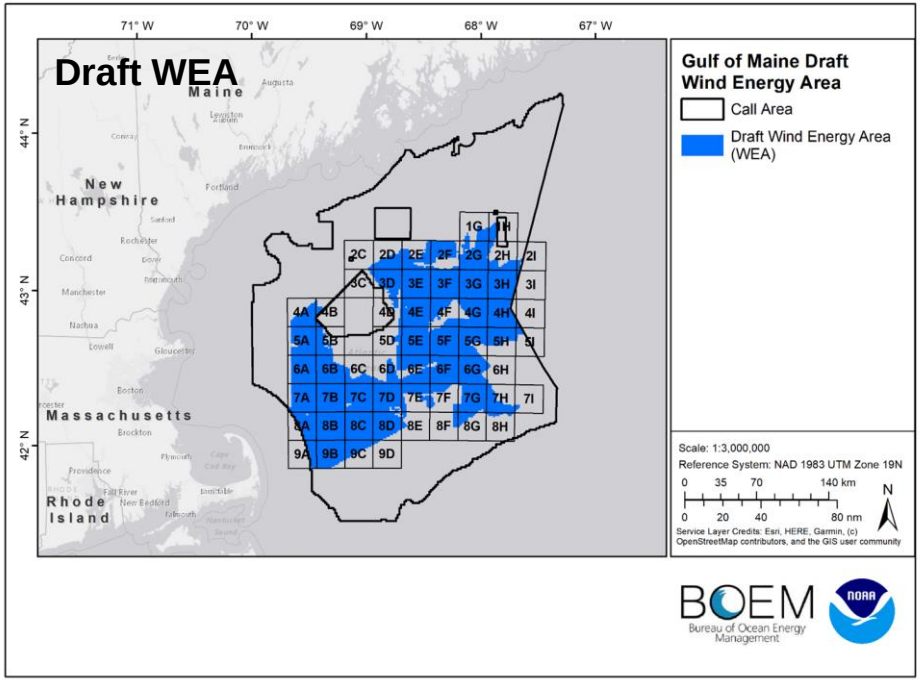
Industry



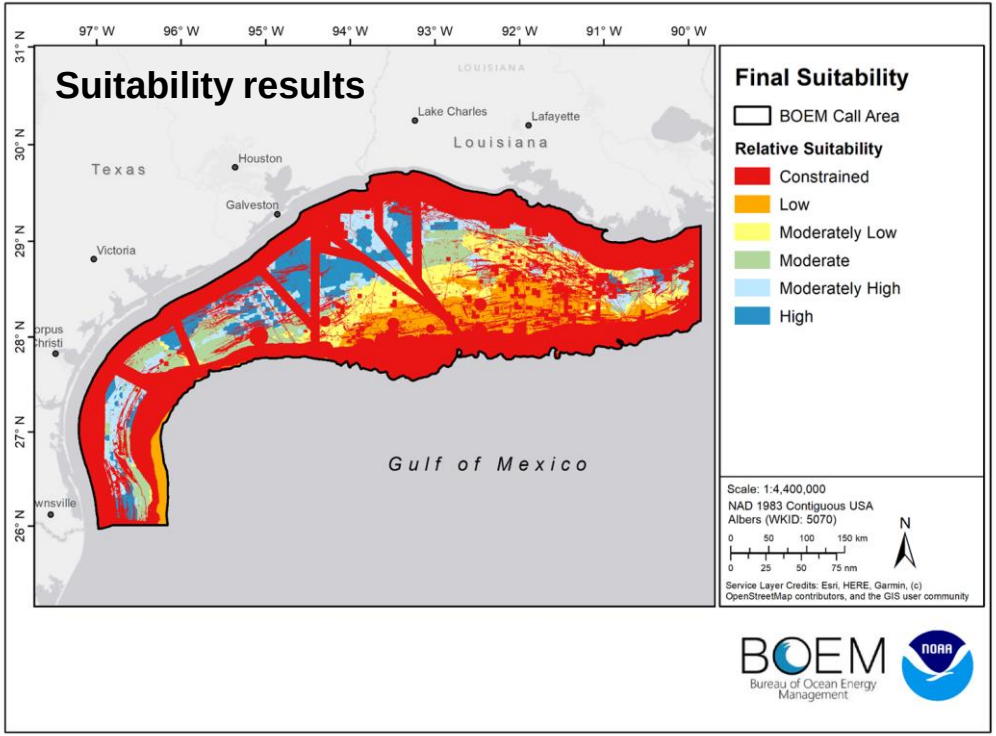
Wind

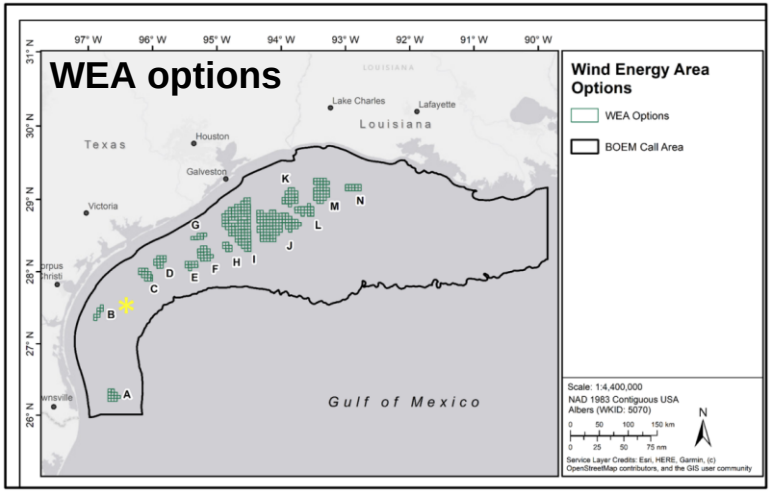
Gulf of Maine

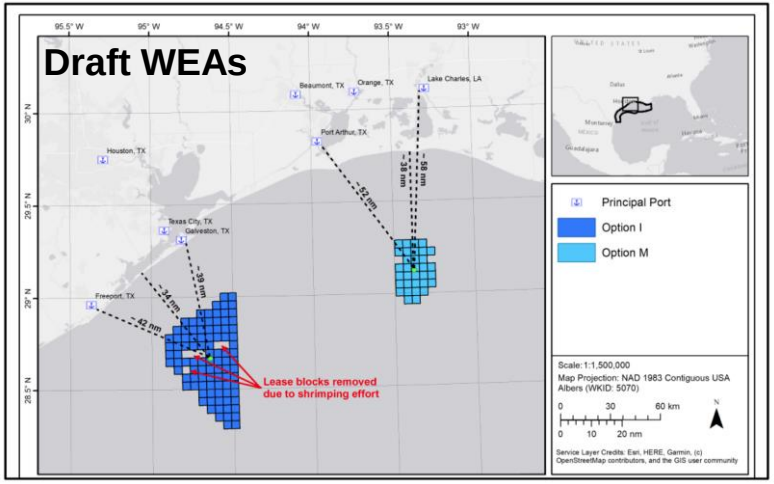




Gulf of Mexico







Changing fishing grounds
Changing species distributions
Habitat change
Weather and wind changes
New ocean users
Shipping industries
Military

Tribal engagement
Participatory mapping
Fisheries ecological knowledge
Traditional ecological knowledge
Environmental justice
Social perceptions

National Centers for Coastal Ocean Science
National Ocean Service

Your OceanFuture Starts Here

Spatial science for ocean food, energy, commerce, and conservation

Thank you!
For more info:
James.Morris@noaa.gov

BOEM Bureau of Ocean Energy Management

Southeast US Marine Spatial Planning Data Development Workshop

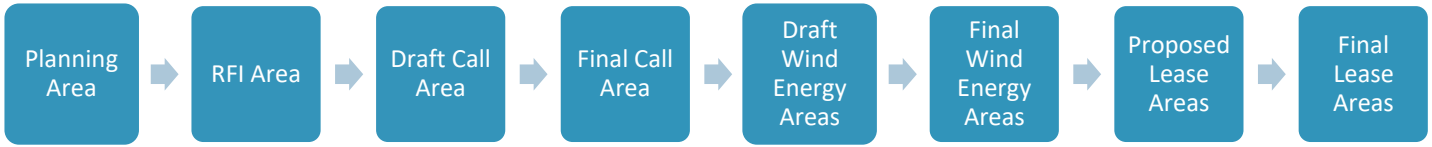
April 9th and 10th

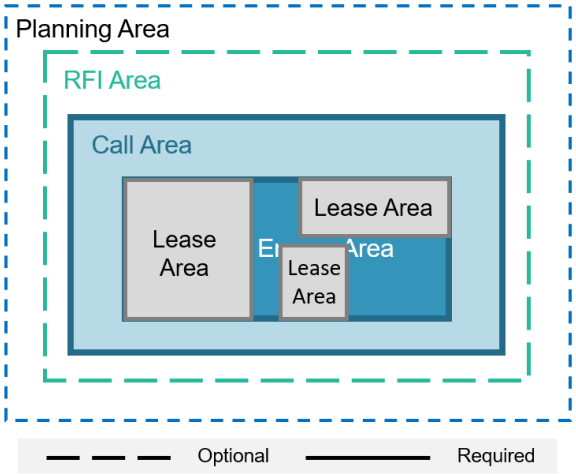
Seth Theuerkauf, Renewable Energy Program Specialist

Office of Renewable Energy Program's (OREP) Mission

...facilitate the responsible development of renewable energy resources on the Outer Continental Shelf through conscientious planning, stakeholder engagement, comprehensive environmental analysis, and sound technical review...

BOEM's Renewable Energy Planning Process





Gulf of Maine Example:

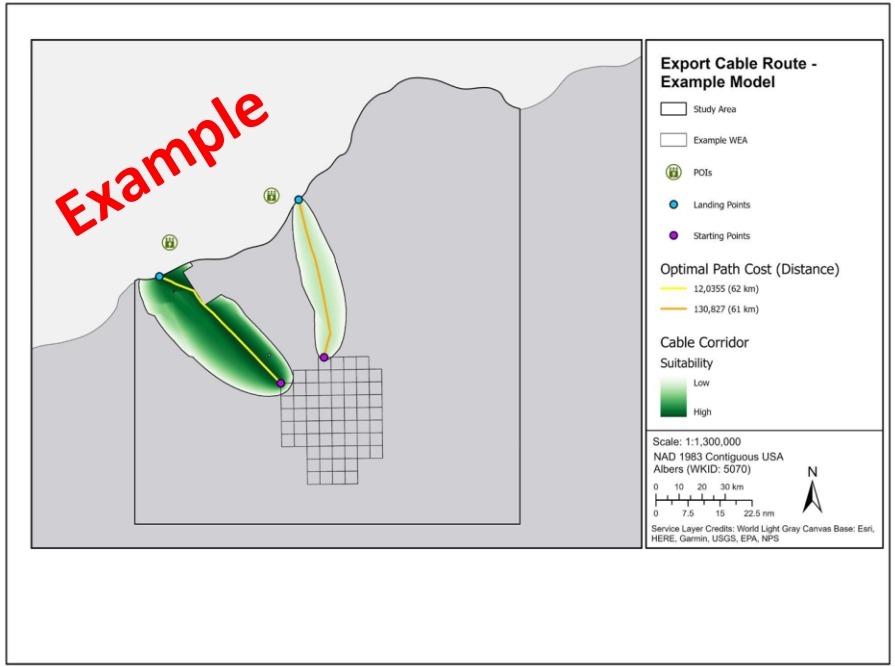
Transmission Spatial Modeling

- "***the Lessee has the right to one or more project easement(s), without further competition … Such easements must be in a location acceptable to the Lessor.***"

- Consultations and environmental analyses of transmission easements typically require evaluation of 2+ route options
  - Adjustments and/or significant mitigation can be required where conflicts exist

- **Support BOEM and interagency partners** with review of proposed project easement locations (e.g., enhanced consultations)

- **Provide Lessees** with sound information to support transmission planning efforts (e.g., avoid false-starts, improved informational baseline)



How will data covered at this workshop inform BOEM?

Central Atlantic 2

- Recently began offshore wind lease planning effort, responsive to Maryland and North Carolina's interest in an additional lease area
- Anticipate initializing effort with a new planning area, utilizing NCCOS spatial modeling to inform winnowing
- Timeline: lease sale in September 2025 – September 2026

Carolinas Transmission Modeling

- Carolina Long Bay and Kitty Hawk South leases are the focus
- Developing spatial models in 2024, including opportunities for agency input
- Products to inform both Lessee planning and agency review
- Timeline: anticipate initial products in fall 2024

Current Data Inventory

1. Natural Resources
2. Fisheries
3. Cultural and Social Resources
4. National Security
5. Metocean and Other
6. Industries
7. Offshore Wind

BOEM BUREAU OF OCEAN ENERGY MANAGEMENT

NOAA NCCOS NATIONAL CENTERS FOR COASTAL OCEAN SCIENCE

Natural Resources

Information about protected species and sensitive habitats

BOEM BUREAU OF OCEAN ENERGY MANAGEMENT

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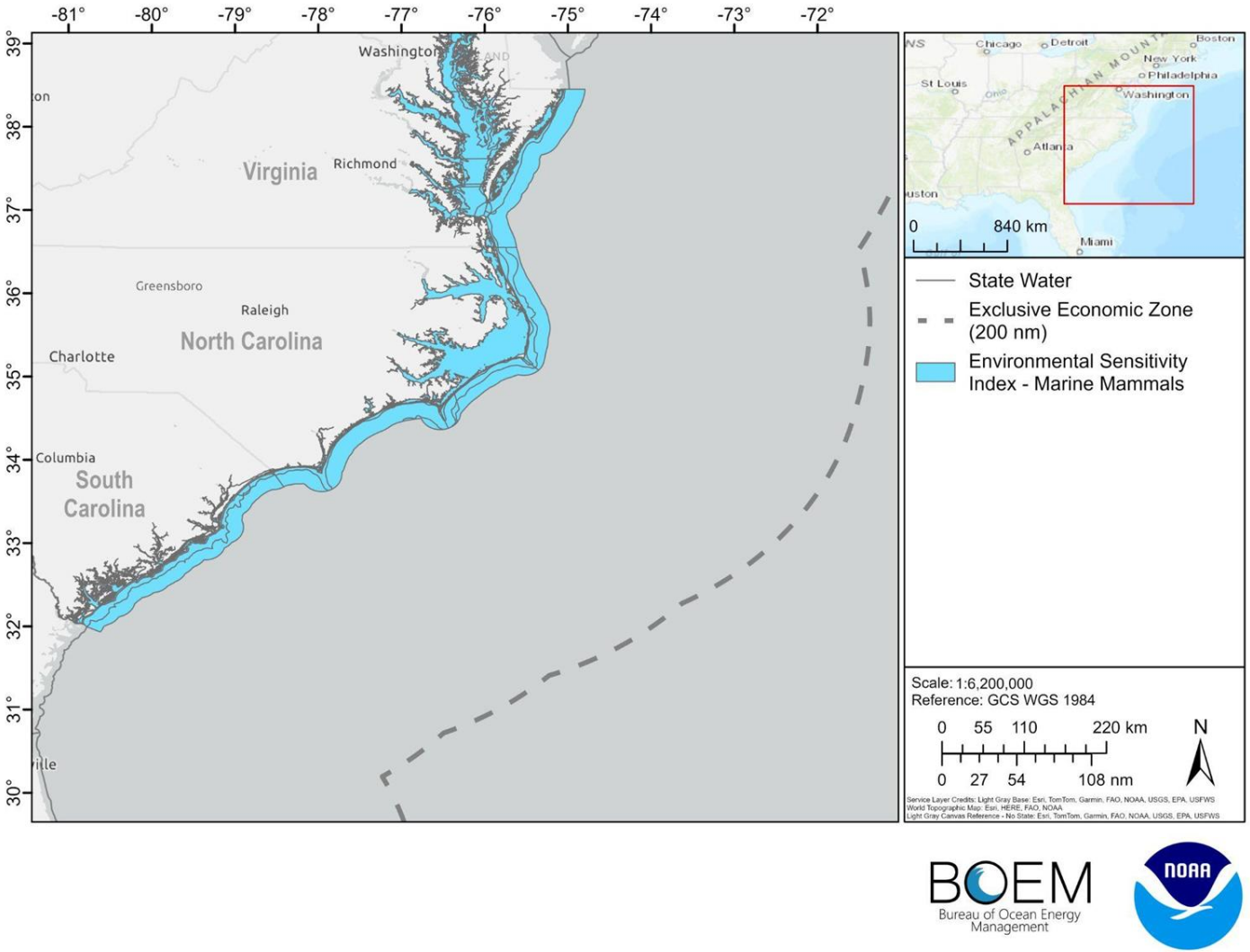
Marine Mammals -

Environmental Sensitivity Index

Description: Sensitive biological resource data for whales, dolphins, and manatees, representing marine mammal distribution. Species specific abundance, seasonality, status, life history, and source information are stored in relational data tables (described below) designed to be used in conjunction with this spatial data layer.

- **Original Source:** NOAA Office of Response and Restoration
- Data Link
- VA: Metadata Link
- NC: Metadata Link
- SC: Metadata Link



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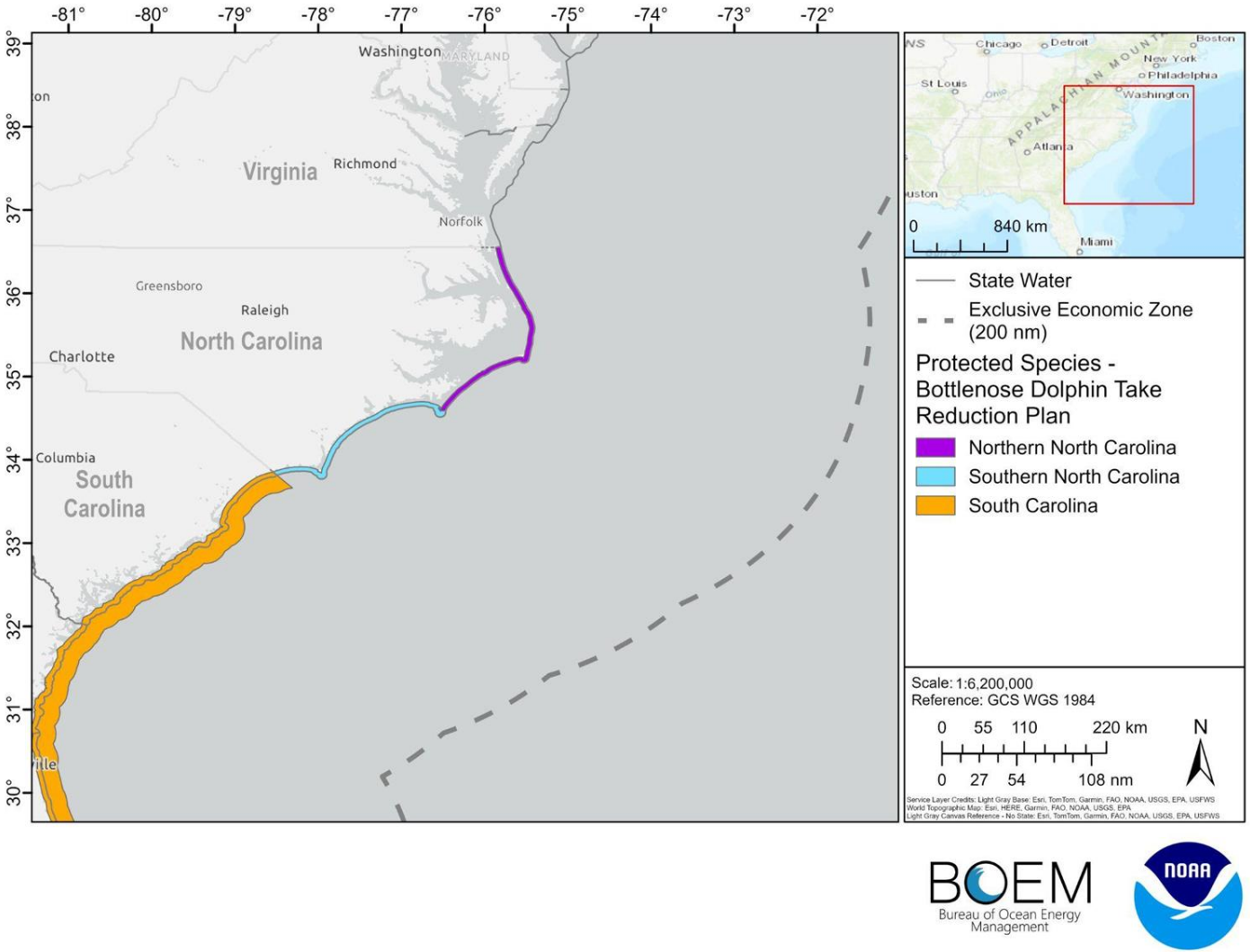
Protected Species -

Bottlenose Dolphin Take Reduction Plan

Description: Bottlenose dolphin are protected under the Marine Mammal Protection Act of 1972. The take reduction plans were developed to reduce incidental mortality and serious injury of strategic stocks of bottlenose dolphins from commercial fisheries in the western North Atlantic Ocean. Gear restricted under the BDTRP includes small, medium, and large mesh gillnets and pound nets.

- **Original Source:** NOAA Fisheries
- N NC: Data Link / Metadata Link
- S NC: Data Link / Metadata Link
- SC: Data Link / Metadata Link



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NOAA

Protected Species -

North Atlantic Right Whale

Critical Habitat: boundaries of the North Atlantic Right Whale Critical Habitat.

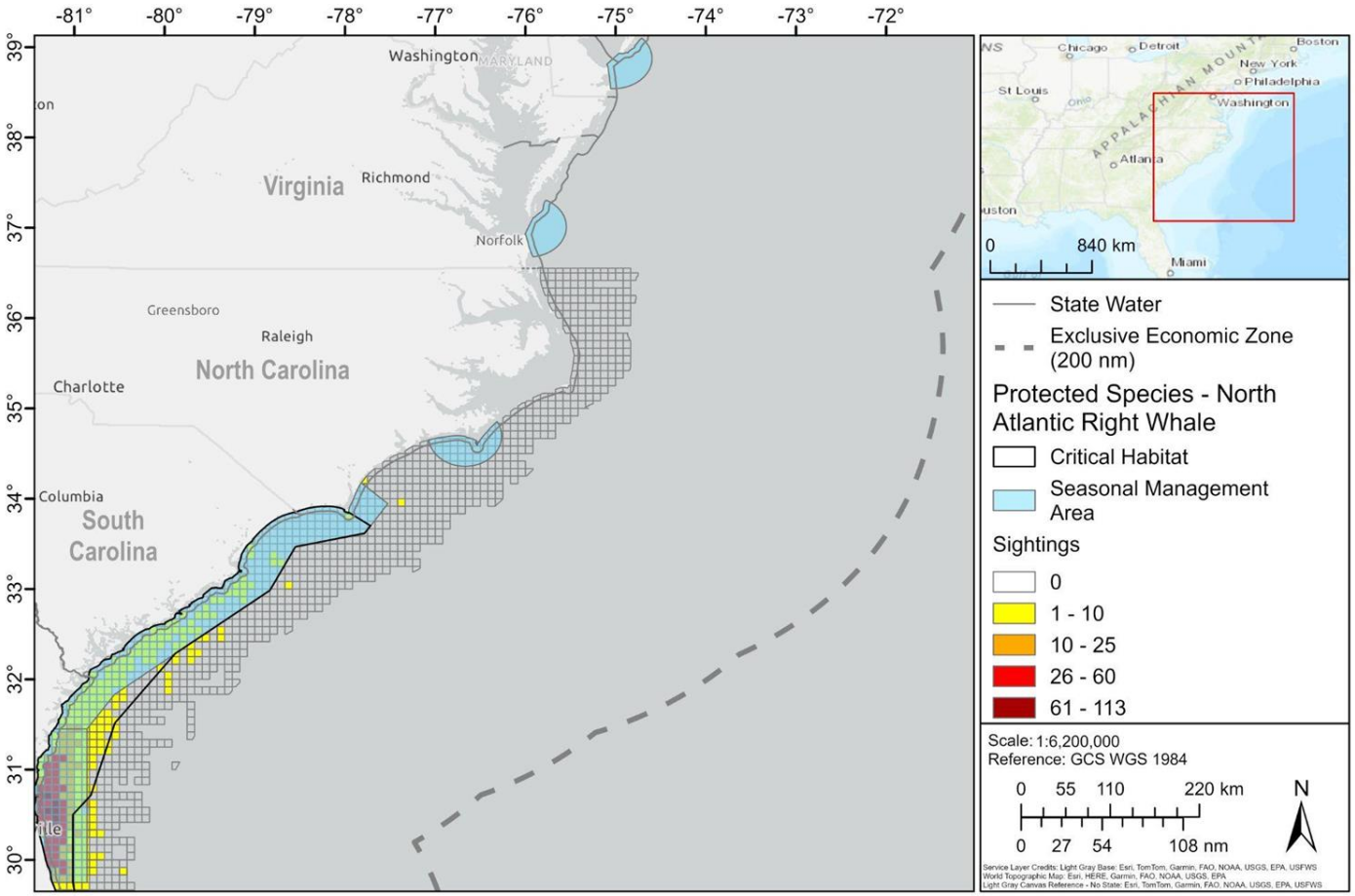
- **Original Source:** NOAA Fisheries
- Data Link / Metadata Link

Seasonal Management Area: This dataset represents mandatory speed restriction zones as described in the Final Rule To Implement Speed Restrictions to Reduce the Threat of Ship Collisions With North Atlantic Right Whales.

- **Original Source:** NOAA Fisheries
- Data Link / Metadata Link

Sightings: Right whales surveyed by the North Atlantic Right Whale (NARW) Consortium, showing sightings per unit effort (SPUE) of the North Atlantic right whale in units of 1000 km of valid survey track.

- **Original Source:** North Atlantic Right Whale (NARW) Consortium
- Data Link / Metadata Link



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NOAA

Protected Species -

Sea Turtles

Loggerhead SEAMAP Survey: The distribution and percent occurrence of loggerhead sea turtles obtained from Southeast Area Monitoring and Assessment Program-South Atlantic (SEAMAP-SA) Coastal Surveys using paired trawls and a stratified random sampling design.

- **Original Source:** SC DNR - SEAMAP
- Data Link / Metadata Link

NC MFC Sea Turtle Sanctuary Management Area: This dataset represents a designated sea turtle sanctuary.

- **Original Source:** NC DEQ
- Data Link

Kemp's Ridley Sea Turtle Trawl Survey: Distribution, relative frequency of abundance, and mean CPUE of Kemp's ridley sea turtles captured in a South Carolina Department of Natural Resources managed in-water turtle survey (2008-2012) using bottom trawls.

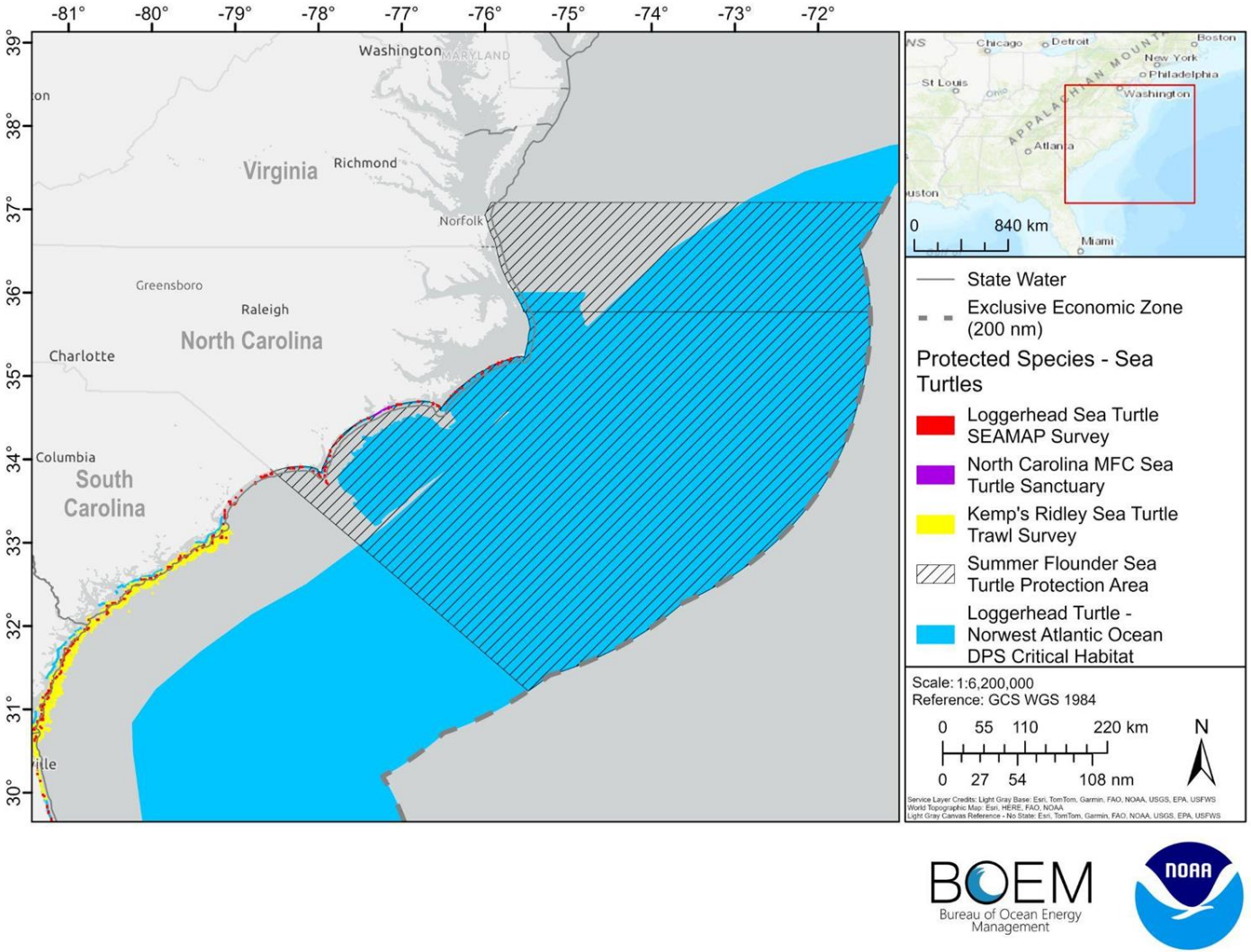
- **Original Source:** SC DNER
- Data Link / Metadata Link

Summer Flounder Sea Turtle Protection Area: This dataset depicts the boundaries of the Summer Flounder Fishery - Sea Turtle Protection Area.

- **Original Source:** NOAA Fisheries
- Data Link / Metadata Link

Northwest Atlantic Ocean DPS Critical Habitat: Critical habitat constitutes areas considered essential for the conservation of a listed species. These data identify, in general, the critical habitat units for the Northwest Atlantic Ocean Distinct Population Segment of Loggerhead sea turtle (Caretta caretta), providing notice to the public and managers of the importance of the areas to the conservation of this species.

- **Original Source:** NOAA Fisheries
- Data Link / Metadata Link



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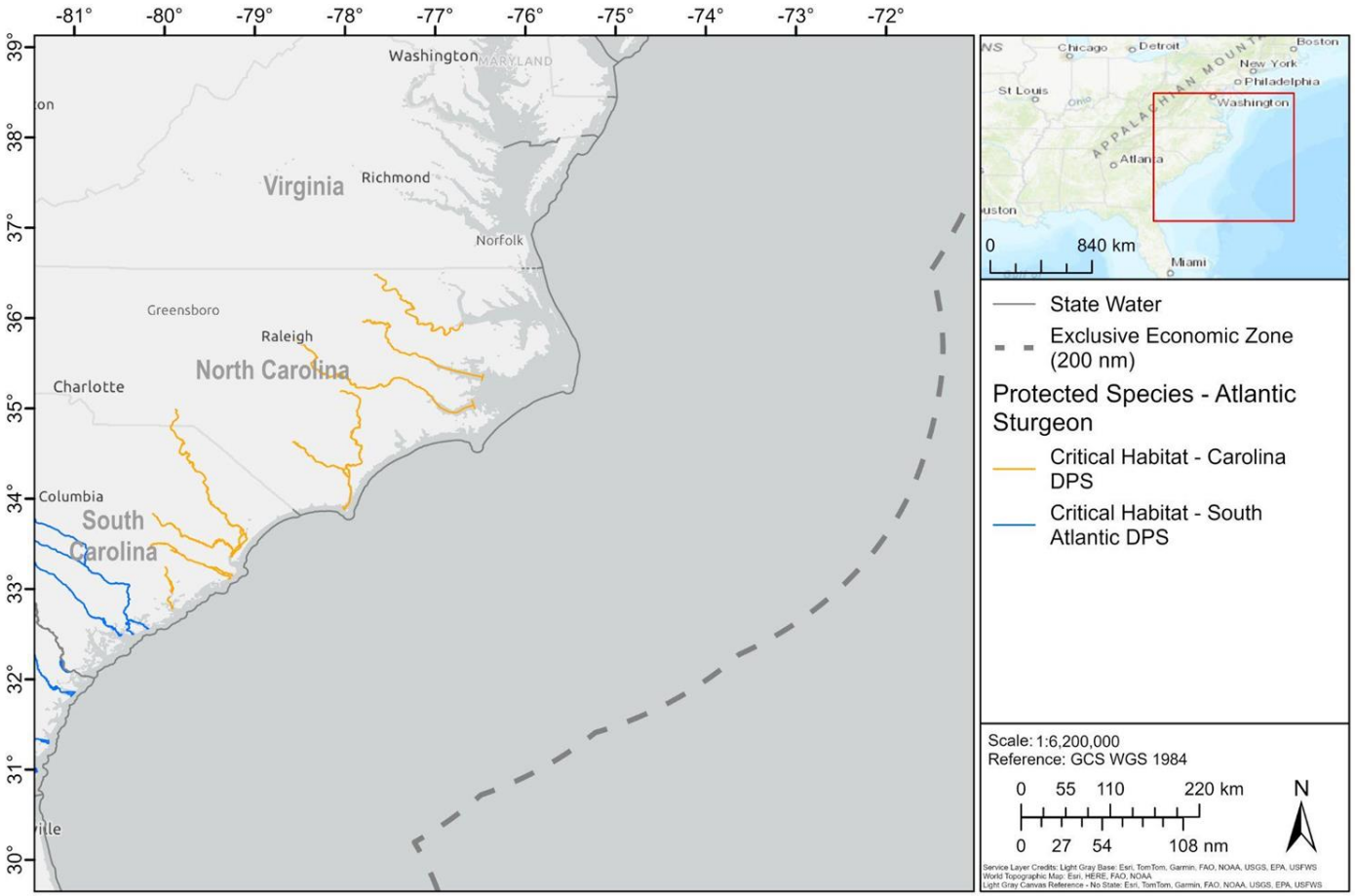
Protected Species -

Atlantic Sturgeon

Description: These two layers depict Critical Habitat designated for the Carolina DPS South Atlantic DPS of Atlantic Sturgeon.

- **Original Source:** NOAA Fisheries
- Data Link / Metadata Link



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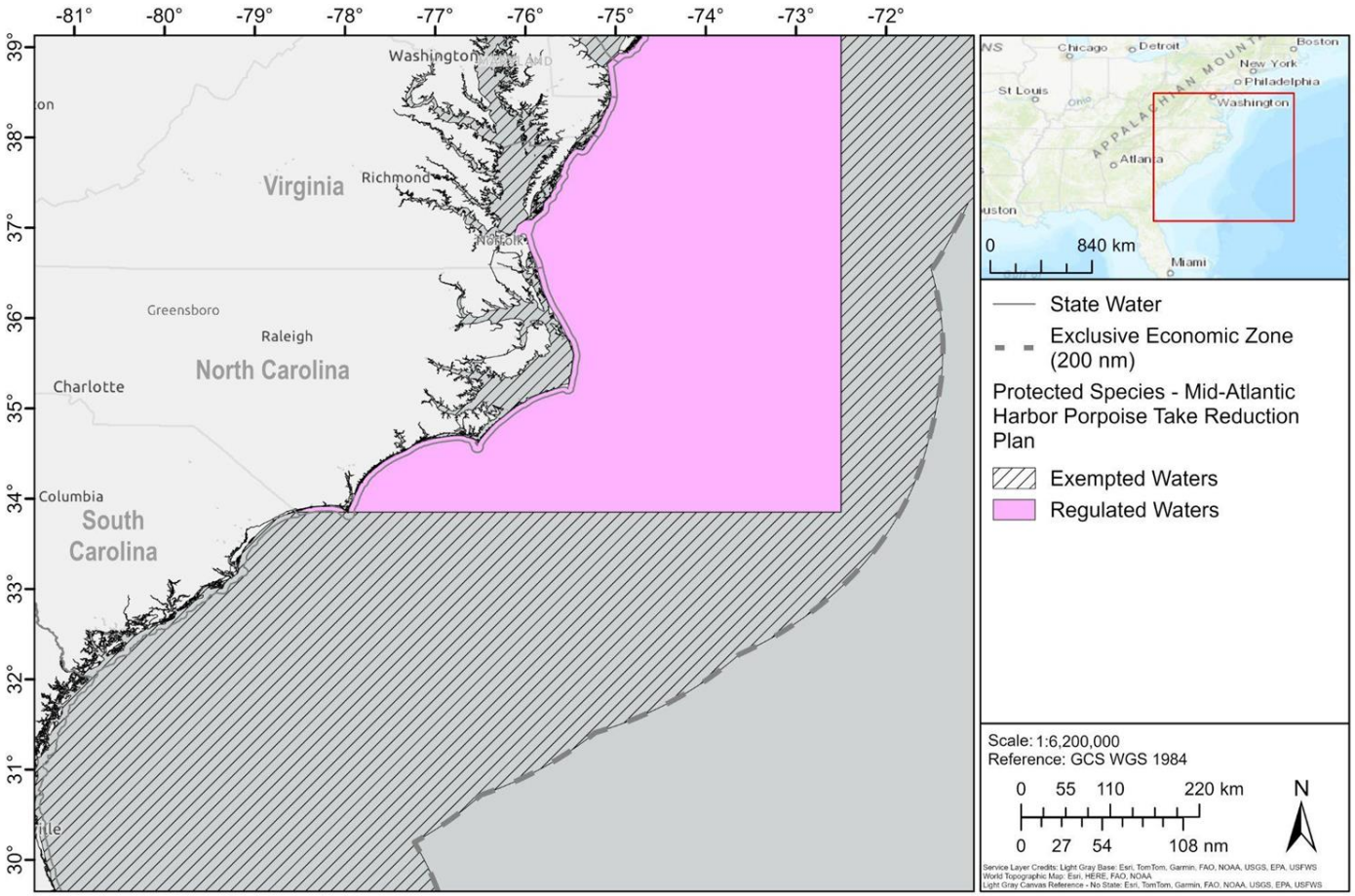
Protected Species -

Mid-Atlantic Harbor Porpoise Take Reduction Plan

Description: This dataset depicts the boundaries of the Harbor Porpoise Take Reduction Plan Mid-Atlantic Regulated and Exempted Waters

- **Original Source:** NOAA Fisheries
- Data Link / Metadata Link



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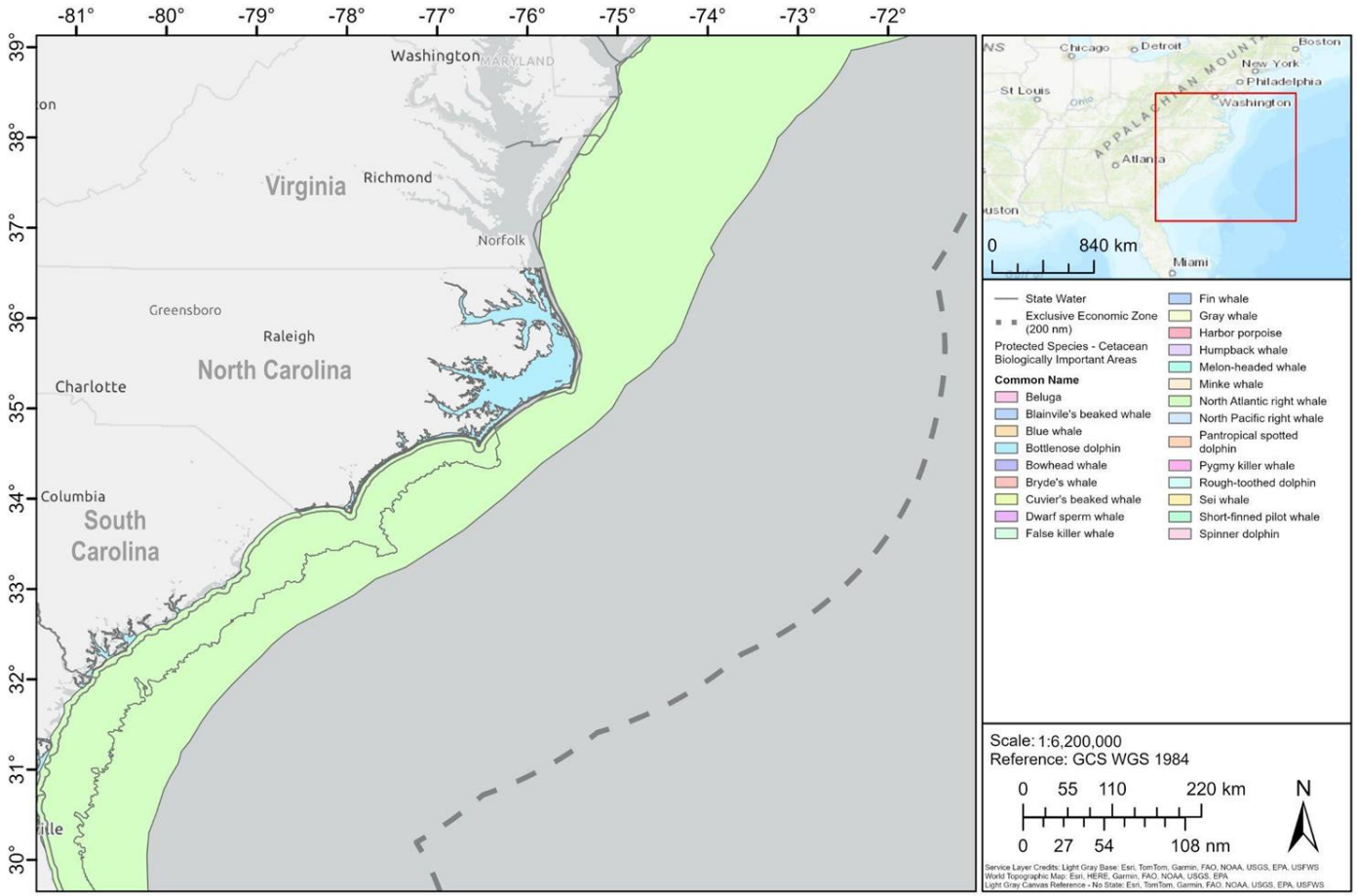
Protected Species -

Cetacean Biologically Important Areas



Description: The Cetacean Density and Distribution Mapping Working Group identified Biologically Important Areas (BIAs) for 24 cetacean species, stocks, or populations in seven regions (US East Coast, Gulf of Mexico, West Coast, Hawaiian Islands, Gulf of Alaska, Aleutian Islands and Bering Sea, and Arctic [encompassing the northeastern Chukchi and western Beaufort seas]) within US waters. BIAs are reproductive areas, feeding areas, migratory corridors, and areas in which small and resident populations are concentrated.

- **Original Source:** NOAA Fisheries
- Data Link / Metadata Link

BOEM Bureau of Ocean Energy Management

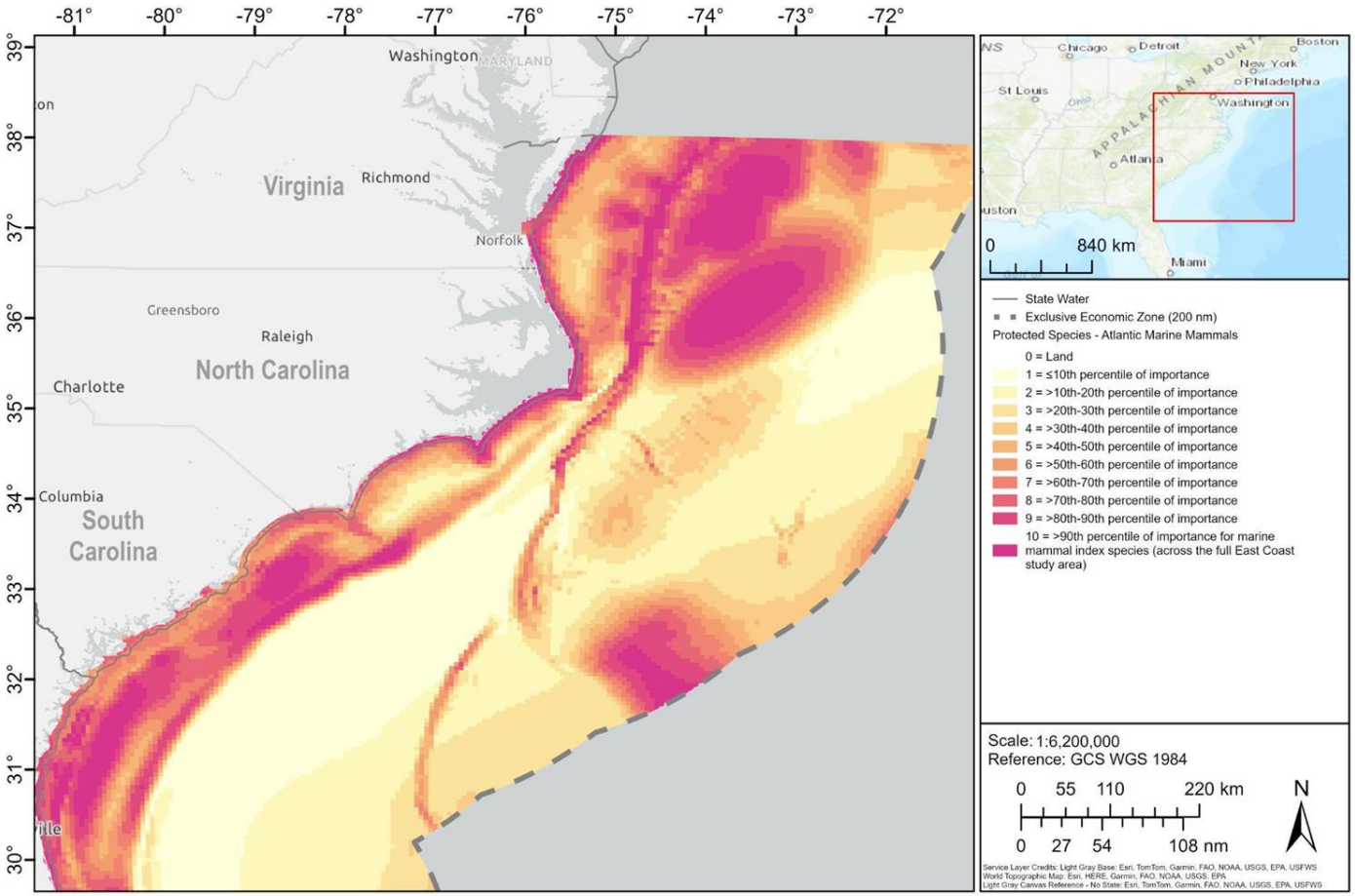
NOAA

Protected Species -

Atlantic Marine Mammals

Description: This indicator identifies important areas in the Atlantic Ocean for dolphins, whales, and seals. It incorporates density predictions for 20 marine mammals species or species groups based on sightings from boat-based and aerial surveys and data on oceanographic conditions. It uses marine mammal models developed by the Duke Marine Lab.

- **Original Source:** Southeast Conservation Adaptation Strategy
- Data Link / Metadata Link



BOEM Bureau of Ocean Energy Management

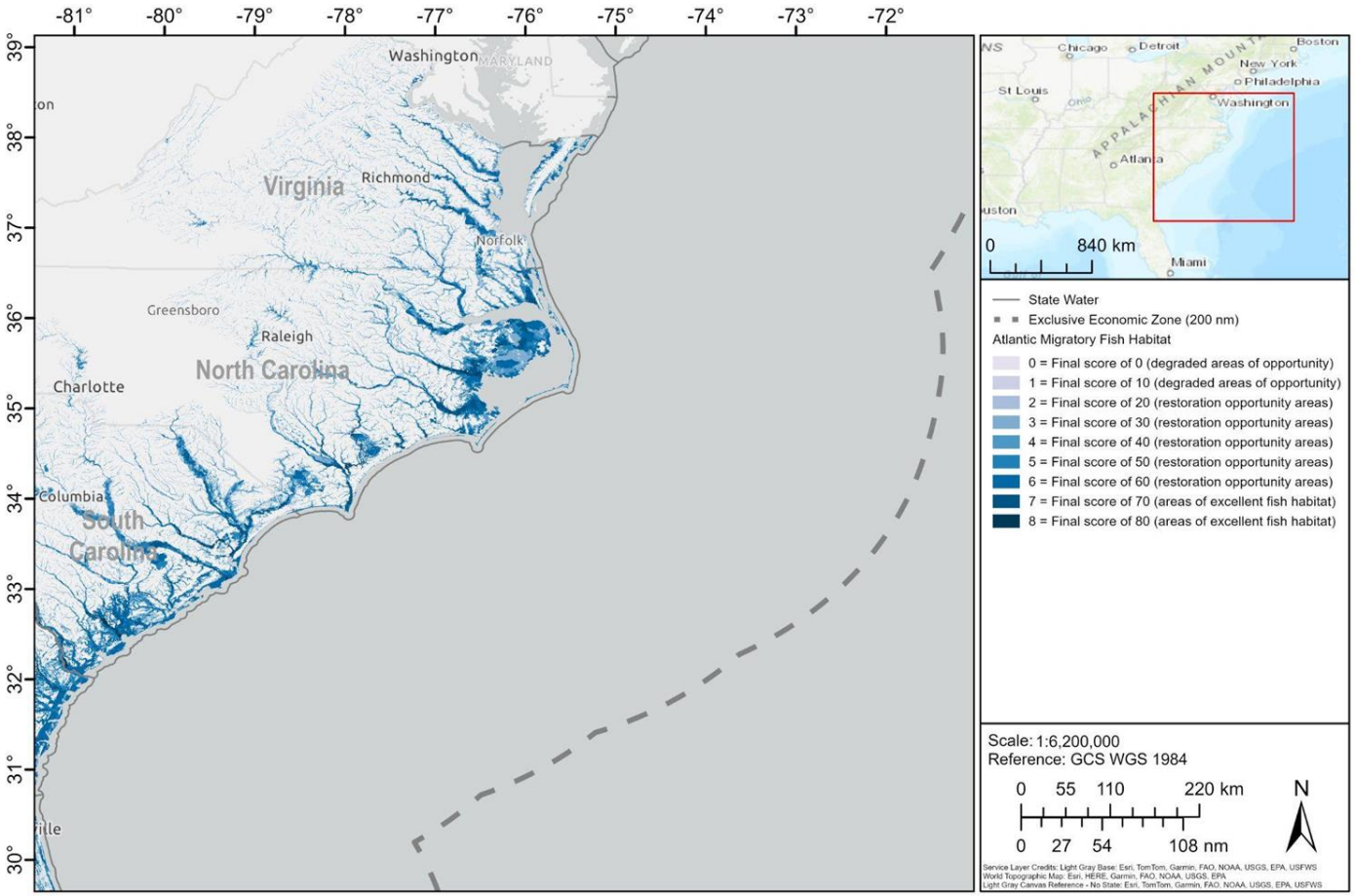
NOAA

Fish -

Atlantic Migratory Fish Habitat

Description: The condition of migratory fish habitat along the Atlantic coast within each catchment, using metrics of water quality, aquatic connectivity, habitat fragmentation, flow alteration, and more.

- **Original Source:** Southeast Conservation Adaptation Strategy
- Data Link / Metadata Link



BOEM Bureau of Ocean Energy Management

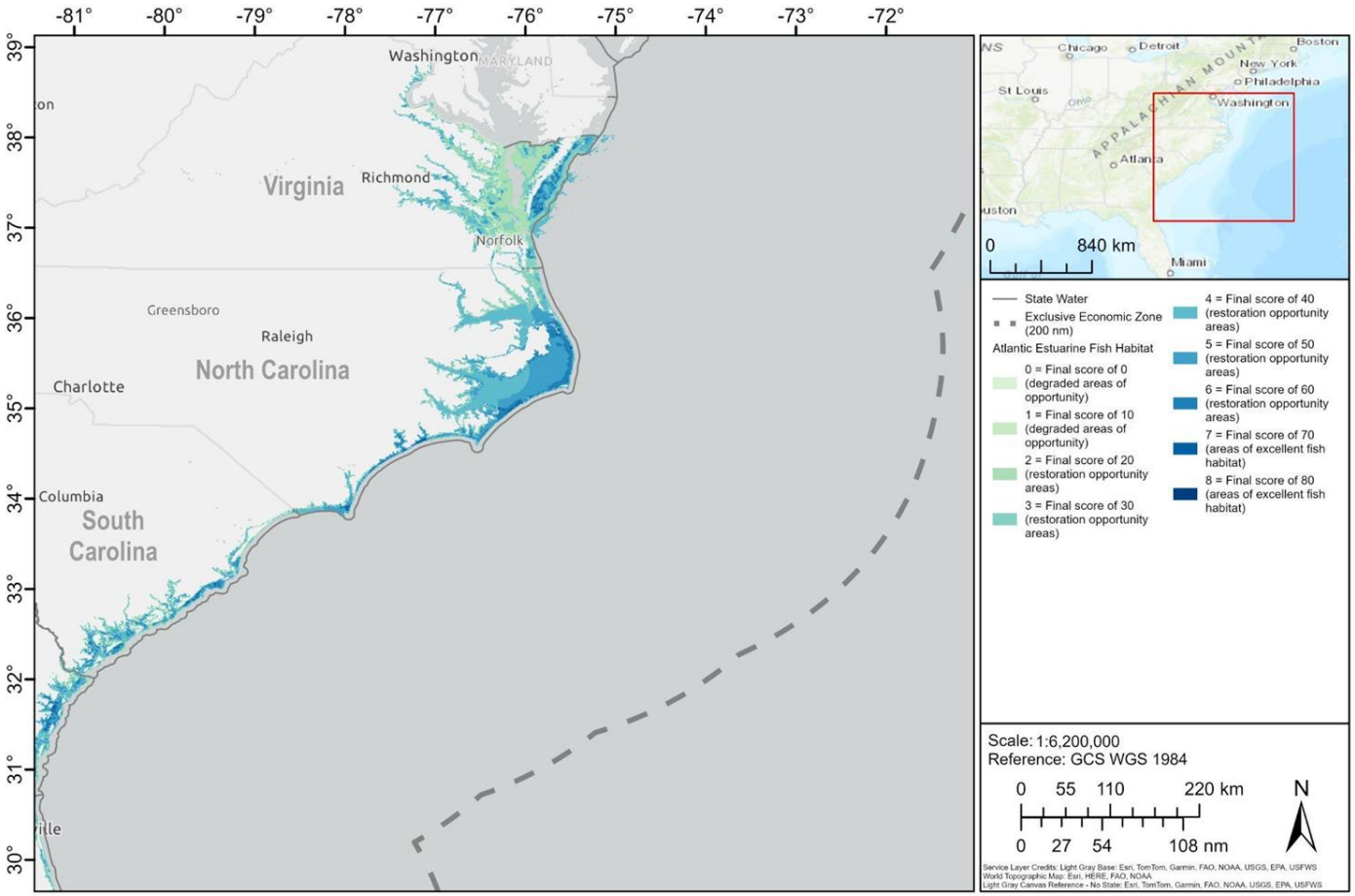
NOAA

Fish -

Atlantic Estuarine Fish Habitat

Description: The condition of estuarine fish habitat along the Atlantic coast using metrics of water quality, marsh edges, seagrass and oyster reefs, fragmentation, human development, and more.

- **Original Source:** Southeast Conservation Adaptation Strategy
- Data Link / Metadata Link



BOEM Bureau of Ocean Energy Management

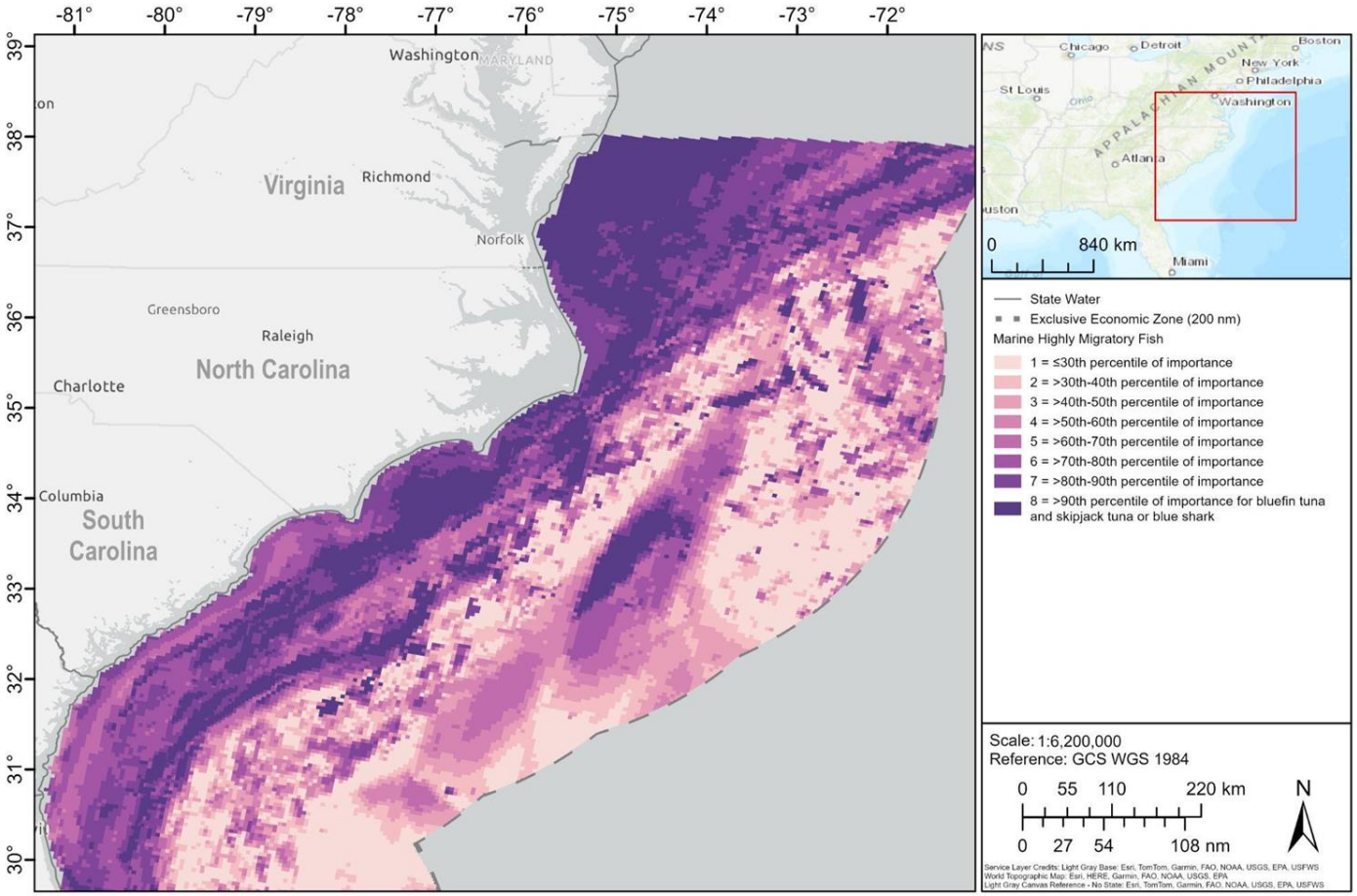
NOAA

Fish -

Marine Highly Migratory Fish

Description: Identifies important foraging and spawning areas for highly migratory fish in the Atlantic Ocean using physical capture and satellite tag observations, remote sensing of environmental variables, and physical oceanographic data to analyze the habitat preferences of three species (skipjack tuna, bluefin tuna, and blue shark) at various life stages. The indicator originates from European Commission Joint Research Centre global fish models.

- **Original Source:** Southeast Conservation Adaptation Strategy
- Data Link / Metadata Link



BOEM Bureau of Ocean Energy Management

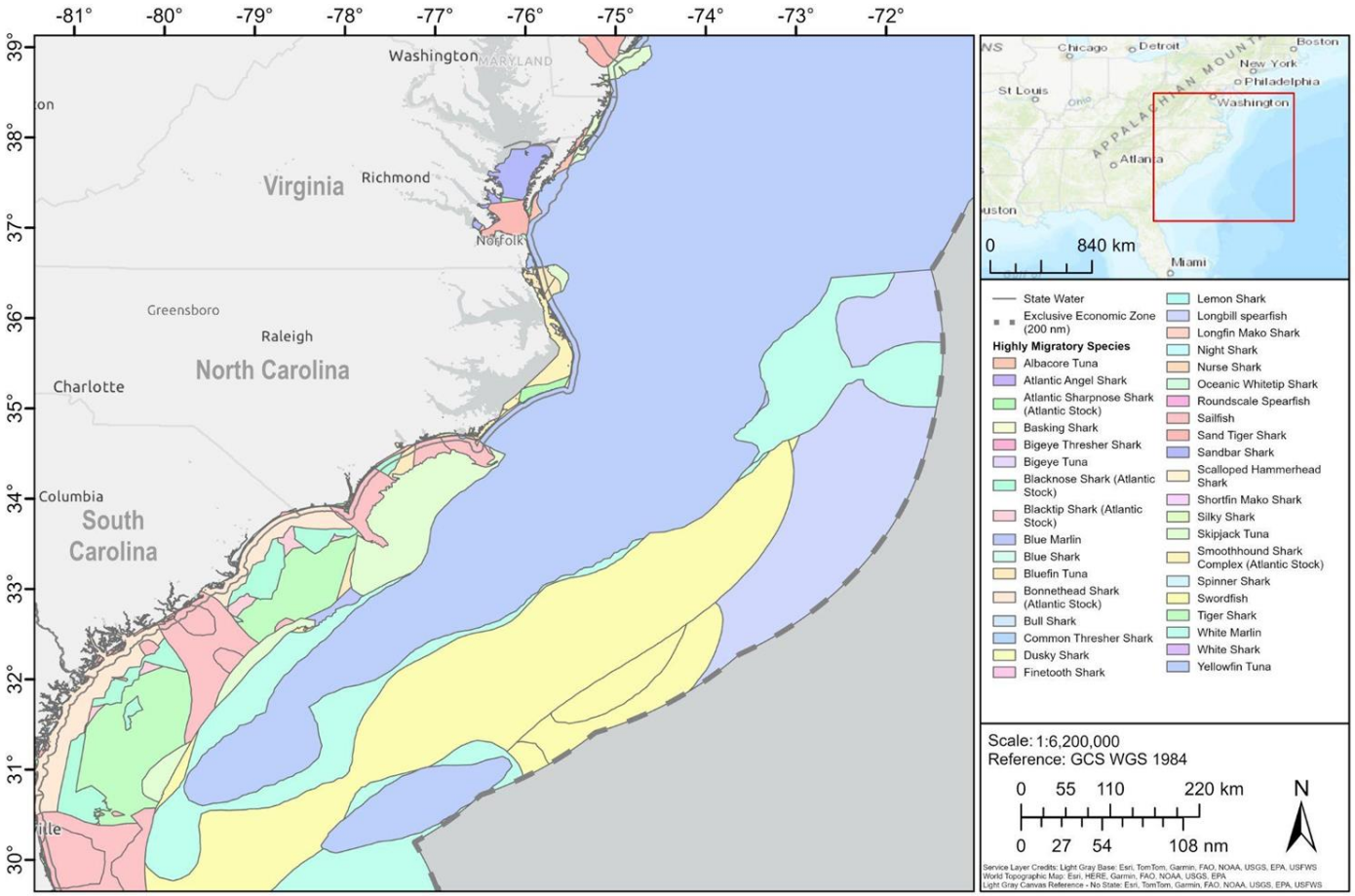
NOAA

Essential Fish Habitat -

Highly Migratory Species

Description: Essential Fish Habitat means those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity. Necessary means the habitat required to support a sustainable fishery and the managed species' contribution to a healthy ecosystem. Highly migratory species managed by NOAA Fisheries include tunas, some sharks, swordfish, billfish, and other highly sought-after fish such as Pacific mahi mahi.

- **Original Source:** NOAA Fisheries
- Data Link / Metadata Link



BOEM Bureau of Ocean Energy Management

NOAA

Fish -

Essential Fish Habitat

Description: Essential Fish Habitat (EFH) are those waters and substrate necessary to fish for spawning, breeding, feeding or growth to maturity.

- **Original Source:** Florida FWC, FWRI, SAFMC

Dolphin and Wahoo

- Data Link

Golden Crab

- Data Link

Shrimp

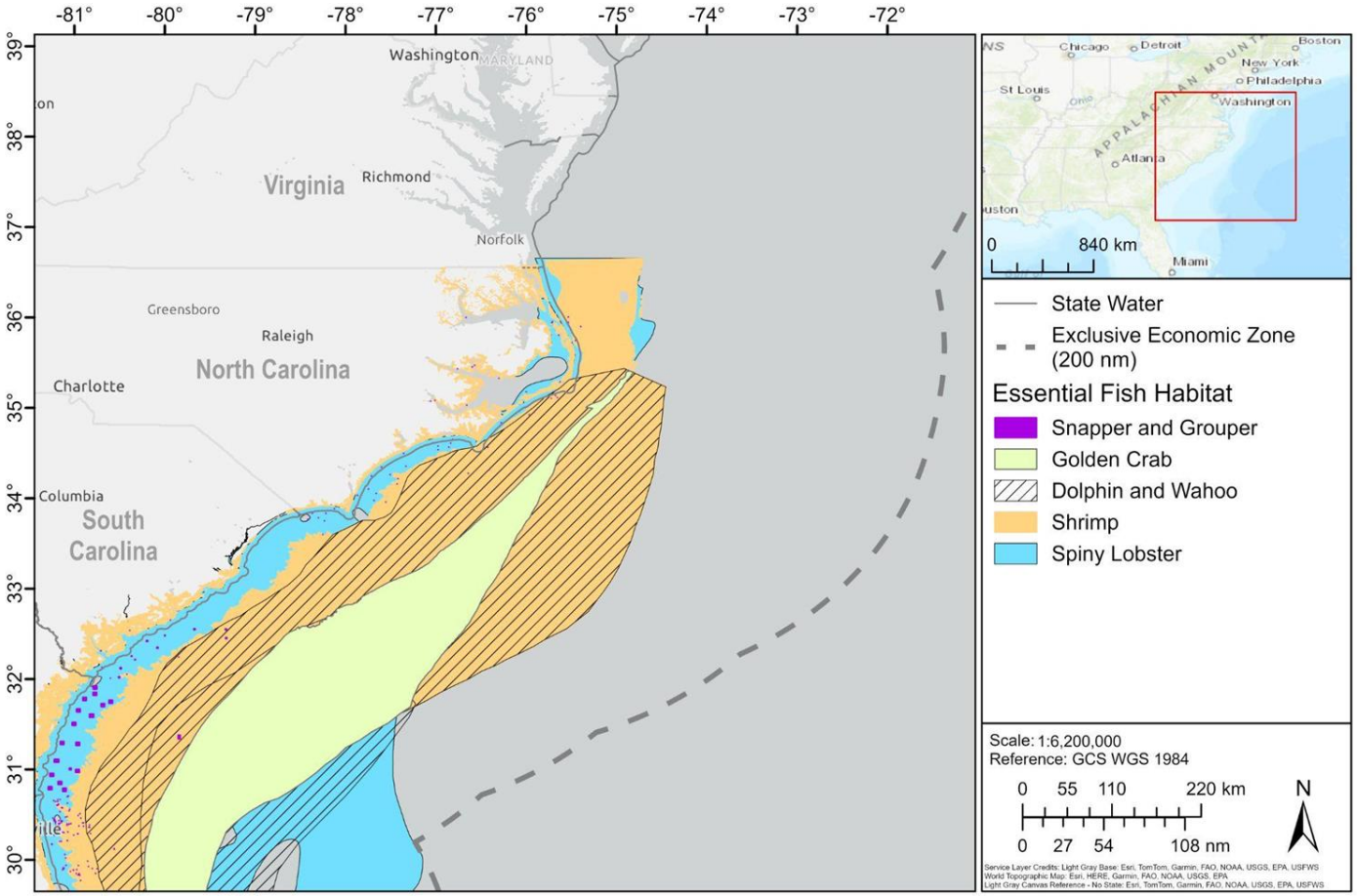
- Data Link

Snapper and Grouper

- Data Link

Spiny Lobster

- Data Link



BOEM Bureau of Ocean Energy Management

NOAA

Fish -

Habitat Areas of Particular Concern

Description: Essential Fish Habitat (EFH) that is judged to be particularly important to the long-term productivity of populations of one or more managed species, or to be particularly vulnerable to degradation.

- **Original Source:** Florida FWC, FWRI, SAFMC

Tilefish

- Data Link

Dolphin and Wahoo

- Data Link

Coastal Migratory Pelagics

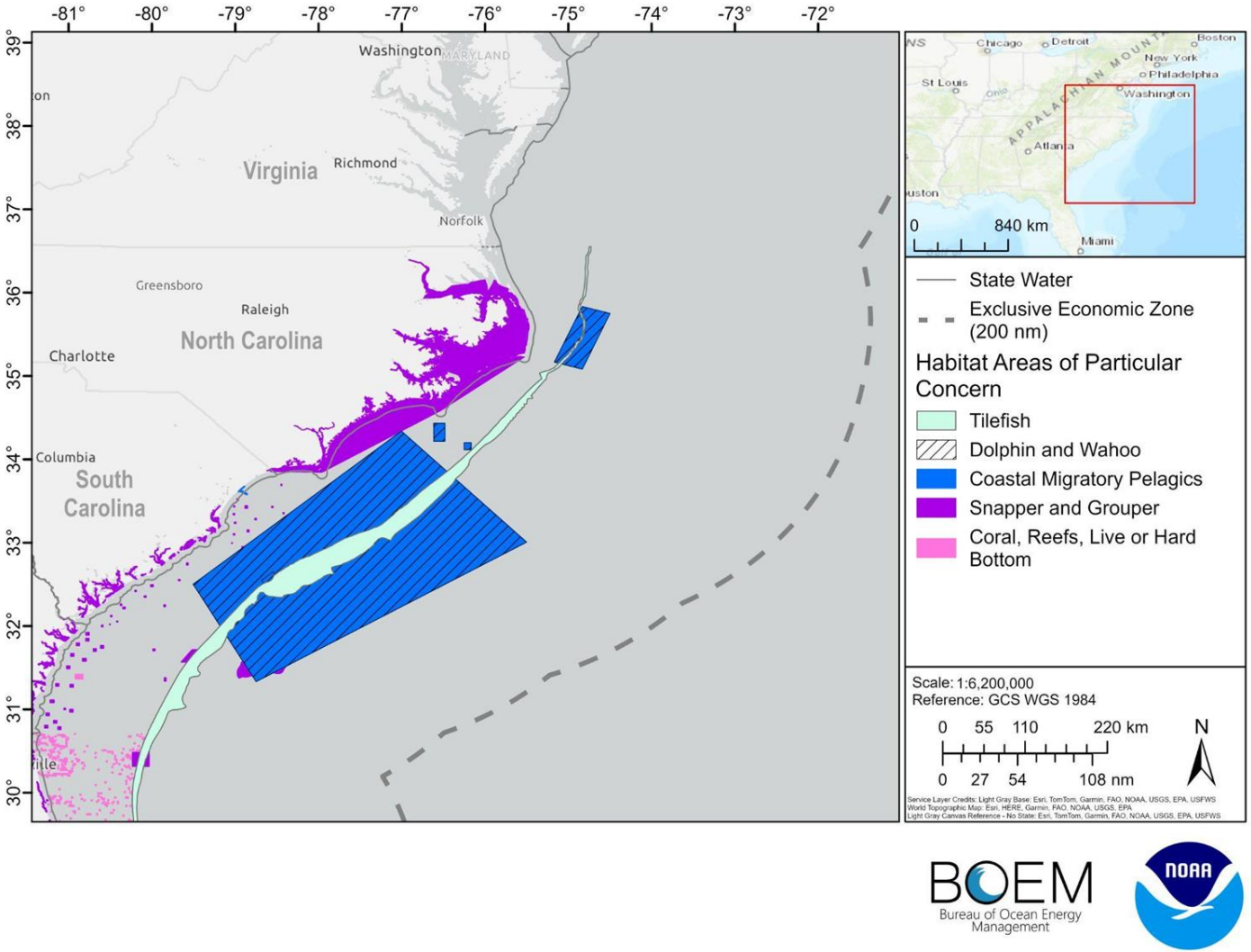
- Data Link

Snapper Grouper

- Data Link

Coral, Reefs, Live or Hardbottom

- Data Link



BOEM Bureau of Ocean Energy Management

NOAA

Fish -

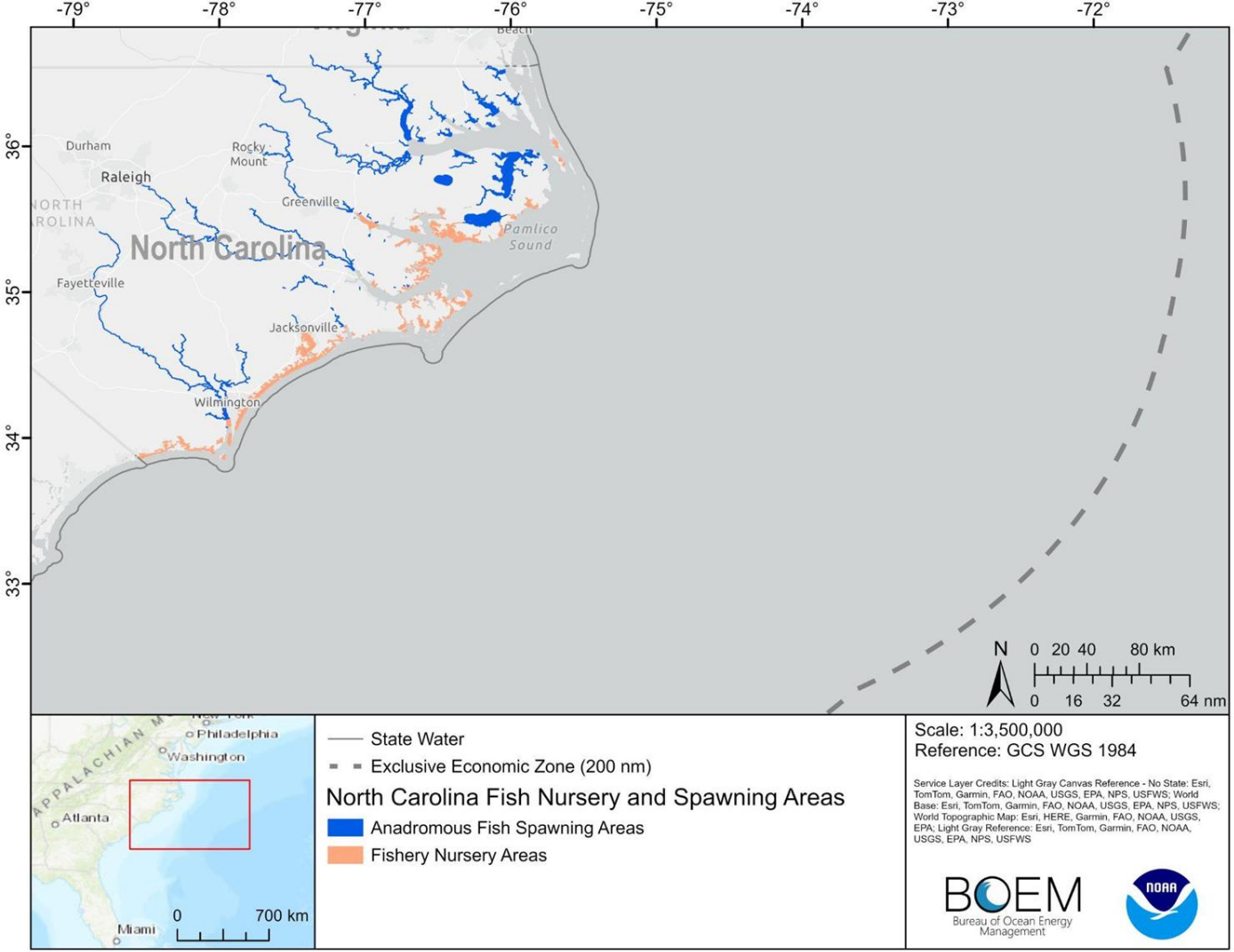
North Carolina Fish Nursery and Spawning Areas

Fishery Nursery Areas

- **Original Source:** North Carolina Department of Environmental Quality
- Data Link / Metadata

Anadromous Fish Spawning Areas

- **Original Source:** North Carolina Department of Environmental Quality
- Data Link / Metadata

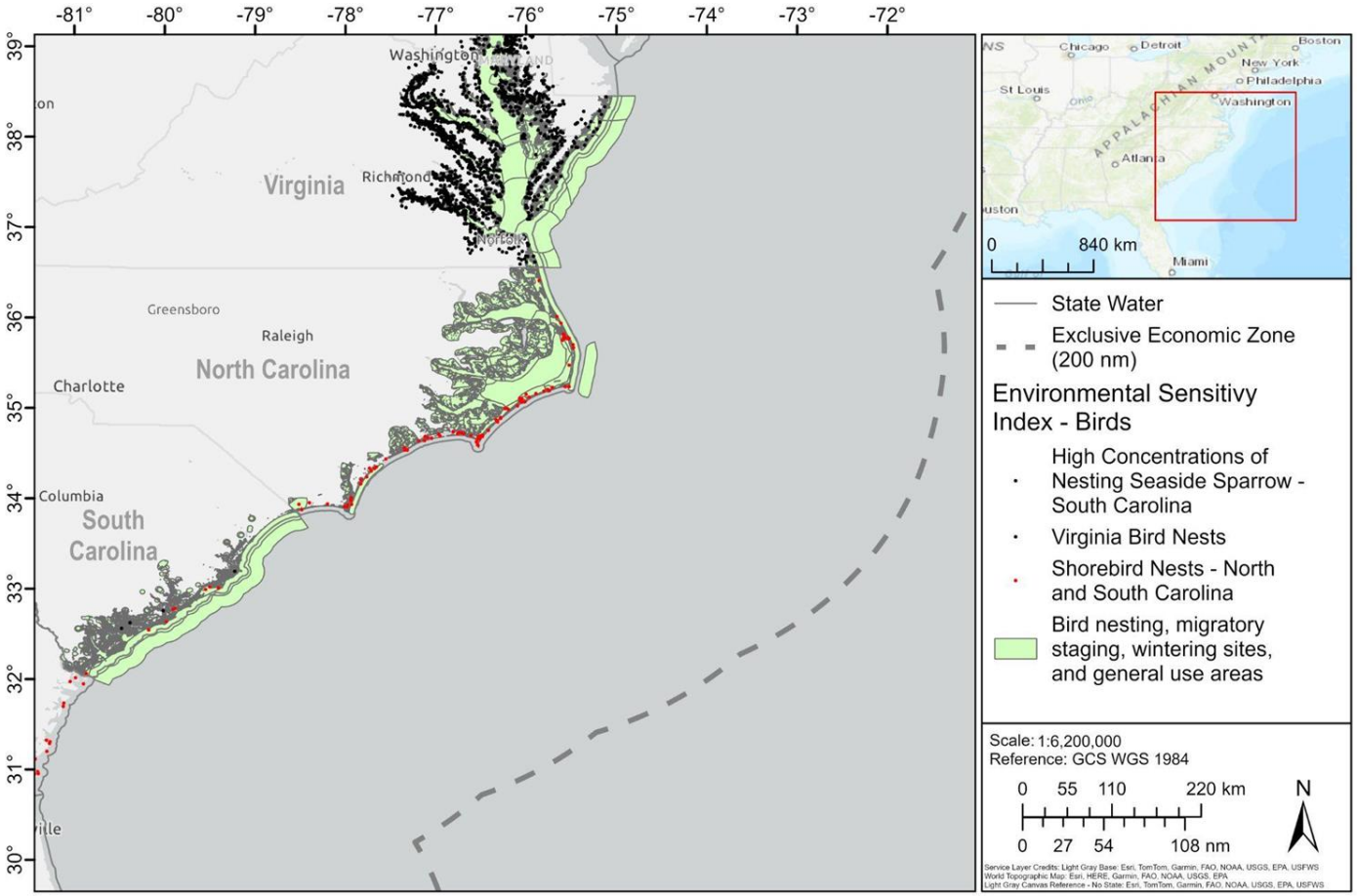


Birds -

Environmental Sensitivity Index

Description: Sensitive biological resource data for wading birds, shorebirds, waterfowl, raptors, diving birds, seabirds, passerine birds, and gulls and terns, including bird nesting, migratory staging, wintering sites, and general use areas.

- **Original Source:** NOAA Office of Response and Restoration
- Data Link



BOEM Bureau of Ocean Energy Management

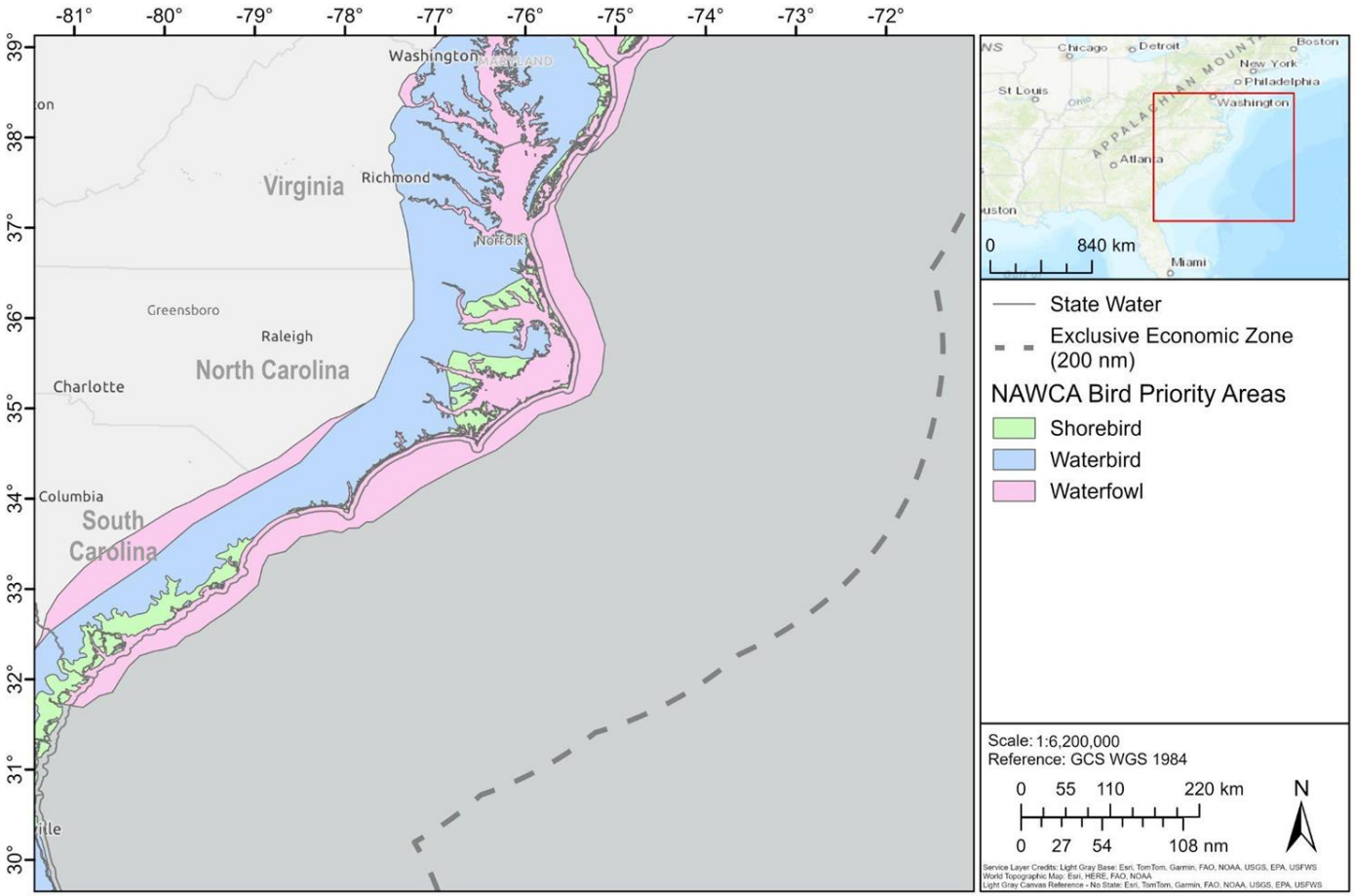
NOAA

Birds -

NAWCA Bird Priority Areas

Description: North American Wetlands Conservation Act (NAWCA) grant project in relation to the National Priority Bird Areas for shorebirds, waterfowl, and waterbirds.

- **Original Source:** US Shorebird Conservation Partnership
- **Download Source:** USFWS
- Data Link / Metadata Link



BOEM Bureau of Ocean Energy Management

NOAA

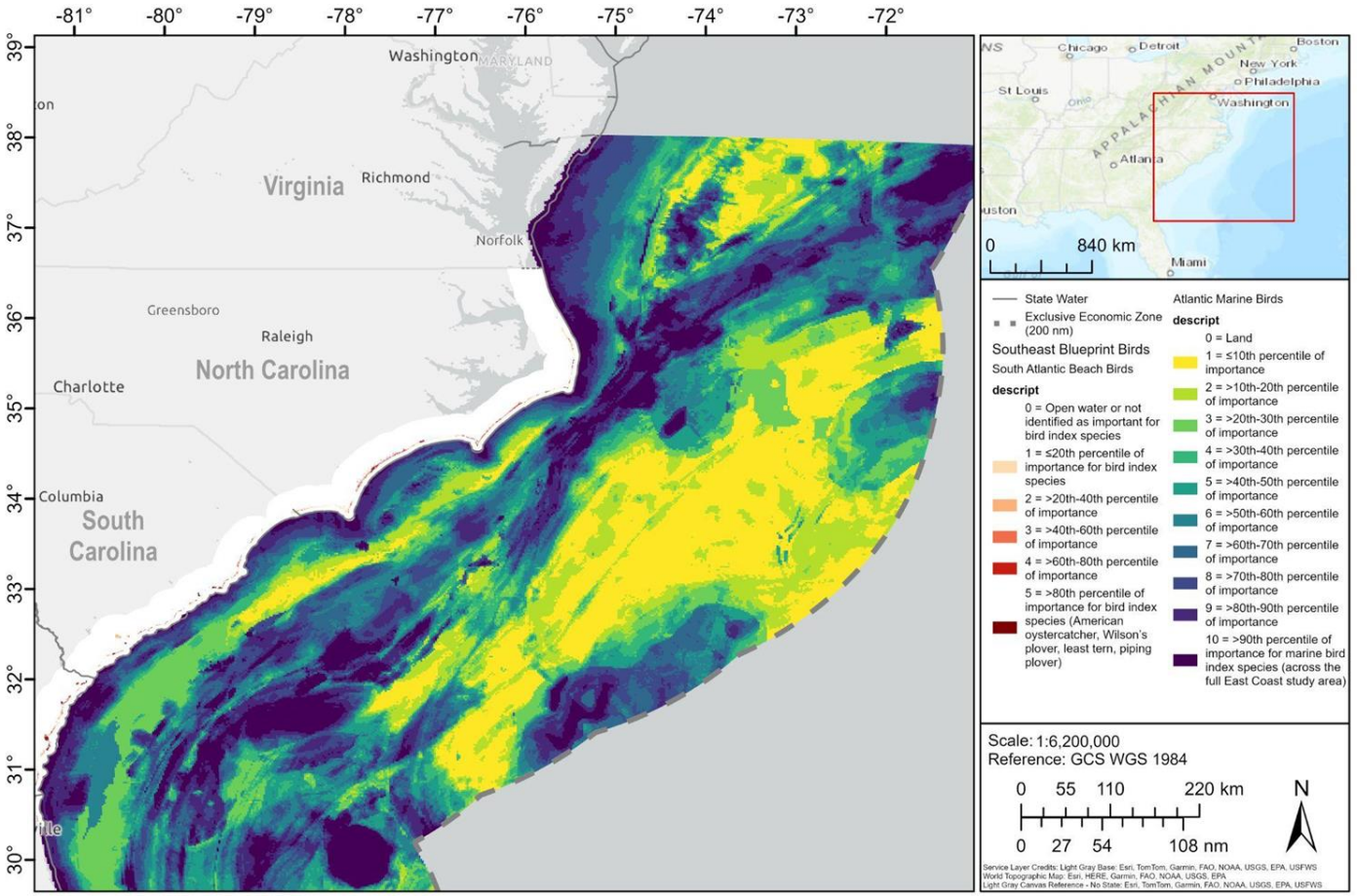
Birds -

Southeast Blueprint

Beach Birds: Index of habitat suitability for four shorebird species (American oystercatcher, Wilson's plover, least tern, piping plover) in the South Atlantic, based on observed abundance. It assesses beaches and nearby onshore habitats. This indicator combines bird data from the U.S. Geological Survey and state waterbird biologists in FL, GA, SC, and NC.

Marine Birds: Important areas for 19 species of marine birds (Audubon's shearwater, band-rumped storm petrel, black-capped petrel, black scoter, Bonaparte's gull, bridled tern, brown pelican, common loon, common tern, Cory's shearwater, great shearwater, Manx shearwater, Northern gannet, parasitic jaeger, red-throated loon, royal tern, sooty shearwater, sooty tern, white-winged scoter) based on sightings from boat-based surveys and marine environmental data like fronts, primary productivity, and ocean currents (originates from Duke University's MDAT marine bird models).

- **Original Source:** Southeast Conservation Adaptation Strategy
- Data Link / Metadata Link



BOEM Bureau of Ocean Energy Management

NOAA

Birds -

Bird Important Areas and Critical Habitat

Piping Plover Critical Habitat: Polygon shapefile that depicts the piping plover critical habitat units on its wintering grounds.

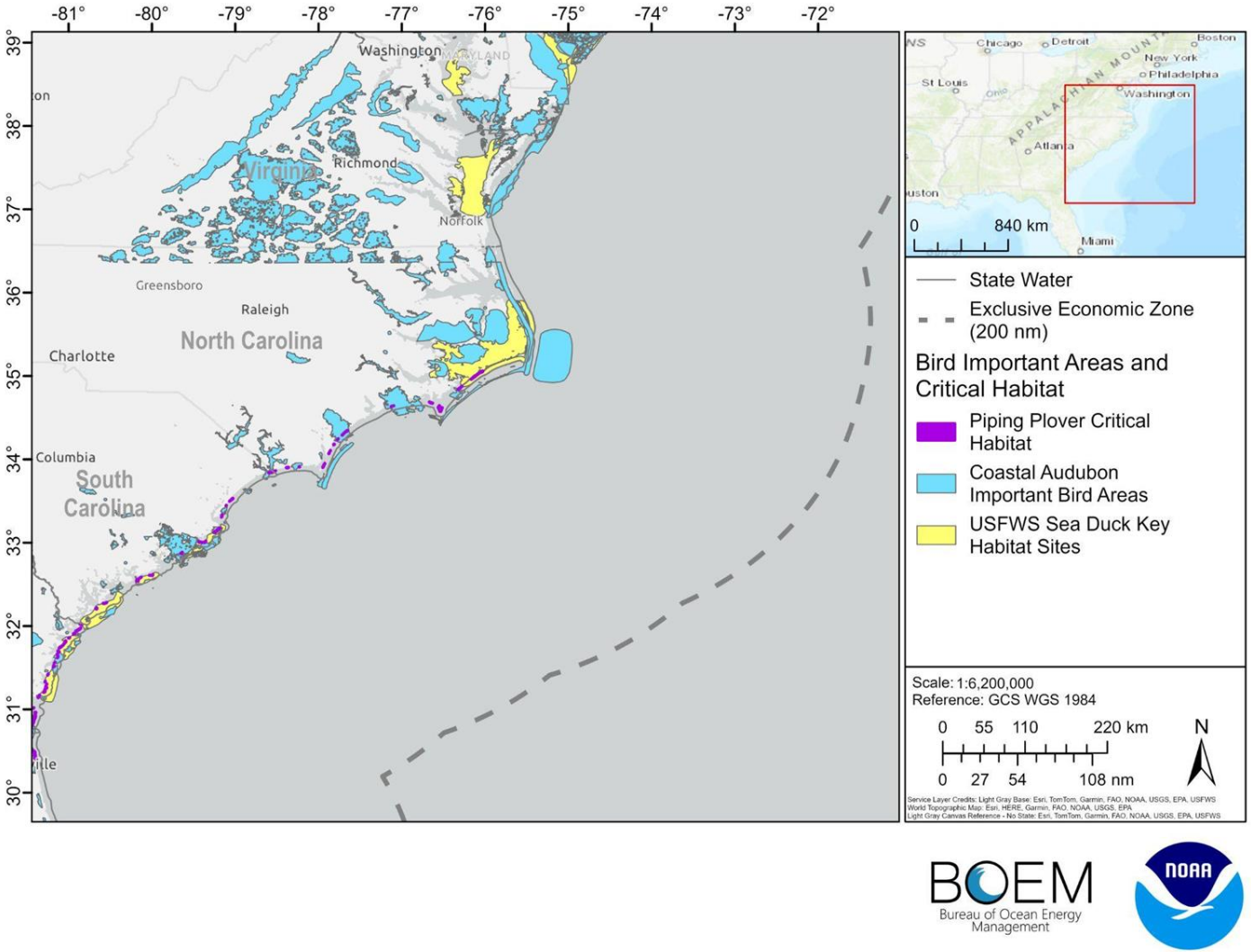
- **Original Source:** USFWS
- Data Link / Metadata Link

Coastal Audubon Important Bird Areas: A compilation of Important Bird Areas for Continental United States, Hawaii and Alaska, created by the National Audubon Society.

- **Original Source:** National Audubon Society
- Data Link / Metadata Link

Sea Duck Key Habitat Sites: Sites of important Sea Duck Habitat in North America that are key for habitat conservation and protection efforts and valuable for inclusion in environmental assessments.

- **Original Source:** USFWS & Sea Duck Joint Venture
- Data Link / Metadata Link



BOEM Bureau of Ocean Energy Management

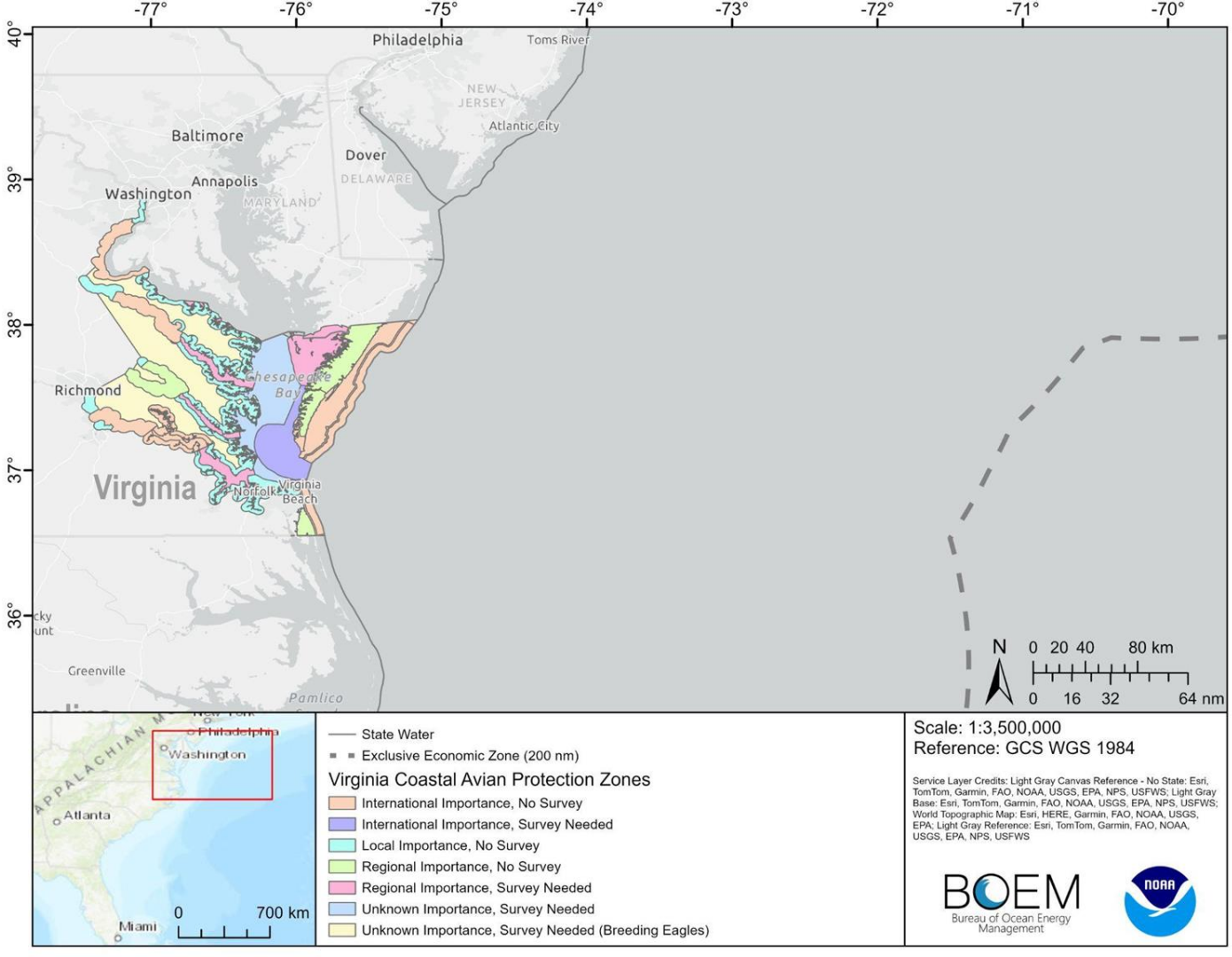
NOAA

Birds -

Virginia Coastal Avian Protection Zones

Description: The CAPZ (Coastal Avian Protection Zones) layer was created to allow small renewable energy project applicants to identify areas that are critically important to coastal avian resources.

- **Original Source:** Virginia Department of Energy Management
- Data Link / Metadata Link



Deep Sea Coral -

Observations, Protected Areas, Habitat Suitability

Observations: Deep Sea Coral Presence data from around the United States of America 1842 to 2017. Data extracted from the NOAA Deep Sea Coral Research and Technology Program.

- **Original Source:** NOAA NCCOS
- Data Link / Metadata Link

Frank R Lautenberg Deepsea Coral Protection Areas: Boundaries of the Frank R. Lautenberg Deep-Sea Coral Protection Area

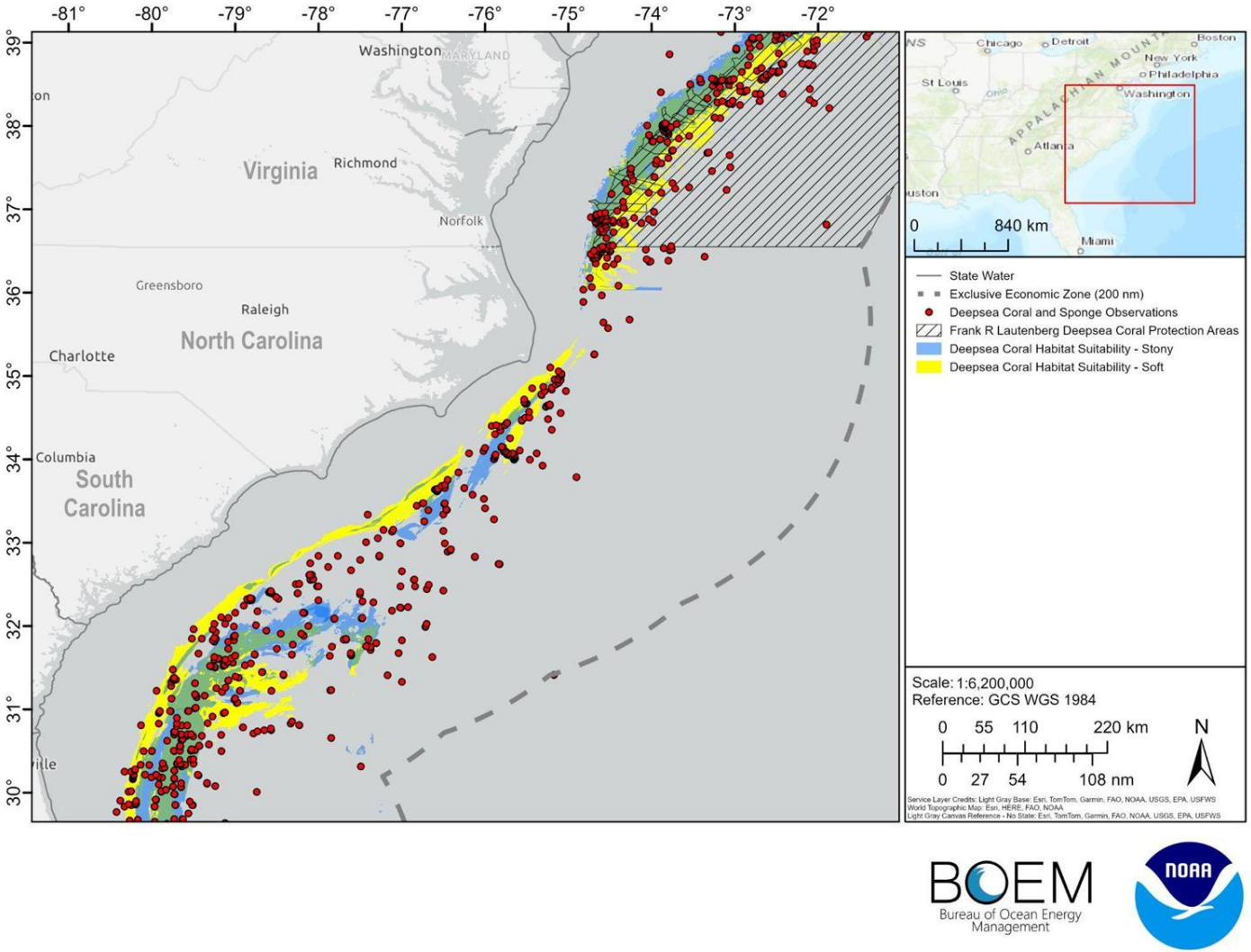
- **Original Source:** NOAA Fisheries
- Data Link / Metadata Link

Deepsea Stony Coral Habitat Suitability: Relative likelihood of finding suitable habitat for stony corals at a given location - a prediction based on a statistical model relating several environmental characteristics to the presence of stony corals using observations of stony corals.

- **Original Source:** NOAA OCM
- Data Link / Metadata Link

Deepsea Soft Coral Habitat Suitability: Relative likelihood of finding suitable habitat for soft corals at a given location - a prediction based on a statistical model relating several environmental characteristics to the presence of soft corals using observations of soft coral.

- **Original Source:** NOAA OCM
- Data Link / Metadata Link

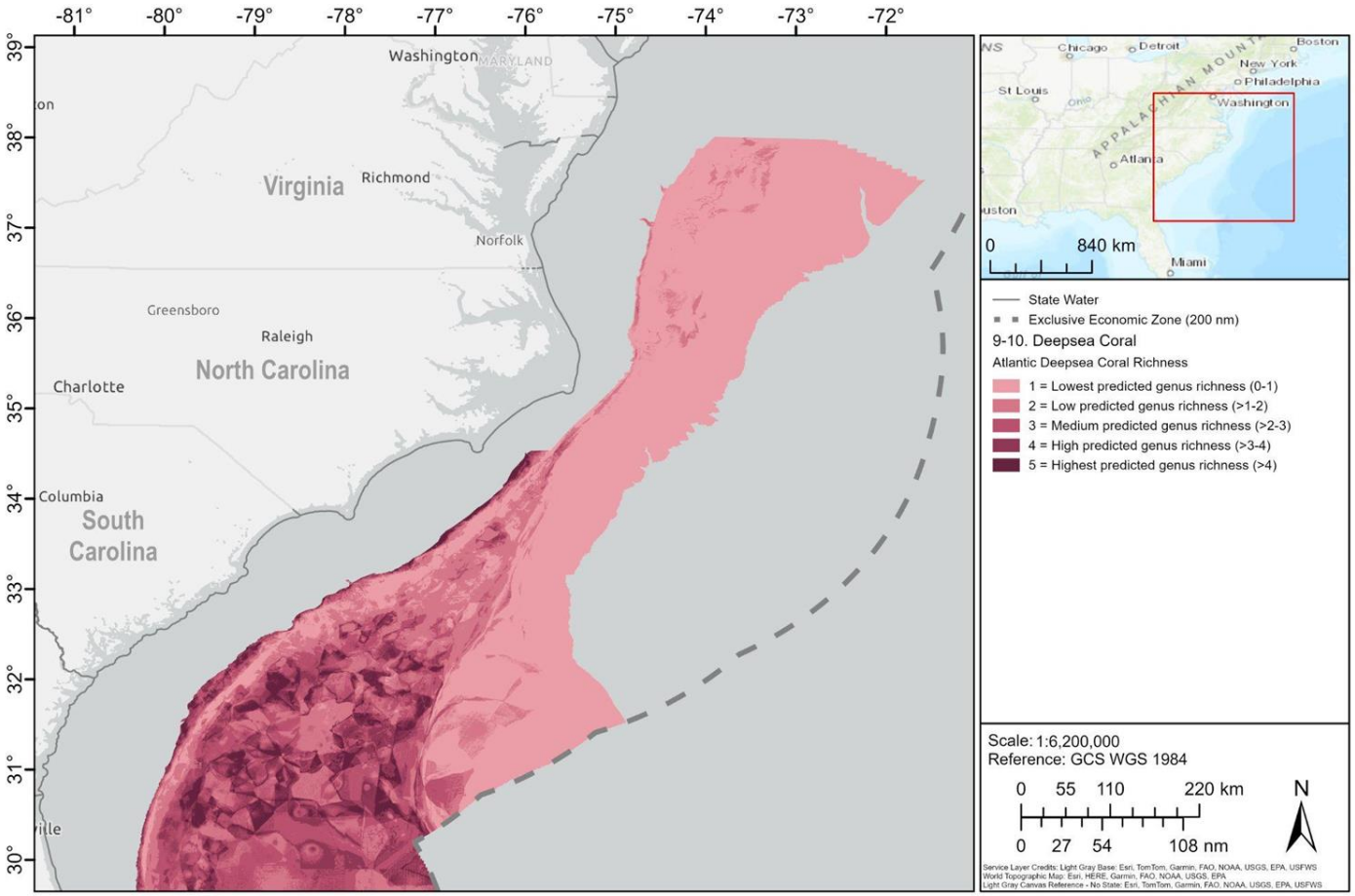


BOEM Bureau of Ocean Energy Management

NOAA

Deep Sea Coral -

Atlantic Deep Sea Coral Richness



Description: This indicator measures the number of deep-sea coral genera predicted to occur in the Atlantic Ocean at depths of approximately 50 m or below. It is based on coral observations and a suite of environmental predictors including measures of depth, seafloor topography and substrate, oceanography, and geography. This indicator combines probability models for 24 deep-sea coral genera to predict overall richness. This indicator originates from a National Oceanic and Atmospheric Administration project characterizing the spatial distributions of deep-sea corals and hardbottom habitats in the U.S. Southeast Atlantic.

- **Original Source:** Southeast Conservation Adaptation Strategy
- Data Link / Metadata Link

BOEM Bureau of Ocean Energy Management

NOAA

Deep Sea Coral -

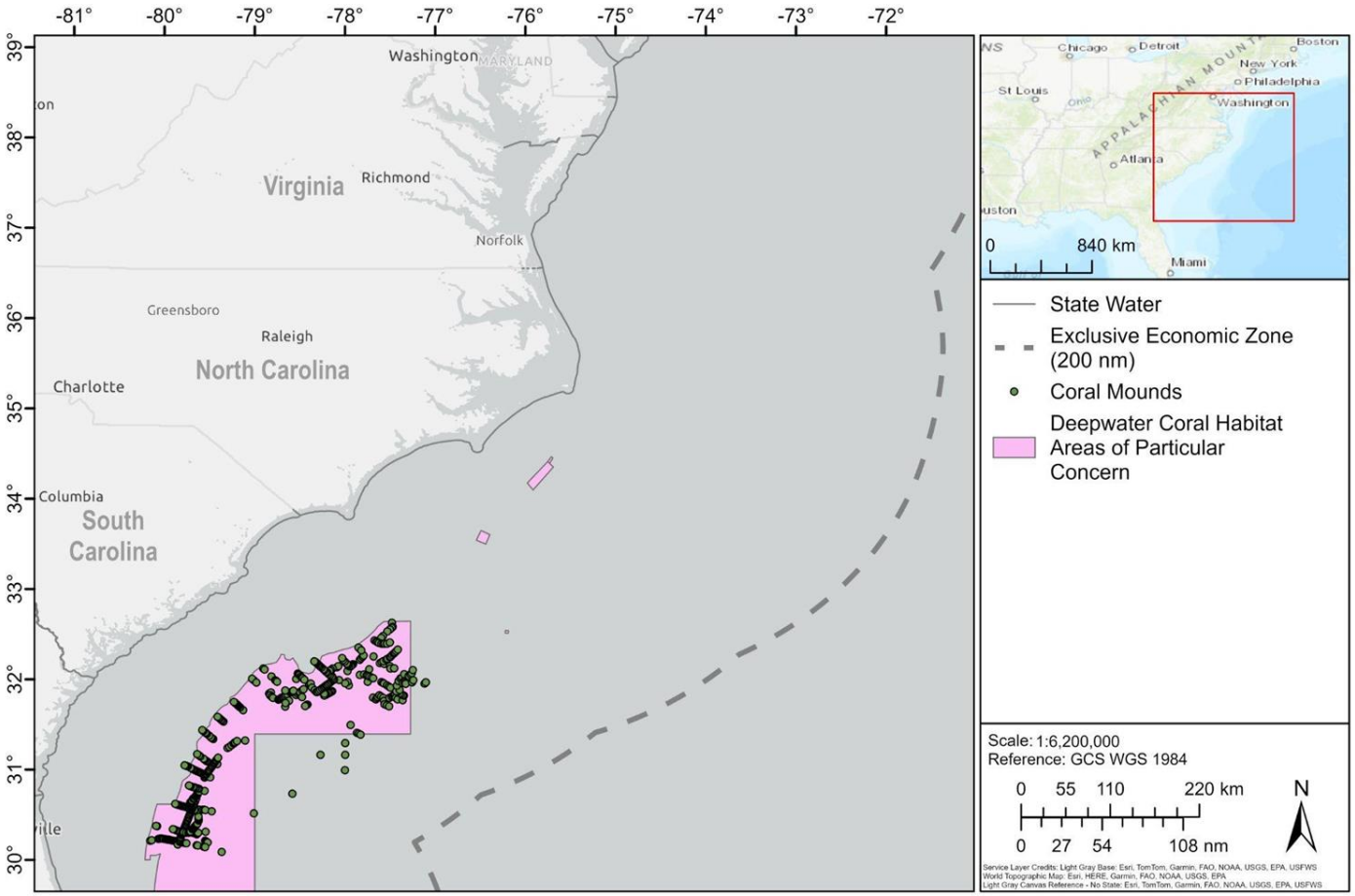
Coral Mounds and Habitat Areas of Particular Concern

Coral Mounds: Coral mounds, which are rock-like deposit consisting of calcareous skeletons secreted by various anthozoans as well as living corals and artificial reefs.

- **Original Source:** Skidaway Institute of Oceanography
- Data Link / Metadata Link

Coral HAPC: Deepwater coral habitat areas of particular concern in the South Atlantic Fishery Management Council's jurisdiction.

- **Original Source:** Florida FWC
- Data Link / Metadata Link



BOEM Bureau of Ocean Energy Management

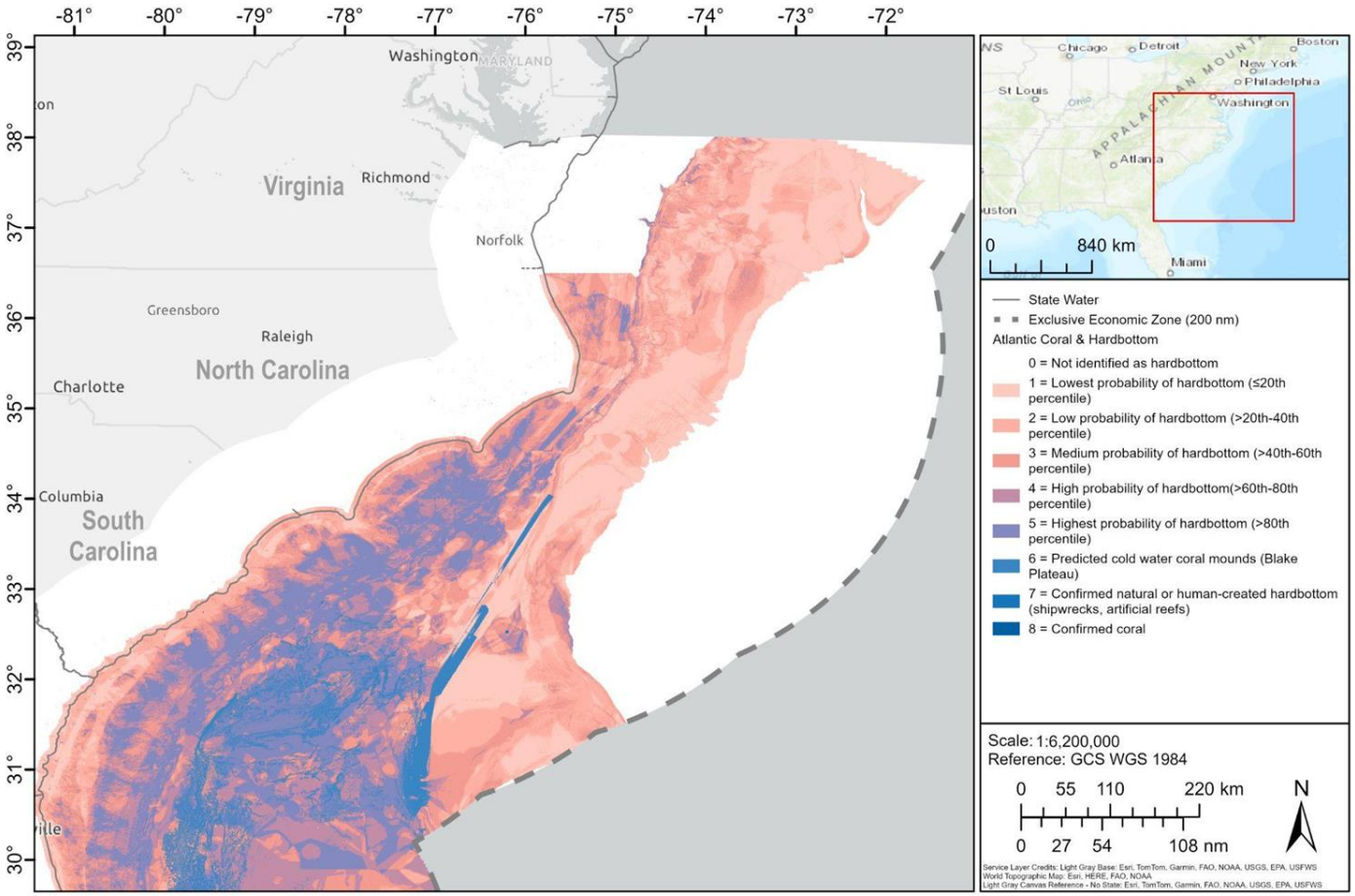
NOAA

Deep Sea Coral -

Atlantic Coral & Hardbottom

Description: This indicator predicts the presence of coral and hardbottom in the Atlantic Ocean based on direct observations, known locations of human-created structures like artificial reefs, and distribution models. The models use hardbottom observations and a suite of environmental predictors including measures of depth, seafloor topography and substrate, oceanography, and geography. This indicator combines data from The Nature Conservancy's South Atlantic Bight Marine Assessment and multiple NOAA datasets (deep-sea coral observations, shipwrecks, artificial reefs, and two projects predicting hardbottom distribution).

- **Original Source:** Southeast Conservation Adaptation Strategy
- Data Link / Metadata Link



BOEM Bureau of Ocean Energy Management

NOAA

Habitat -

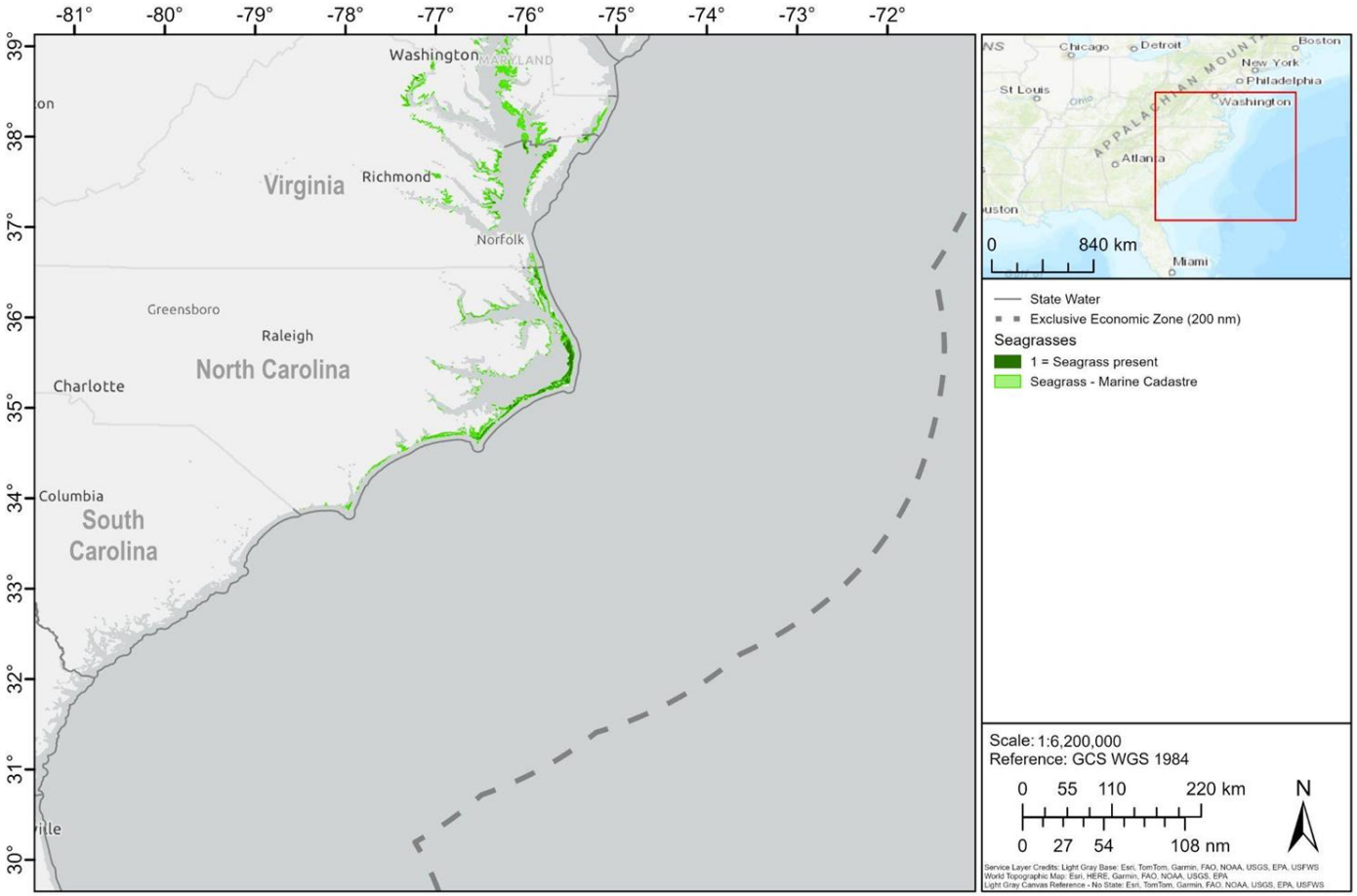
Seagrasses

Seagrass: These data show aquatic vascular vegetation beds dominated by submerged, rooted, vascular species or submerged or rooted floating freshwater tidal vascular vegetation.

- **Original Source:** NOAA OCM
- Data Link / Metadata Link

Seagrass Presence: This indicator represents the presence of seagrass in the Atlantic Ocean and Gulf of Mexico. It originates from the National Oceanic and Atmospheric Administration's Marine Cadastre.

- **Original Source:** Southeast Conservation Adaptation Strategy
- Data Link / Metadata Link



BOEM Bureau of Ocean Energy Management

NOAA

Habitat -

Submerged Aquatic Vegetation

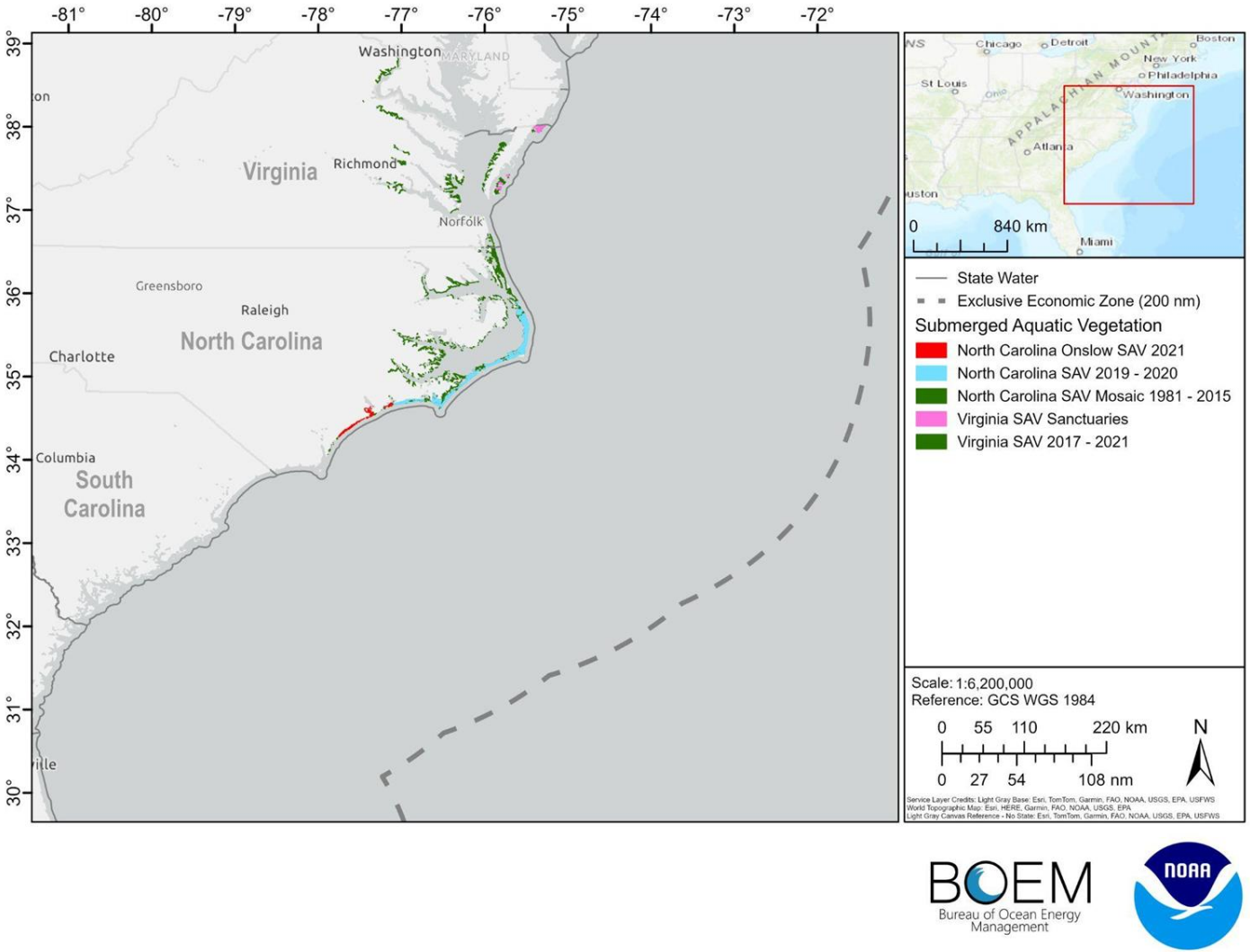
NC SAV Onslow 2021
- **Original Source:** NC DEQ
- Data Link / Metadata Link

NC SAV 2019-2020 Mapping
- **Original Source:** NC DEQ
- Data Link / Metadata Link

NC SAV 1981-2015
- **Original Source:** NC DEQ
- Data Link / Metadata Link

VA SAV Sanctuaries: areas which were designated to restore SAV and protect it from loss.
- **Original Source:** Virginia Marine Resources Commission
- Data Link

VA SAV 2017-2021
- **Original Source:** Virginia Marine Resources Commission
- Data Link



BOEM Bureau of Ocean Energy Management

NOAA

Habitat -

Oyster Reefs

VA Oyster Sanctuaries: areas that are closed to the harvest of oysters

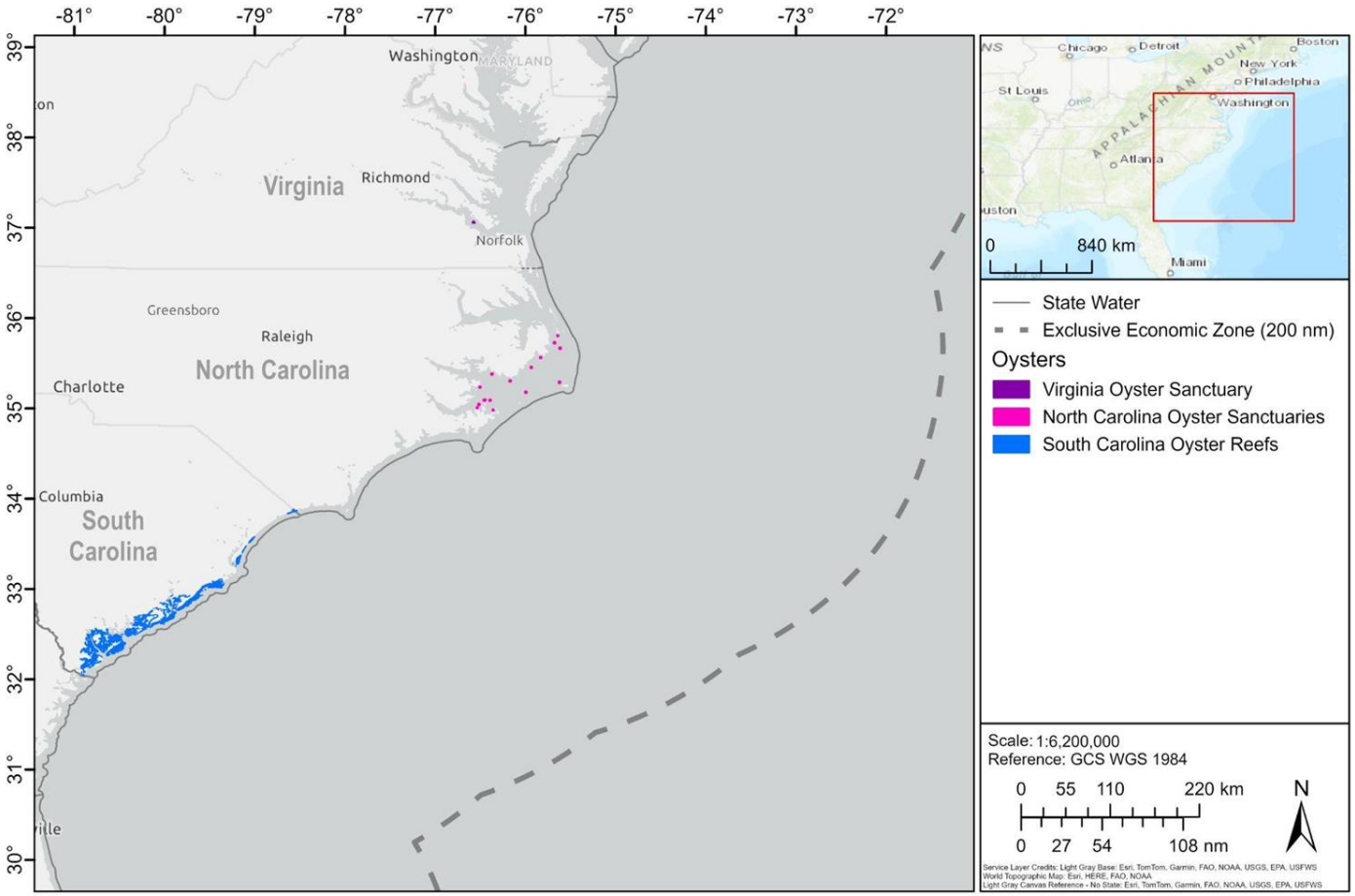
- **Original Source:** Virginia Marine Resources Commission
- Data Link

NC Oyster Sanctuaries: areas that are closed to the harvest of oysters

- **Original Source:** NC DEQ
- Data Link

SC Oyster Reefs: boundaries of intertidal oyster reefs found along the South Carolina coast.

- **Original Source:** SC DNR
- Data Link / Metadata



BOEM Bureau of Ocean Energy Management

NOAA

Habitat -

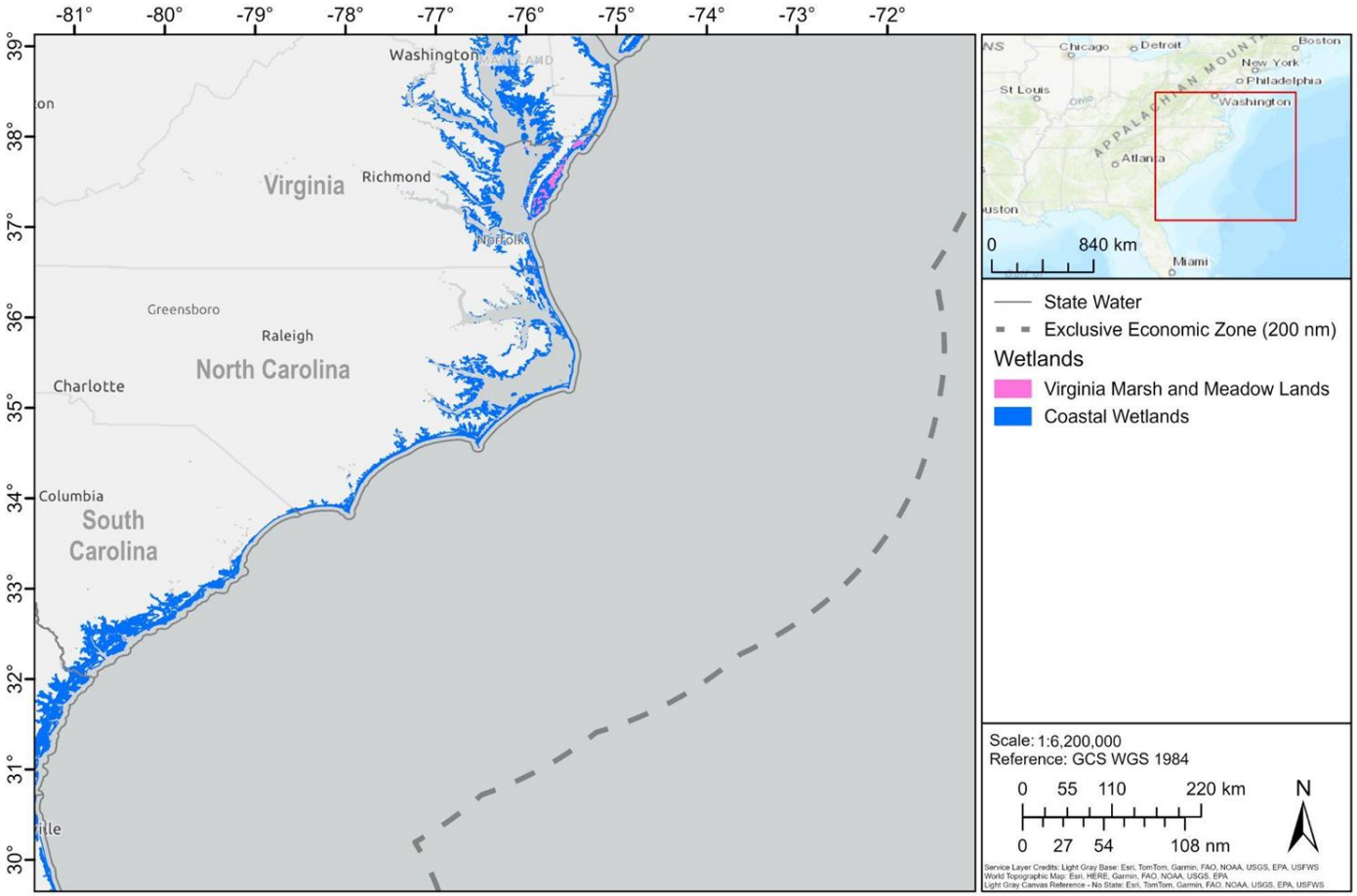
Wetlands

VA Marsh and Meadow Lands

- **Original Source:** Virginia Marine Resources Commission
- Data Link

Coastal Wetlands: extent, approximate location and type of estuarine and marine wetland habitats in the US.

- **Original Source:** USFWS
- Data Link / Metadata

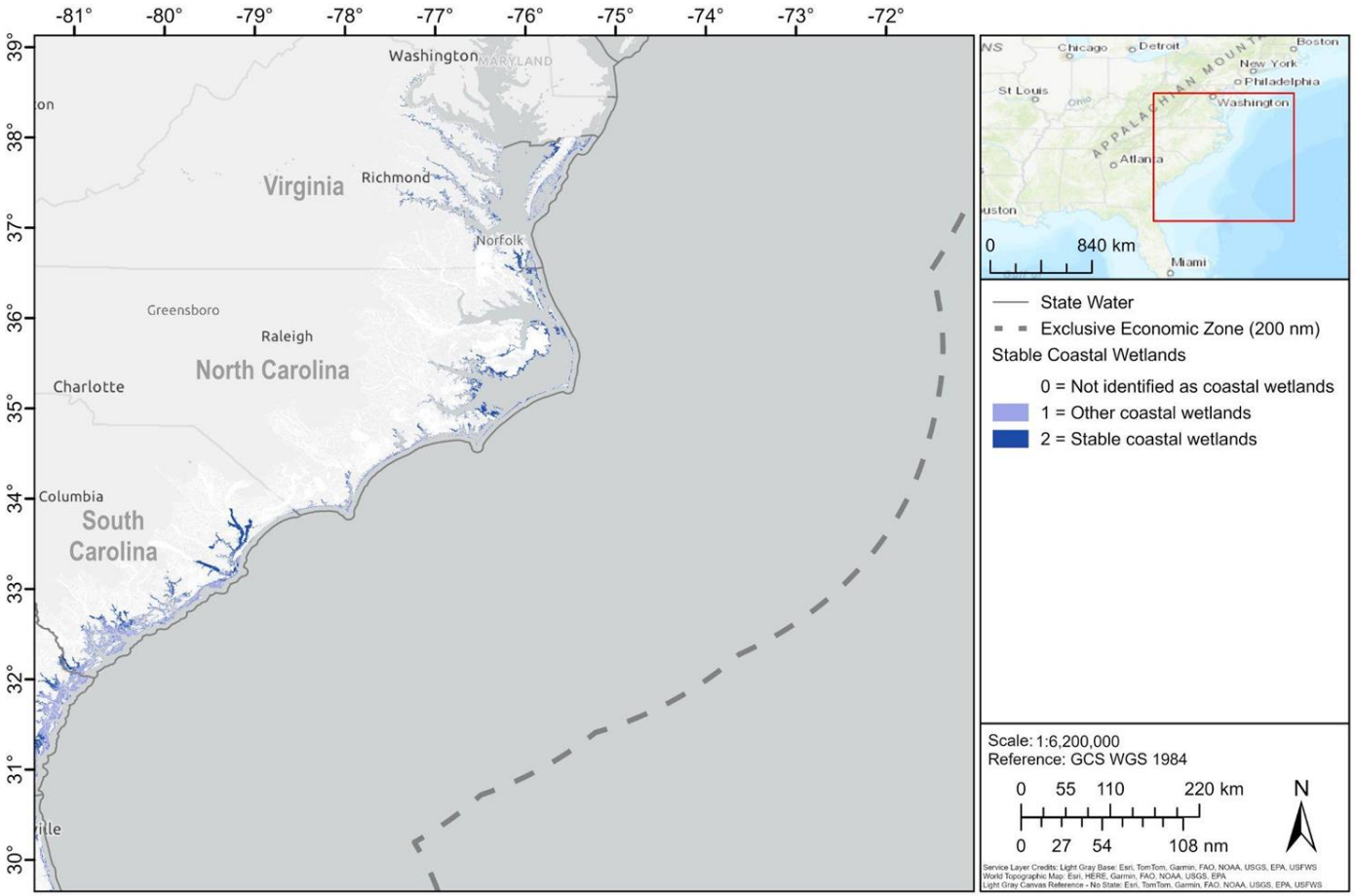


BOEM Bureau of Ocean Energy Management

NOAA

Habitat -

Wetlands (Southeast Blueprint)



Description: This indicator uses remote sensing to calculate the unvegetated-vegetated ratio of tidal wetlands, which compares how much of a wetland is not covered by plants (e.g., sediment, rocks, open water) to how much is covered by plants. This indicator originates from a U.S. Geological Survey project on an unvegetated to vegetated ratio for coastal wetlands.

- **Original Source:** Southeast Conservation Adaptation Strategy
- Data Link / Metadata Link

BOEM Bureau of Ocean Energy Management

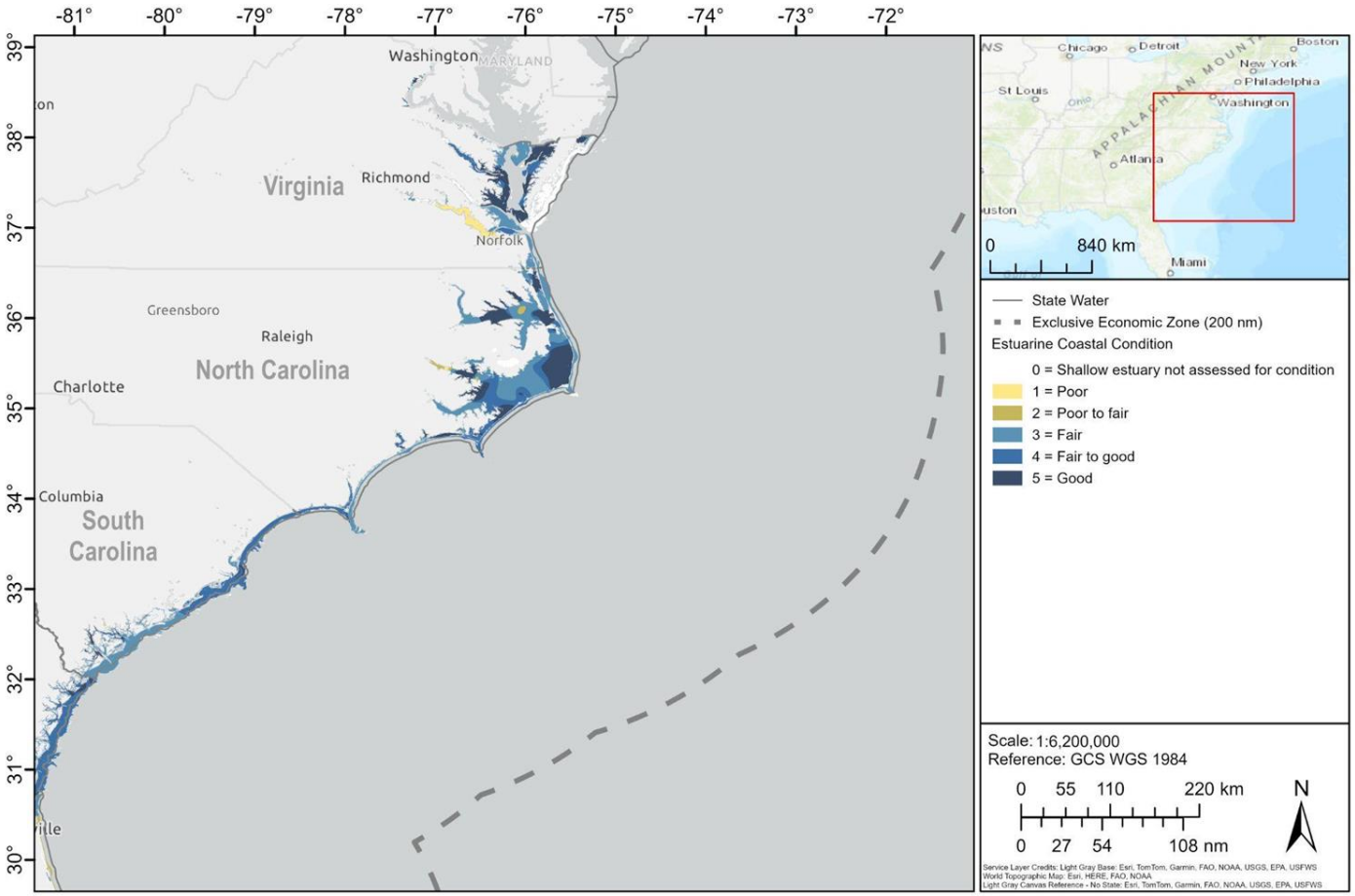
NOAA

Habitat -

Estuarine Coastal Condition

Description: This index measures the condition of the nation's estuaries following standard national methodologies and is synthesized by the U.S. Environmental Protection Agency (EPA) roughly every five years.

- **Original Source:** Southeast Conservation Adaptation Strategy
- Data Link / Metadata Link

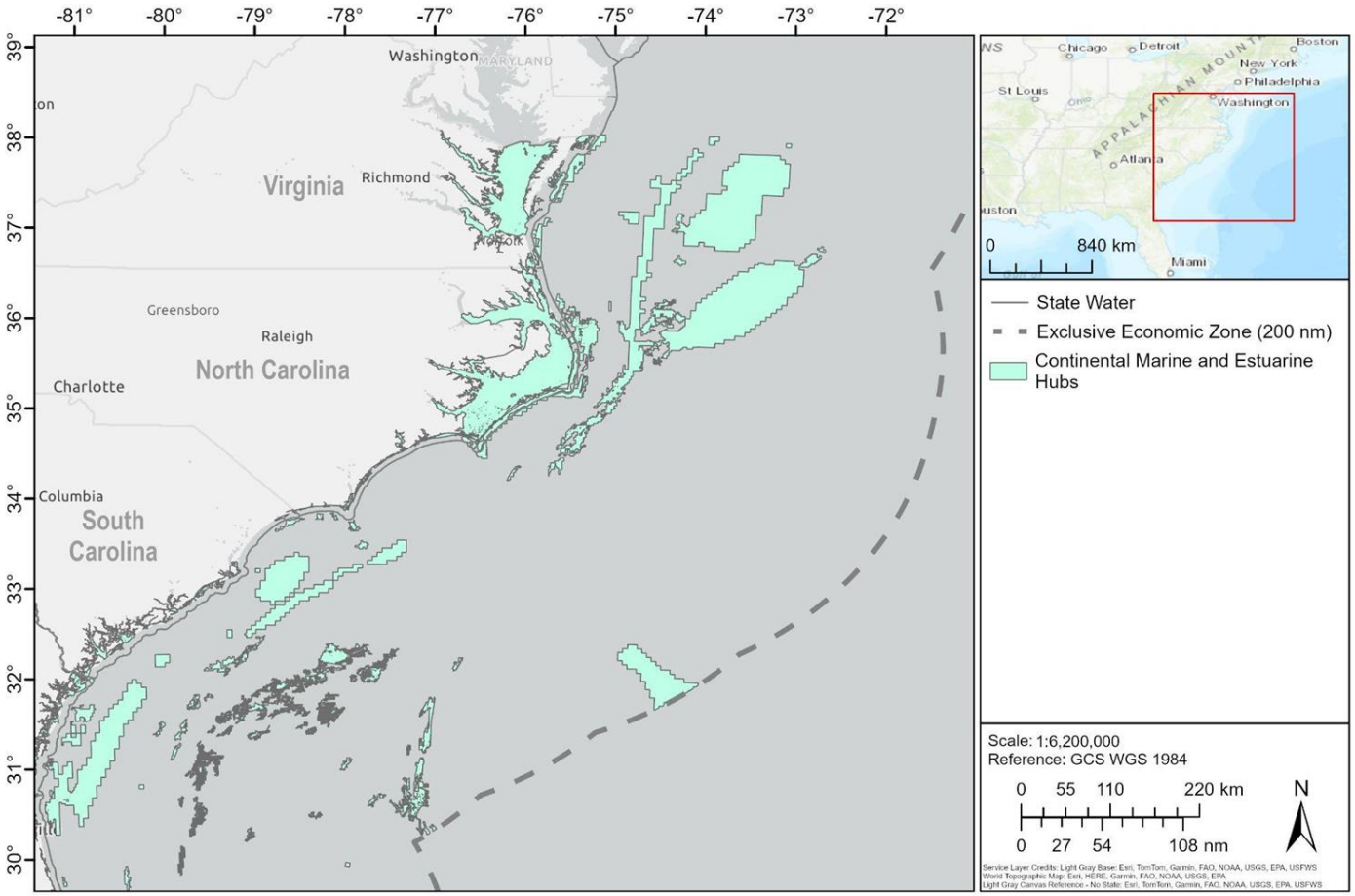


BOEM Bureau of Ocean Energy Management

NOAA

Habitat -

Marine and Estuarine Continental Hubs



Description: These are the hubs used in the the Linkage Mapper-based connectivity analysis for the marine/estuarine continental portion of Southeast Conservation Blueprint 2023.

- **Original Source:** Southeast Conservation Adaptation Strategy
- Data Link / Metadata Link

BOEM Bureau of Ocean Energy Management

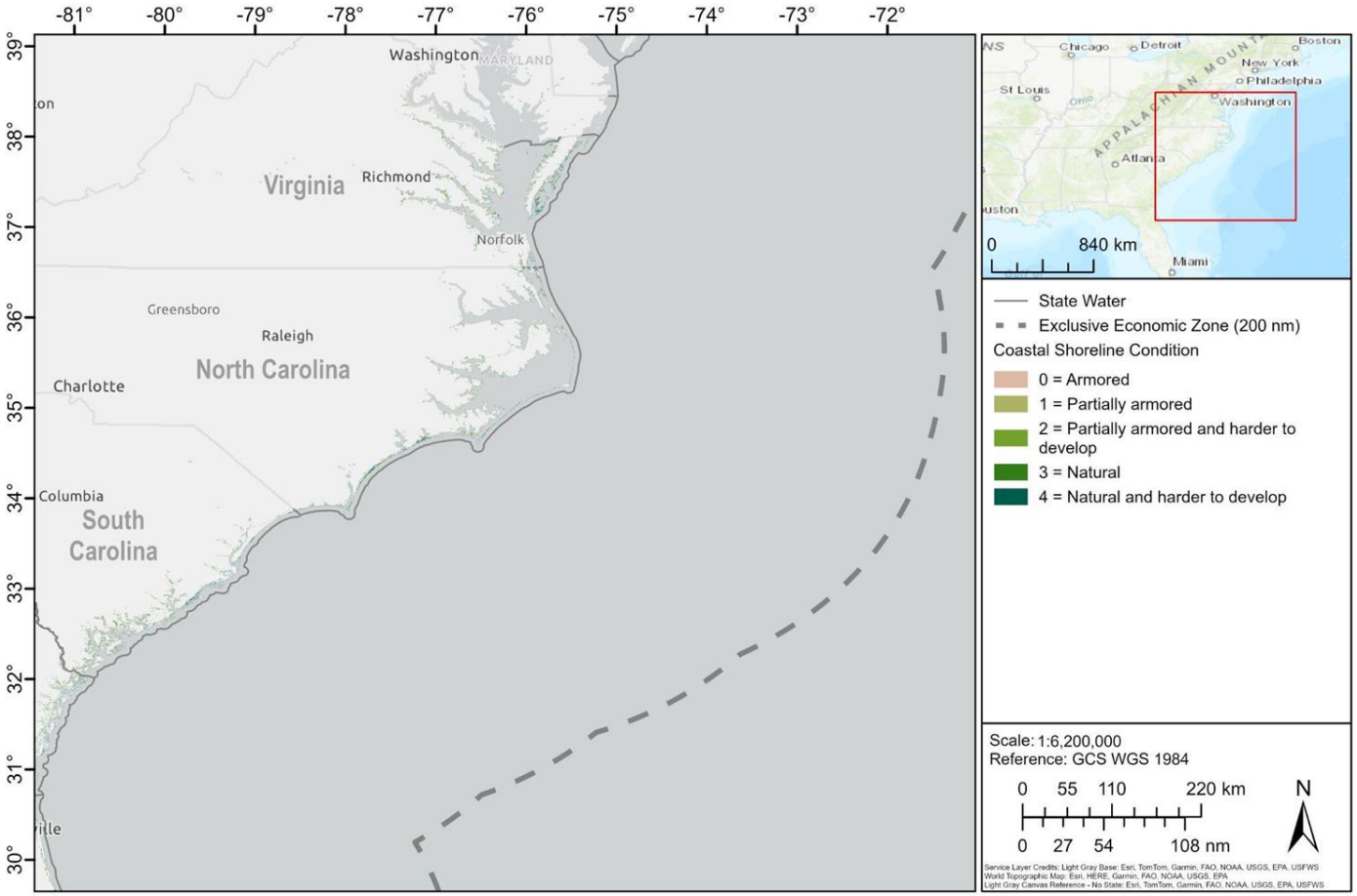
NOAA

Habitat -

Coastal Shoreline Condition

Description: This indicator assesses shoreline condition based on the presence of hardened structures like jetties, groins, and riprap, as well as other human development. Natural shorelines in harder-to-develop coastal areas receive the highest shoreline condition scores, while hardened shorelines receive the lowest scores. This indicator originates from NOAA's ESI dataset.

- **Original Source:** Southeast Conservation Adaptation Strategy
- Data Link / Metadata Link



BOEM Bureau of Ocean Energy Management

NOAA

Habitat -

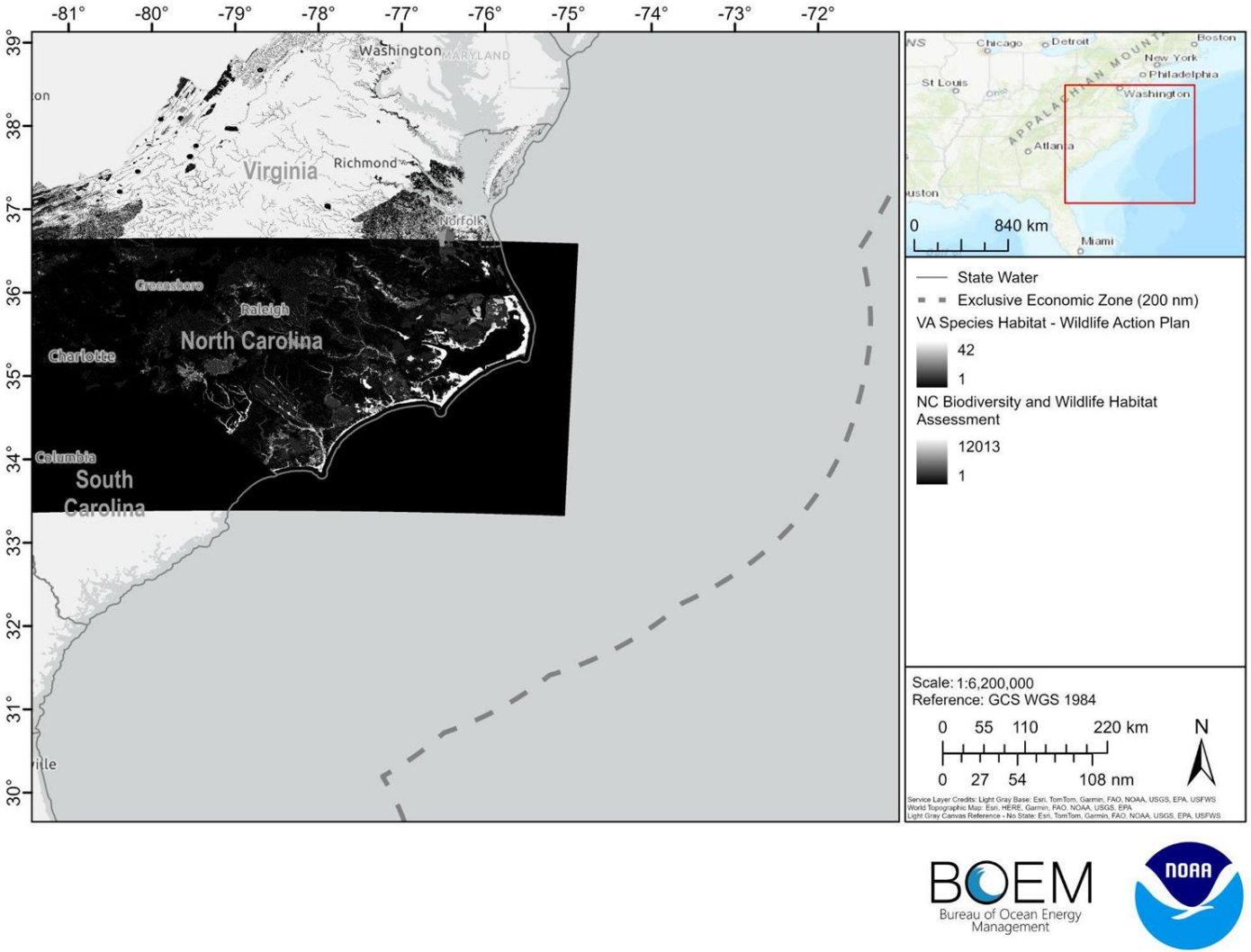
Wildlife Habitat

VA Species Habitat Wildlife Action Plan: Species with mapped potential or confirmed essential habitat across Virginia. These data were created as part of the Virginia Wildlife Action Plan (WAP). This is a combination of mapped habitat from 149 terrestrial species and 98 aquatic species. These habitats were summarized to show areas of conservation opportunity.

- **Original Source:** Virginia Department of Wildlife Resources
- Data Link

NC Biodiversity and Wildlife Habitat Assessment: The Biodiversity and Habitat Assessment was created by the North Carolina Natural Heritage Program to identify, evaluate, and prioritize areas that are important for maintaining healthy and sustainable ecosystems statewide. The relative conservation values displayed by this dataset focus on (1) the biodiversity of aquatic and terrestrial species and communities, (2) large-scale landscapes, and (3) lands important to ecosystem processes.

- **Original Source:** North Carolina Natural Heritage Program
- Data Link / Metadata Link



BOEM Bureau of Ocean Energy Management

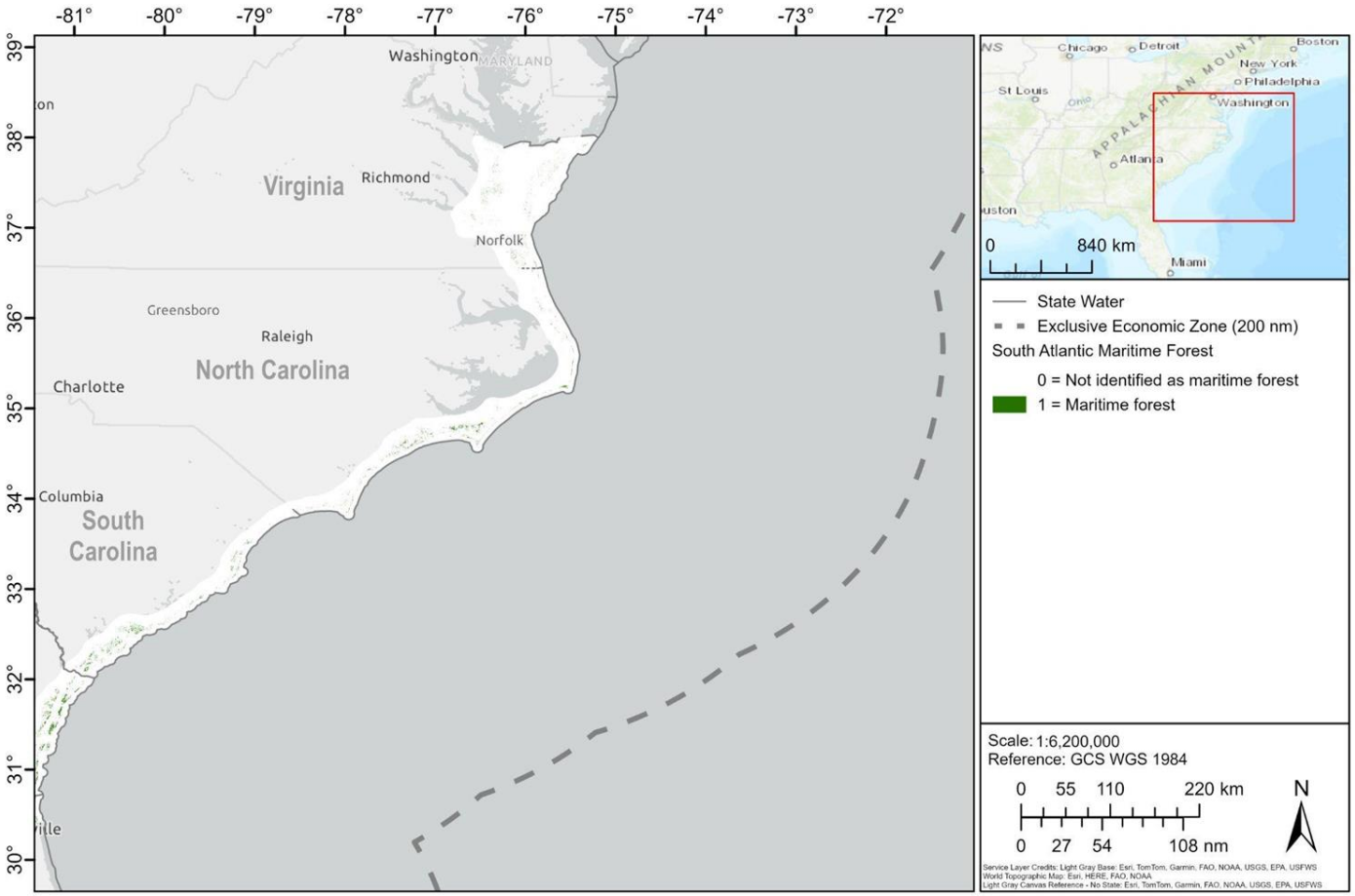
NOAA

Habitat -

South Atlantic Maritime Forest

Description: Overall acreage of existing maritime forest provides an indicator of whether maritime forest being inundated by sea-level rise is being replaced or restored somewhere else.

- **Original Source:** Southeast Conservation Adaptation Strategy
- Data Link / Metadata Link



BOEM Bureau of Ocean Energy Management

NOAA

Habitat -

Artificial Reefs

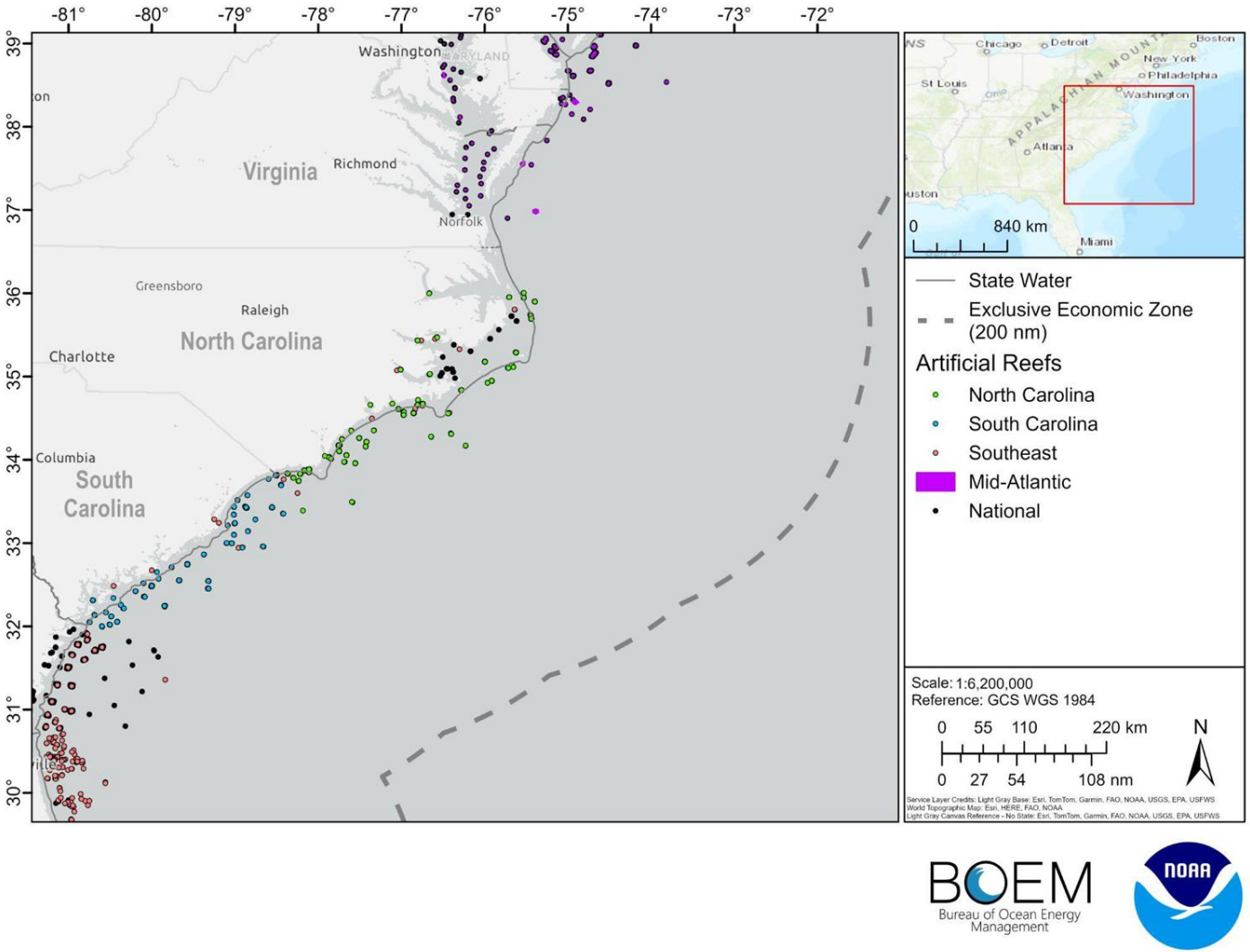
North Carolina:
- **Original Source:** NC DEQ
- Data Link / Metadata Link

South Carolina:
- **Original Source:** SC DNR
- Data Link

Mid-Atlantic:
- **Original Source:** TNC
- Data Link / Metadata Link

Southeast Atlantic:
- **Original Source:** SC DNR
- Data Link

National:
- **Original Source:** NOAA OCM
- Data Link / Metadata Link



BOEM Bureau of Ocean Energy Management

NOAA

Protected Areas and Sanctuaries

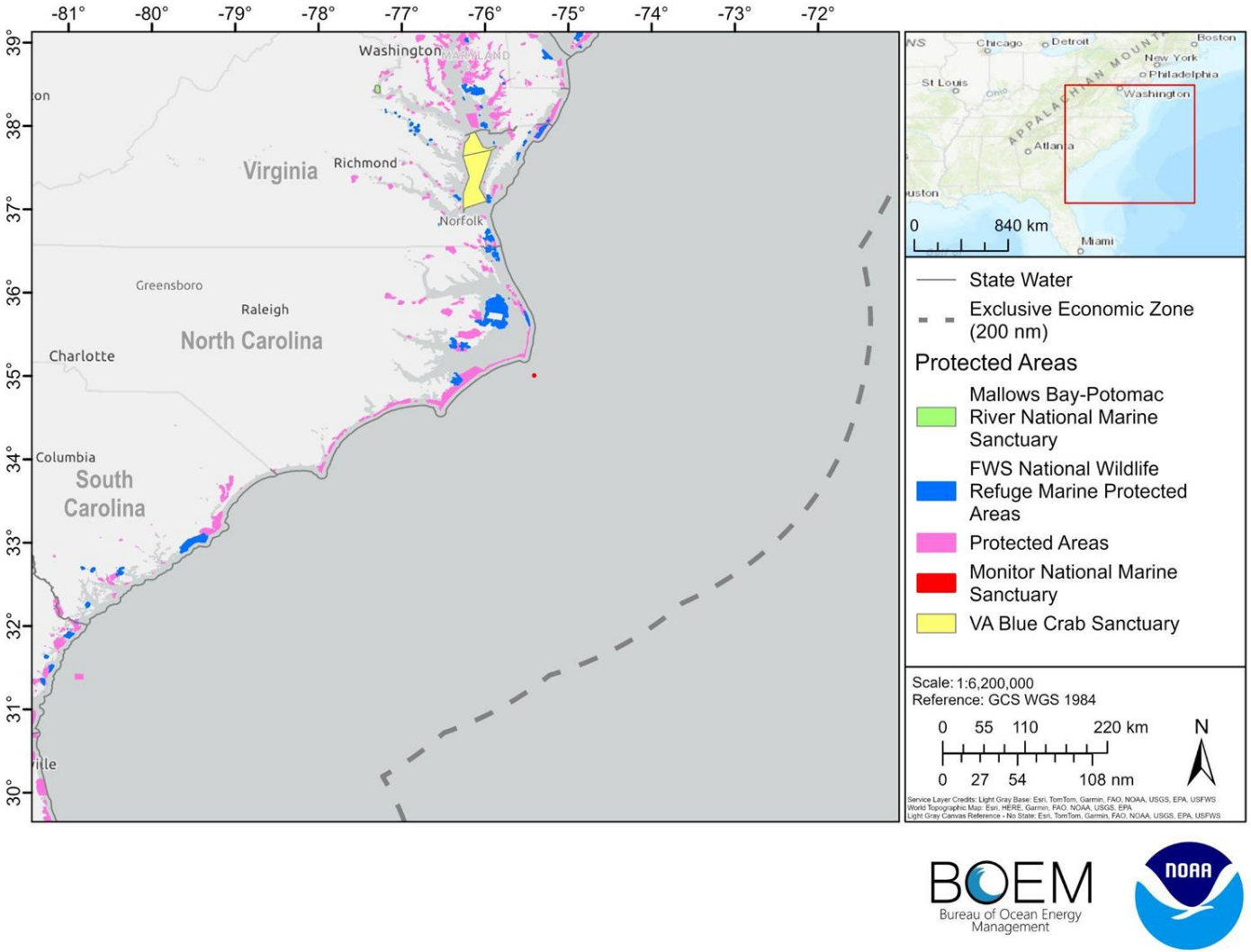
Mallows Bay-Potomac River National Marine Sanctuary
- **Original Source:** NOAA National Marine Sanctuaries Program
- Data Link / Metadata Link

FWS National Wildlife Refuge Marine Protected Areas: Marine Protected Areas on U.S. Fish and Wildlife Service National Wildlife Refuges.
- **Original Source:** USFWS
- Data Link

Protected Areas: marine and terrestrial protected areas in the continental US. Marine features are shown for US state and federal waters as well as those located within 20 miles of coastal submerged lands including hydrologically related rivers and bays.
- **Original Source:** NOAA OCM, USGS
- Data Link / Metadata Link

Monitor National Marine Sanctuary
- **Original Source:** NOAA National Marine Sanctuaries Program
- Data Link / Metadata Link

VA Blue Crab Sanctuary
- **Original Source:** Virginia Marine Resources Commission
- Data Link / Metadata Link



BOEM Bureau of Ocean Energy Management

NOAA

Managed Areas

VA Wildlife Management Areas
- **Original Source:** Virginia Department of Wildlife Resources
- Data Link

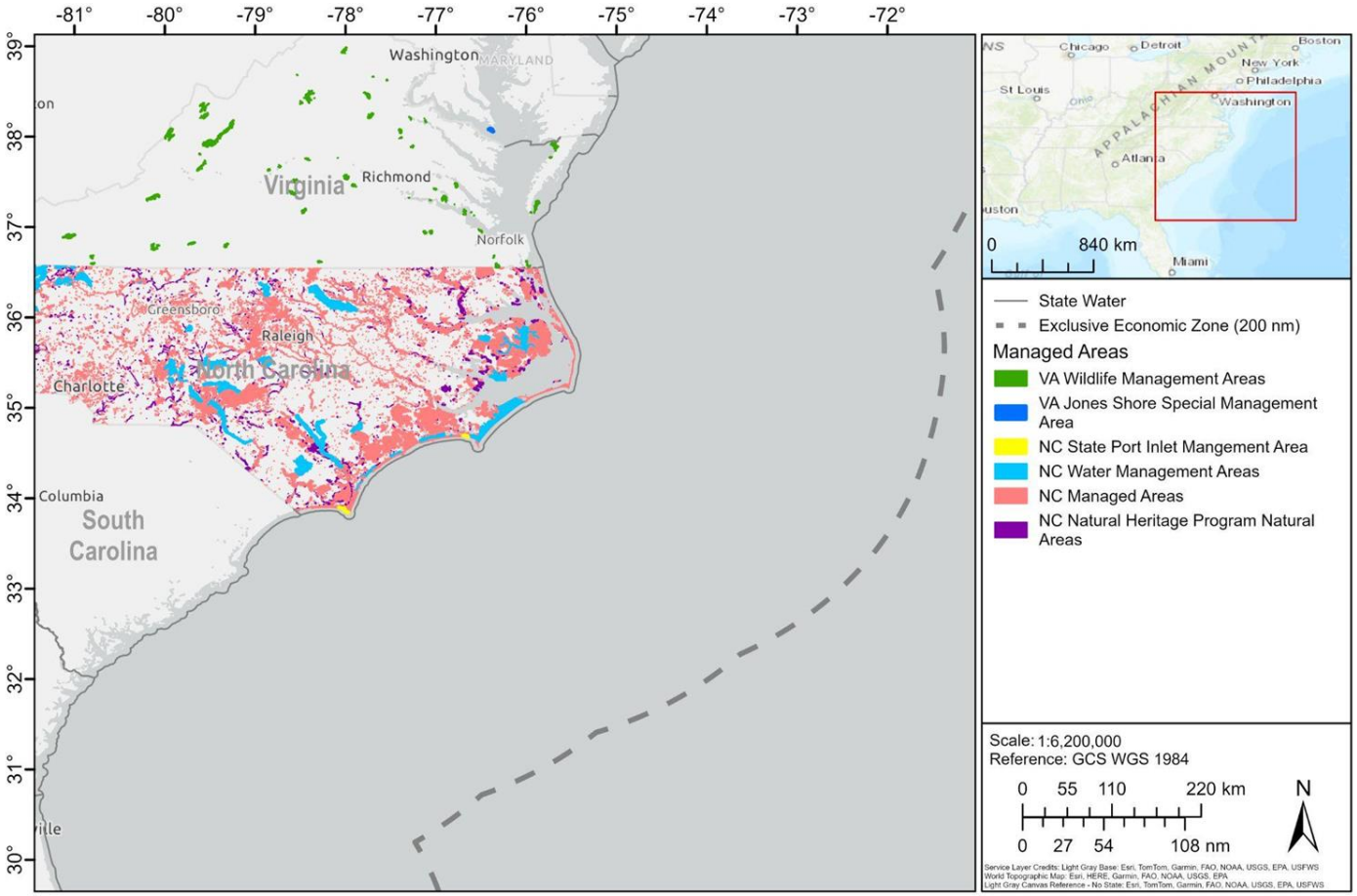
VA Jones Shore Special Management Area
- **Original Source:** Virginia Marine Resources Commission
- Data Link / Metadata Link

NC State Port Inlet Management Area
- **Original Source:** NC DEQ
- Data Link / Metadata Link

NC Water Management Areas
- **Original Source:** NC DEQ
- Data Link / Metadata Link

NC Managed Areas: properties and easements where natural resource conservation is one of the management goals.
- **Original Source:** NC Natural Heritage Program
- Data Link

NC Natural Heritage Program Natural Areas: sites that are of special biodiversity significance. A natural area's significance may be due to the presence of rare species, exemplary natural communities, or important animal assemblages.
- **Original Source:** NC Natural Heritage Program
- Data Link / Metadata Link



BOEM Bureau of Ocean Energy Management

NOAA

Critical Habitat and Coastal Barrier Resources

National Estuarine Research Reserve System: The National Estuarine Research Reserve System is a network of 30 coastal sites designated to protect and study estuarine systems.

- **Original Source:** NOAA OCM
- Data Link / Metadata Link

USFWS Threatened and Endangered Species Critical Habitat: active proposed and final critical habitat for FWS only and Joint FWS/NMFS threatened and endangered species

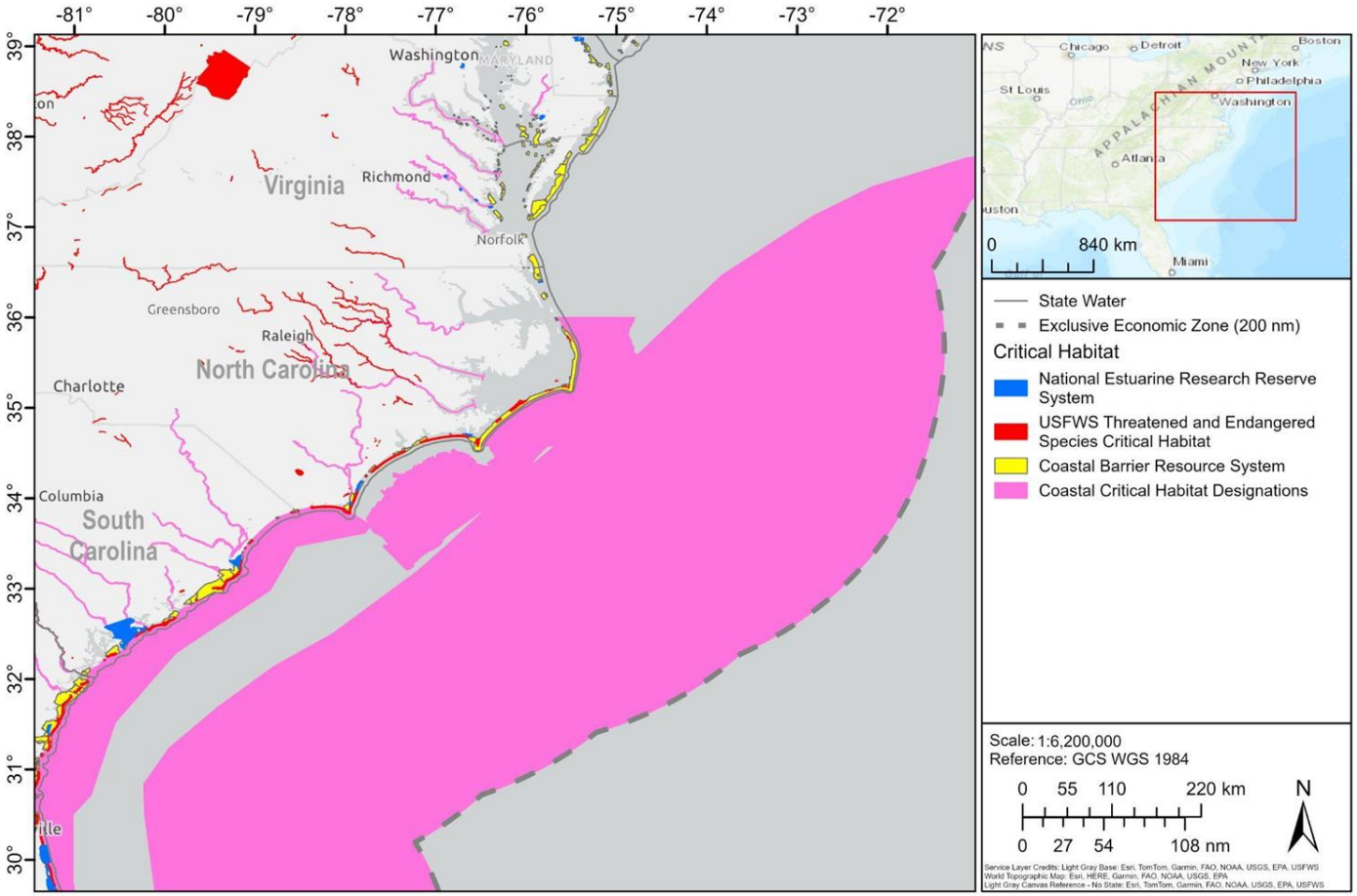
- **Original Source:** USFWS
- Data Link / Metadata Link

Coastal Barrier Resource System: Coastal Barrier Resources Act designated relatively undeveloped coastal barriers along the Atlantic and Gulf coasts as part of the John H. Chafee Coastal Barrier Resources System.

- **Original Source:** USFWS
- Data Link / Metadata Link

Coastal Critical Habitat Designation: NOAA NMFS and USFWS designated critical habitat in coastal areas of the US.

- **Original Source:** NOAA and USFWS
- Data Link / Metadata Link



BOEM Bureau of Ocean Energy Management

NOAA

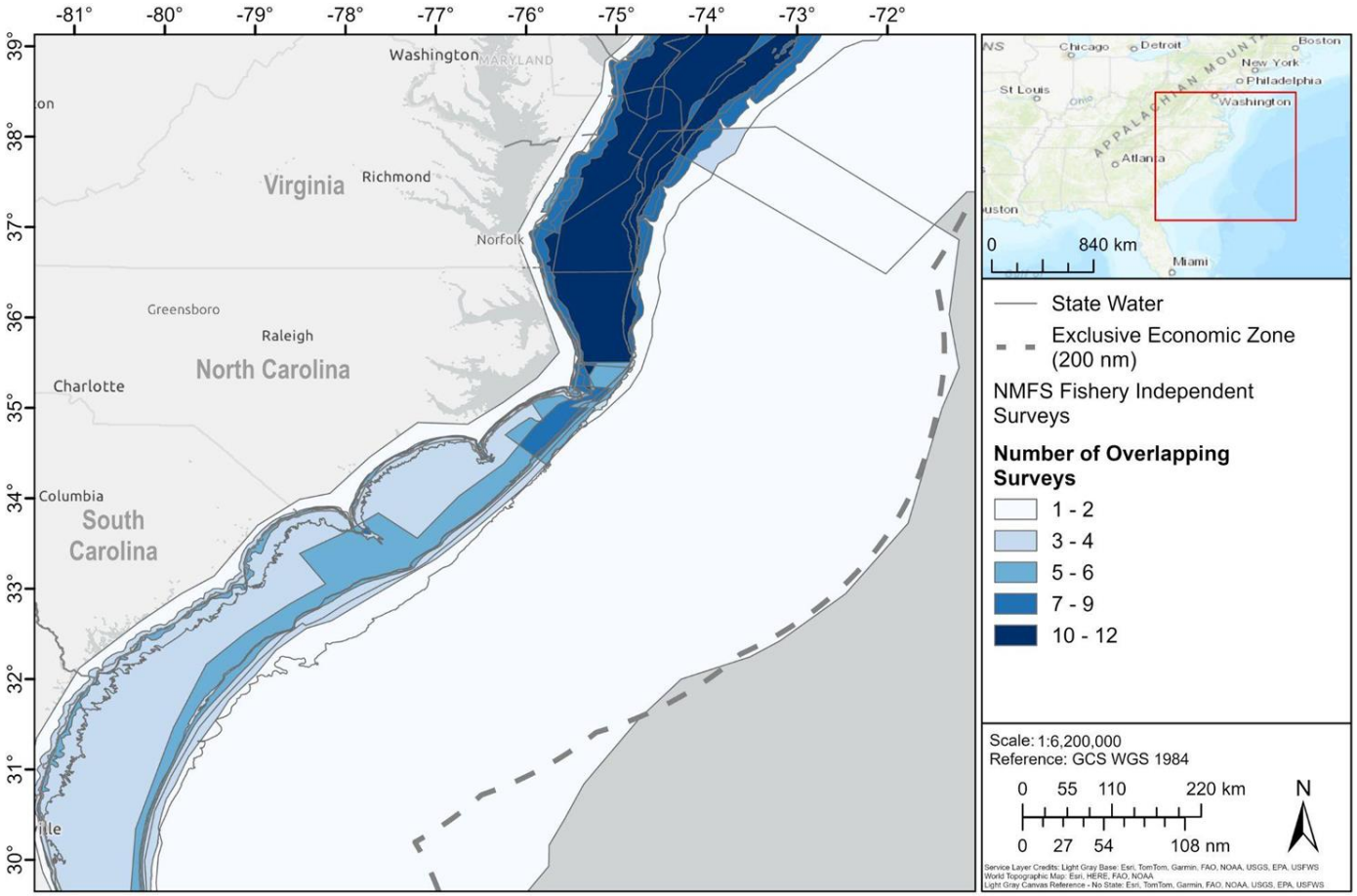
NMFS Fisheries Independent Surveys

Summary: National Marine Fisheries Service (NMFS) fishery-independent surveys in the region.

- **Source:** NOAA Fisheries

Surveys Included:

- AMAPPS Aerial Survey
- AMAPPS NE Ship Survey
- AMAPPS SE Ship Survey
- Apex Predators Survey
- Bottom Trawl Survey Fall
- Bottom Trawl Survey Spring
- EcoMon Survey (x4)
- Ocean Quahog Survey
- Scallop-Shellfish Survey
- SEAMAP Coastal Trawl Survey Fall
- SEAMAP Coastal Trawl Survey Spring
- SEAMAP Coastal Trawl Survey Summer
- SERFS Survey
- SEFSC SA Shark Red Snapper BLL
- SADL Survey
- Surf Clam Survey



BOEM Bureau of Ocean Energy Management

NOAA

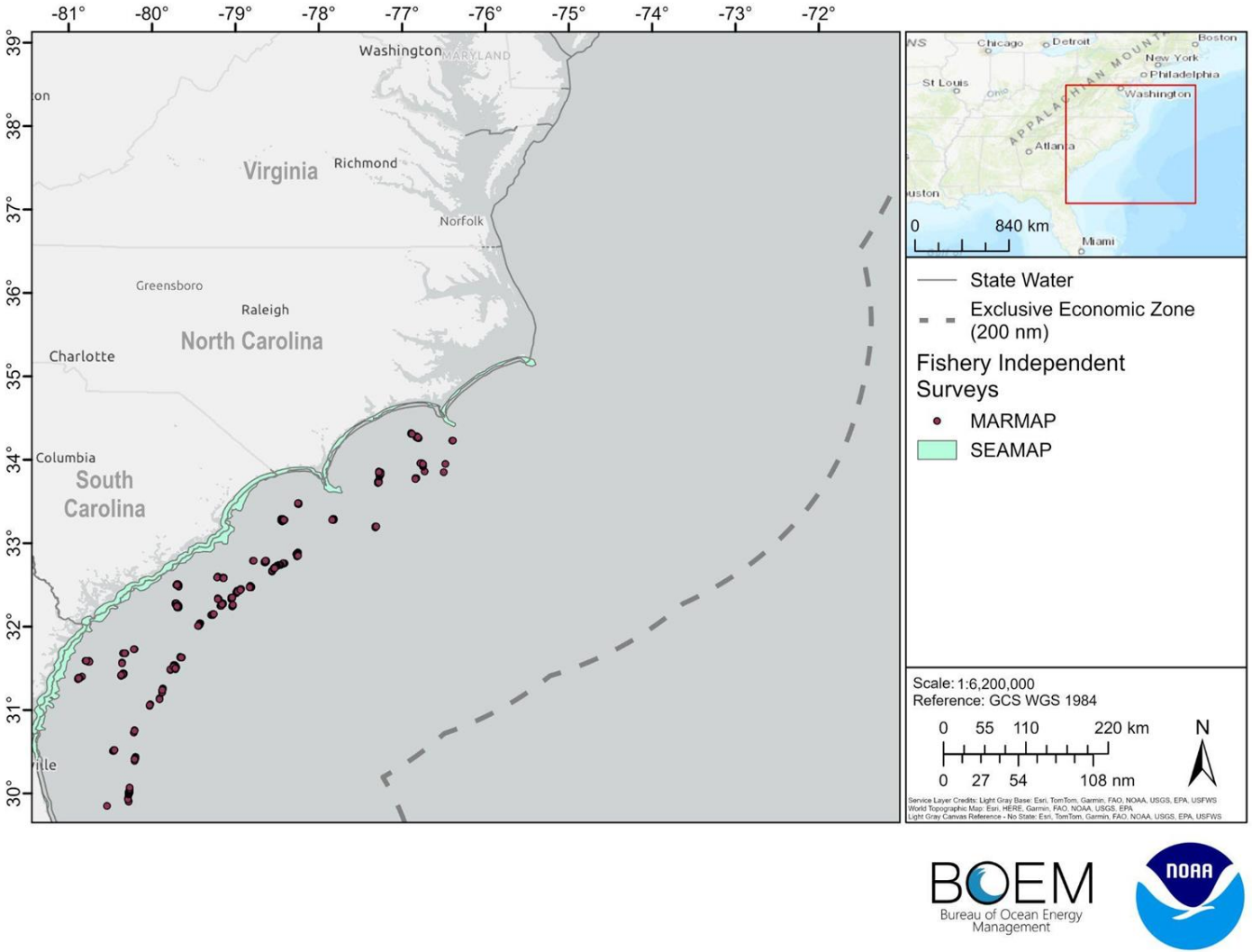
Fishery Independent Surveys

MARMAP: Species abundance, biomass, and length frequency of black sea bass, gray triggerfish, vermilion snapper, and red porgy collected by chevron traps as part of the fisheries-independent reef fish monitoring in the South Atlantic Bight by the Marine Resources Monitoring, Assessment, and Prediction (MARMAP) program at the South Carolina Department of Natural Resources.

- **Original Source:** South Carolina Department of Natural Resource/NOAA MARMAP Program
- Data Link

SEAMAP: MRRI staff, funded by the Southeast Area Monitoring and Assessment Program - South Atlantic (SEAMAP-SA) of the National Marine Fisheries Service (NMFS) have been conducting a shallow water trawl survey in the coastal zone of the South Atlantic Bight since 1986. SEAMAP-SA Shallow Water Trawl Survey cruises are conducted each year in Spring, Summer, and Fall. The goal of this project is to monitor the status and trends of coastal species in the South Atlantic Bight, including fish, shrimp, crabs, horseshoe crabs, sea turtles, mantis shrimp, and squid, in order to amass a long-term database for research and fisheries management use.

- **Original Source:** NOAA Fisheries
- Data Link



BOEM Bureau of Ocean Energy Management

NOAA

Fisheries

Active areas for both commercial and recreational fisheries, fishery management areas

BOEM BUREAU OF OCEAN ENERGY MANAGEMENT

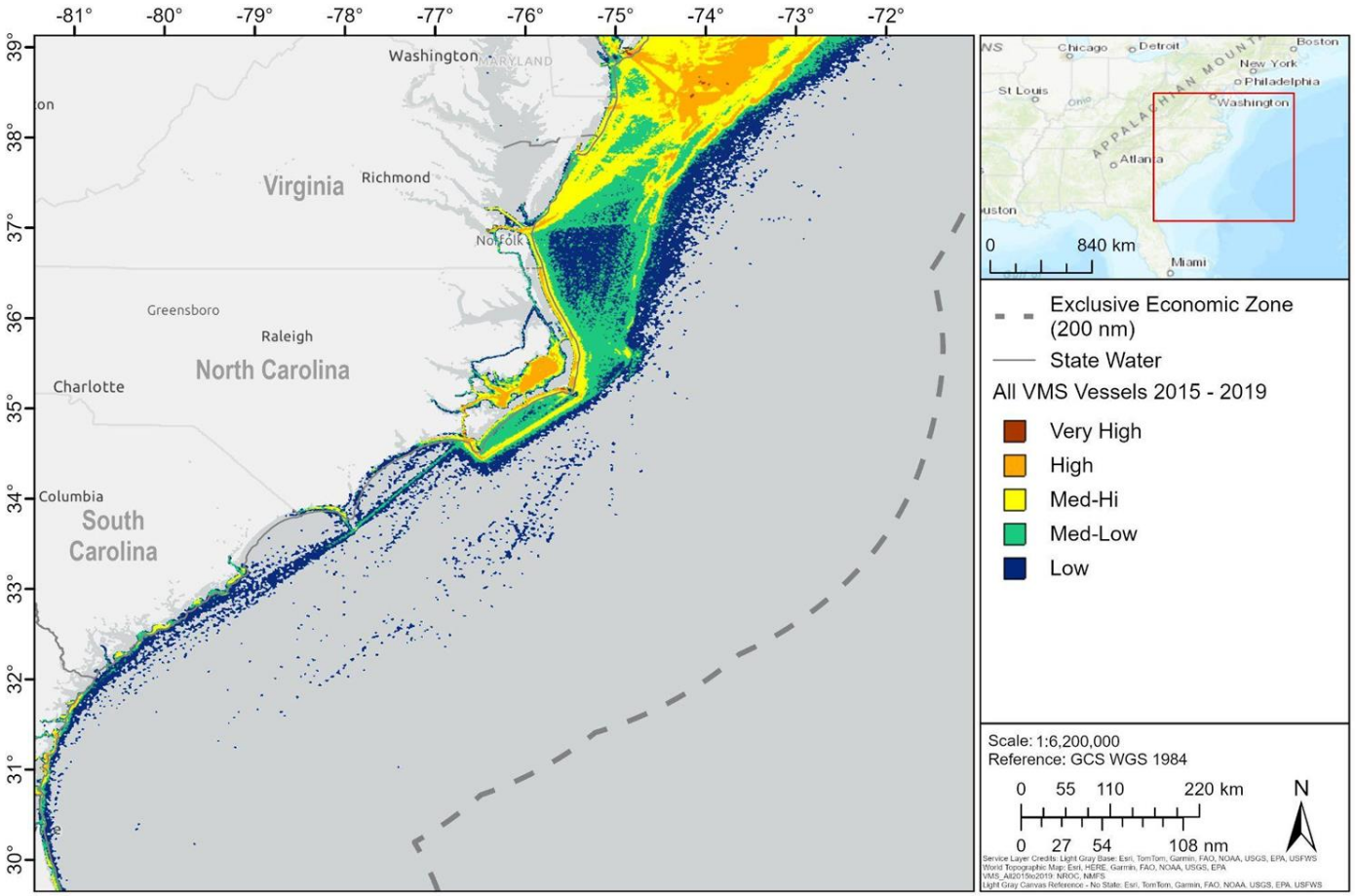
NCCOS NATIONAL CENTERS FOR COASTAL OCEAN SCIENCE

Vessel Monitoring System (VMS) -

All Fishing Types

Description: NMFS describes VMS as a satellite surveillance system primarily used to monitor the location and movement of commercial fishing vessels in the US. This data source characterizes the density of commercial fishing vessel activity for the Multispecies, Monkfish, Herring, Scallop, Surfclam, Ocean Quahog, and Squid/Mackerel/Butterfish fisheries, as well as for vessels not declaring into one of these fisheries and all vessels overall.

- **Original Source:** NOAA Fisheries
- **Download Source:** Northeast Ocean Data Portal
- Data Link



BOEM Bureau of Ocean Energy Management

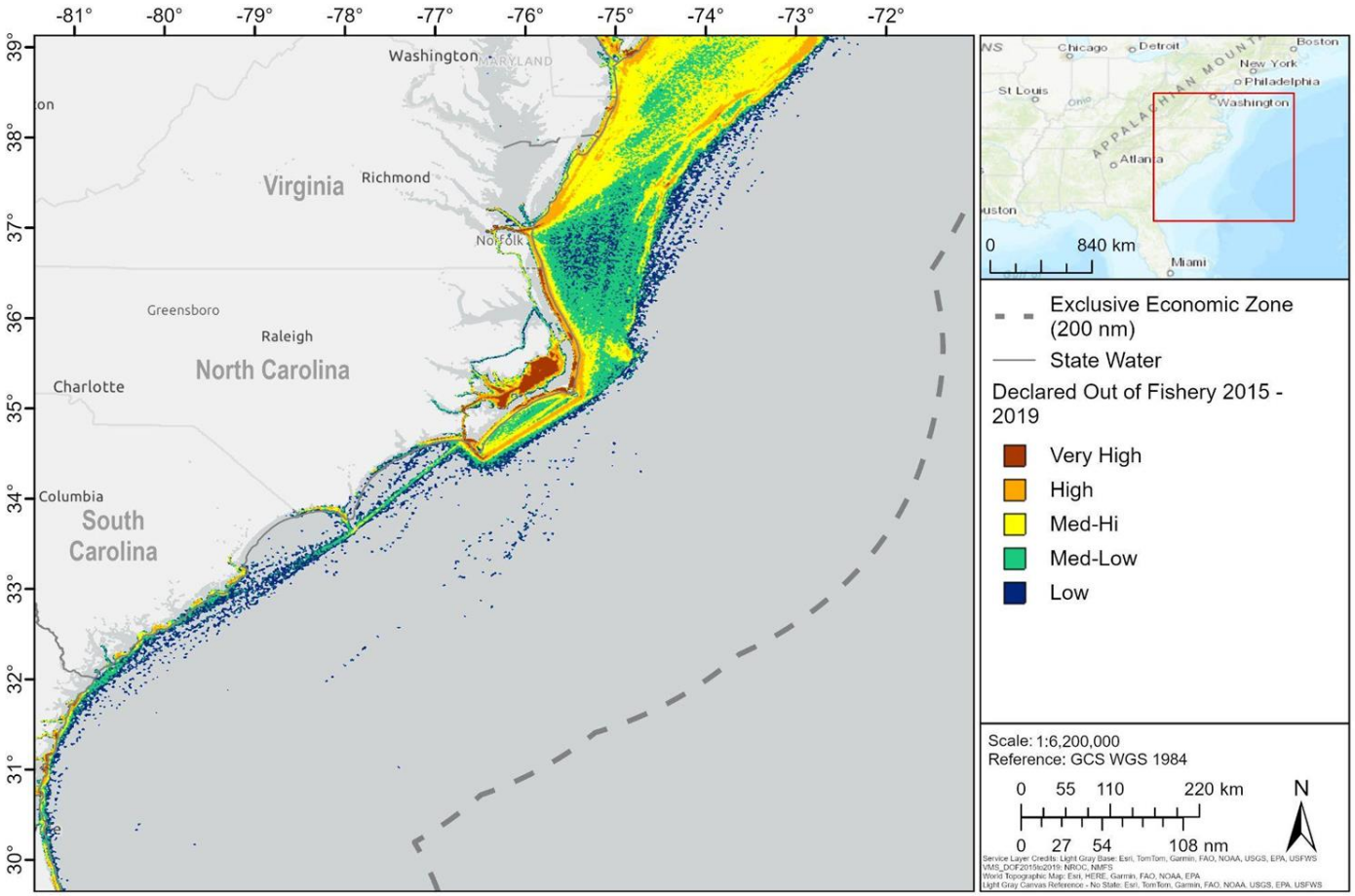
NOAA

Vessel Monitoring System (VMS) -

Declared Out of Fishery (DOF)

Description: NMFS describes VMS as a satellite surveillance system primarily used to monitor the location and movement of commercial fishing vessels in the US. This data source characterizes the density of commercial fishing vessel activity for the Multispecies, Monkfish, Herring, Scallop, Surfclam, Ocean Quahog, and Squid/Mackerel/Butterfish fisheries, as well as for vessels not declaring into one of these fisheries and all vessels overall.

- **Original Source:** NOAA Fisheries
- **Download Source:** Northeast Ocean Data Portal
- Data Link



BOEM Bureau of Ocean Energy Management

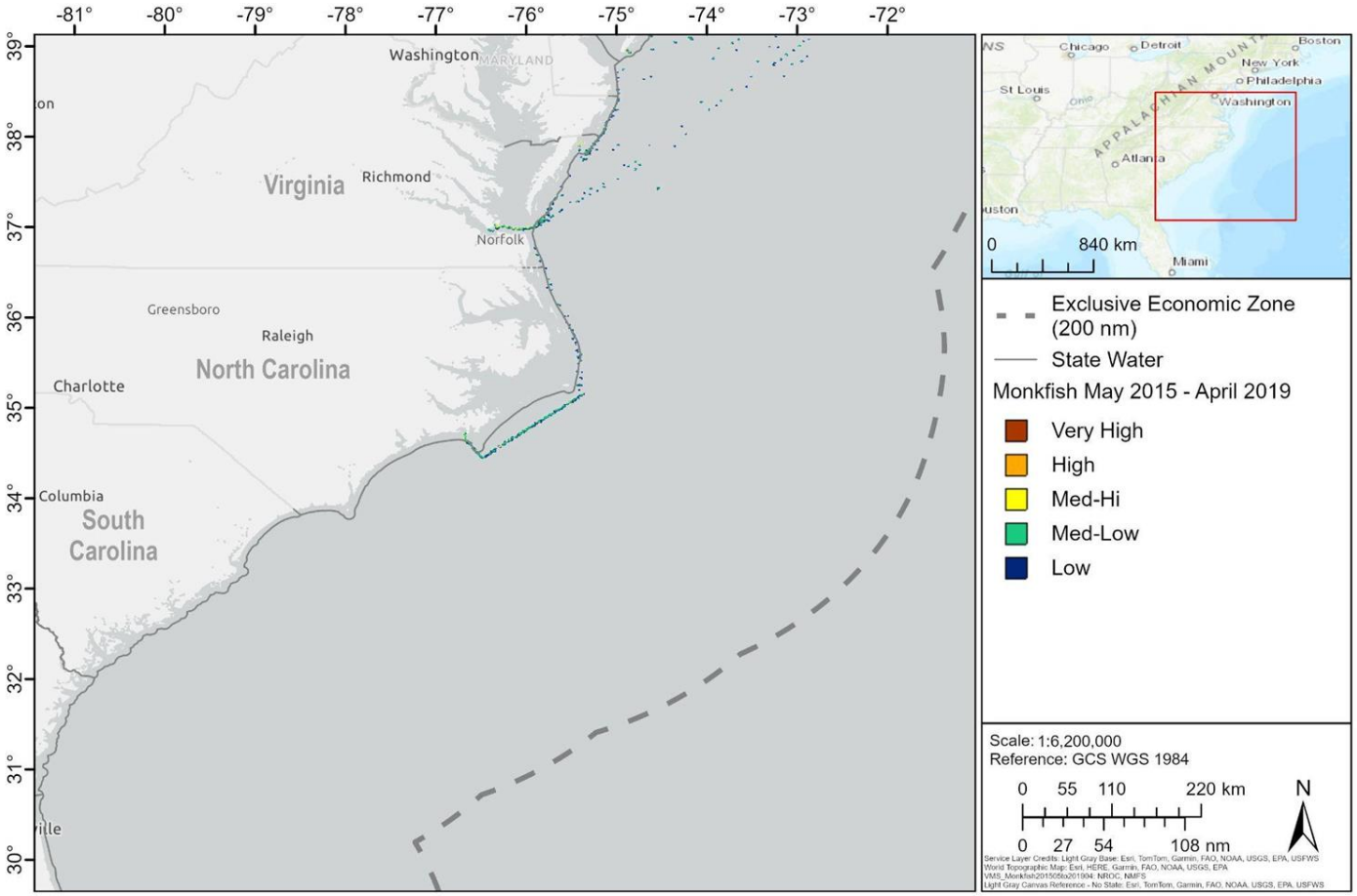
NOAA

Vessel Monitoring System (VMS) -

Monkfish

Description: NMFS describes VMS as a satellite surveillance system primarily used to monitor the location and movement of commercial fishing vessels in the US. This data source characterizes the density of commercial fishing vessel activity for the Multispecies, Monkfish, Herring, Scallop, Surfclam, Ocean Quahog, and Squid/Mackerel/Butterfish fisheries, as well as for vessels not declaring into one of these fisheries and all vessels overall.

- **Original Source:** NOAA Fisheries
- **Download Source:** Northeast Ocean Data Portal
- Data Link



BOEM Bureau of Ocean Energy Management

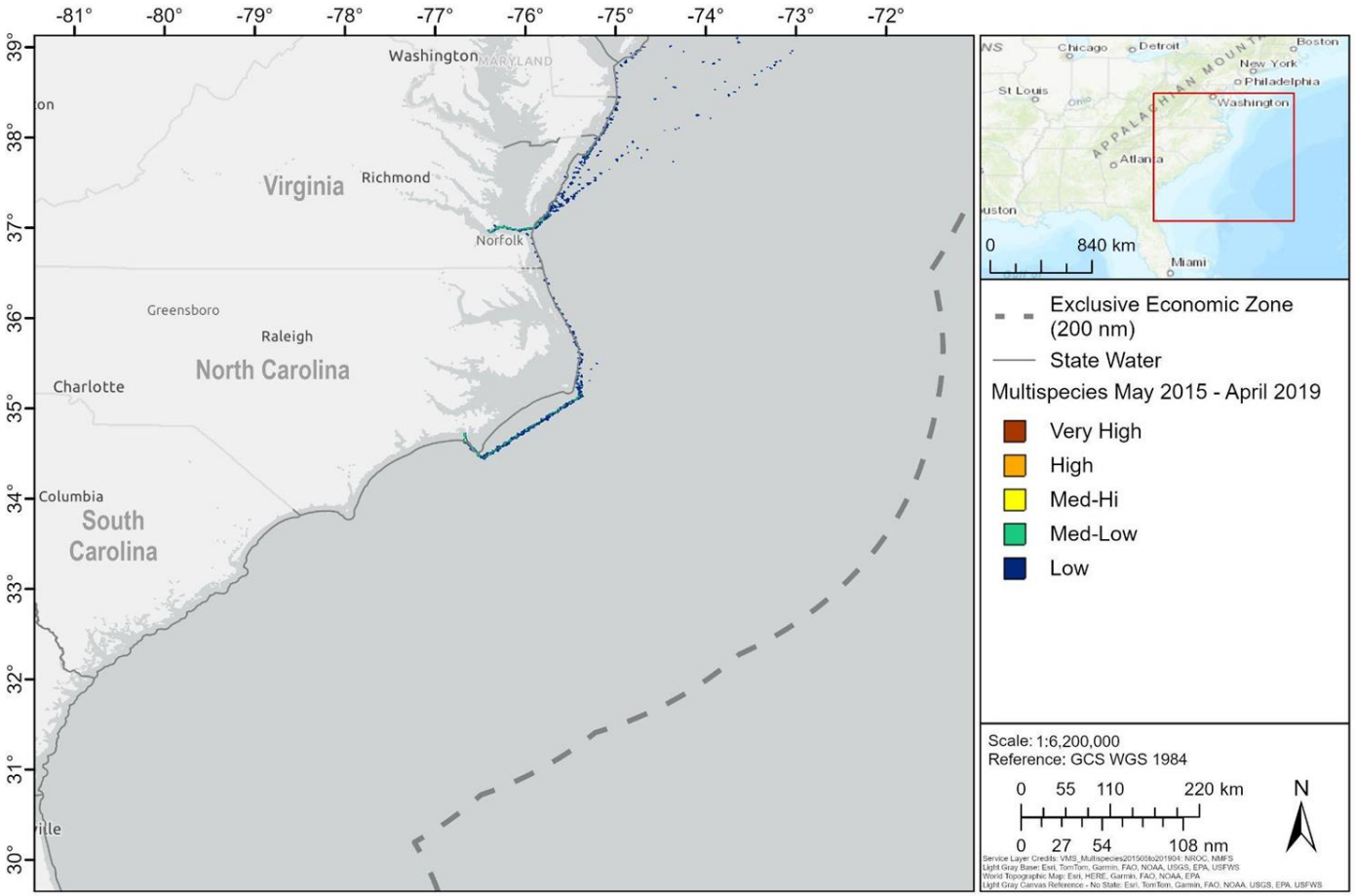
NOAA

Vessel Monitoring System (VMS) -

Multispecies

Description: NMFS describes VMS as a satellite surveillance system primarily used to monitor the location and movement of commercial fishing vessels in the US. This data source characterizes the density of commercial fishing vessel activity for the Multispecies, Monkfish, Herring, Scallop, Surfclam, Ocean Quahog, and Squid/Mackerel/Butterfish fisheries, as well as for vessels not declaring into one of these fisheries and all vessels overall.

- **Original Source:** NOAA Fisheries
- **Download Source:** Northeast Ocean Data Portal
- Data Link



BOEM Bureau of Ocean Energy Management

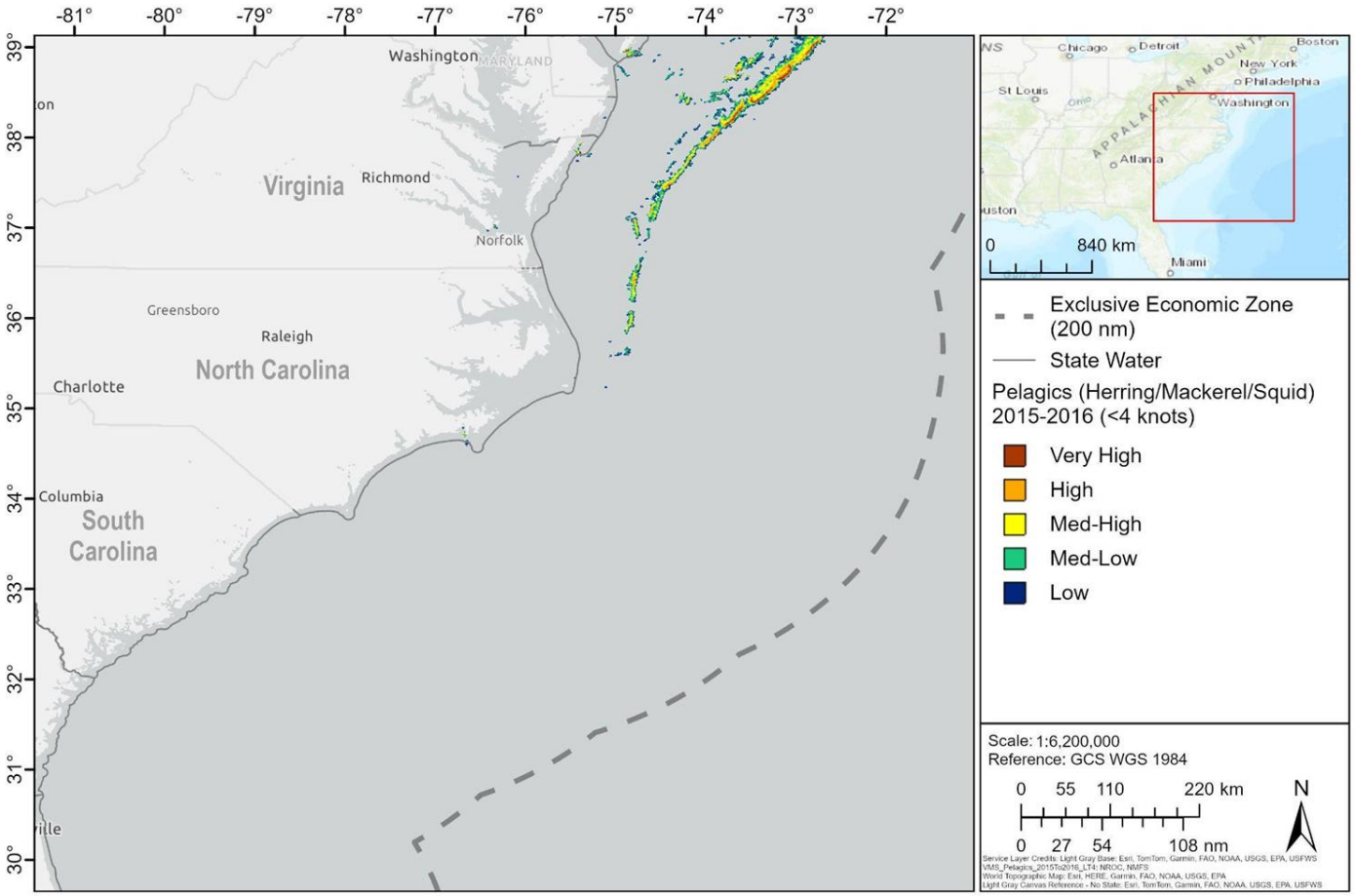
NOAA

Vessel Monitoring System (VMS) -

Pelagics (Herring, Mackerel, squid)

Description: NMFS describes VMS as a satellite surveillance system primarily used to monitor the location and movement of commercial fishing vessels in the US. This data source characterizes the density of commercial fishing vessel activity for the Multispecies, Monkfish, Herring, Scallop, Surfclam, Ocean Quahog, and Squid/Mackerel/Butterfish fisheries, as well as for vessels not declaring into one of these fisheries and all vessels overall.

- **Original Source:** NOAA Fisheries
- **Download Source:** Northeast Ocean Data Portal
- Data Link



BOEM Bureau of Ocean Energy Management

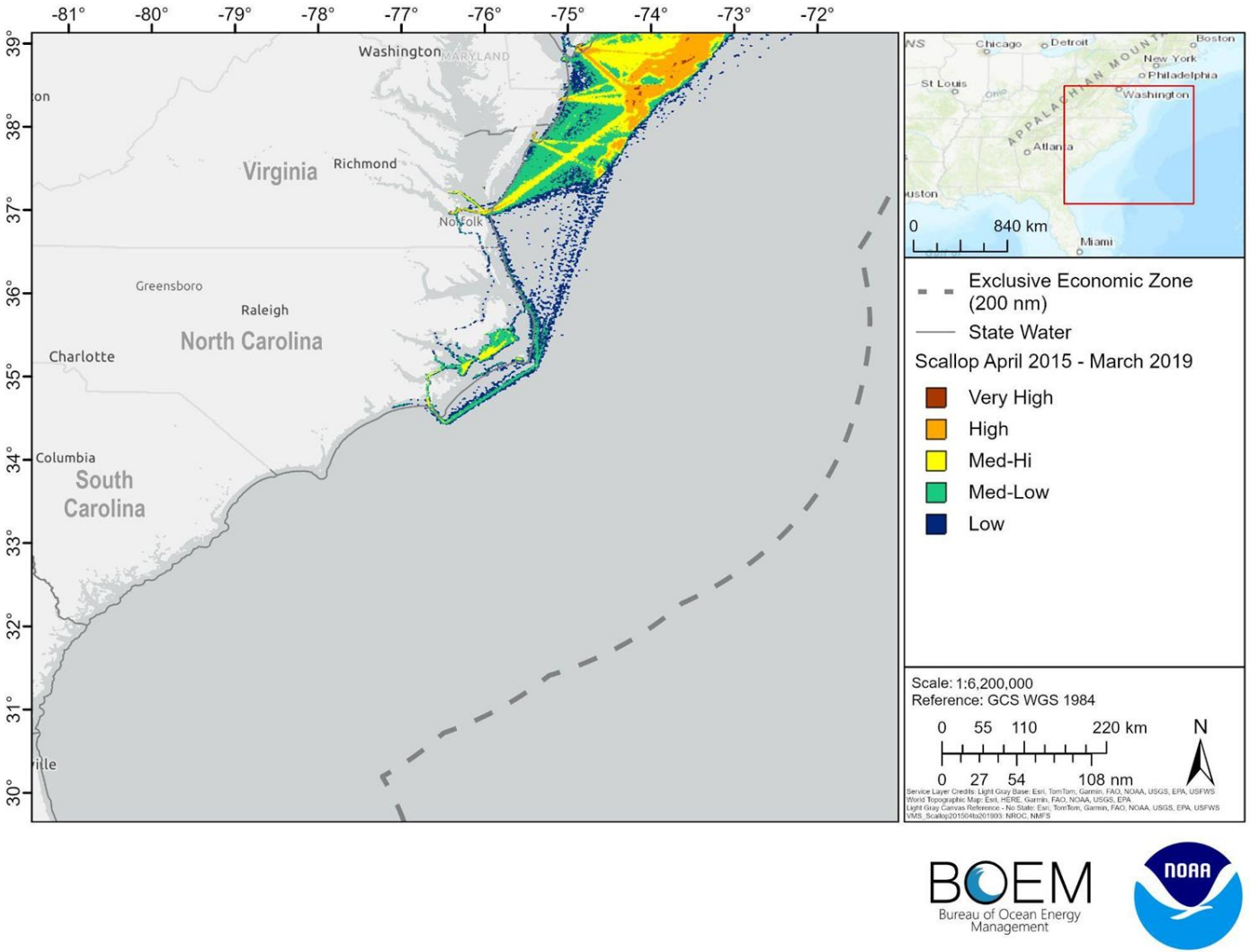
NOAA

Vessel Monitoring System (VMS) -

Scallops

Description: NMFS describes VMS as a satellite surveillance system primarily used to monitor the location and movement of commercial fishing vessels in the US. This data source characterizes the density of commercial fishing vessel activity for the Multispecies, Monkfish, Herring, Scallop, Surfclam, Ocean Quahog, and Squid/Mackerel/Butterfish fisheries, as well as for vessels not declaring into one of these fisheries and all vessels overall.

- **Original Source:** NOAA Fisheries
- **Download Source:** Northeast Ocean Data Portal
- Data Link



BOEM Bureau of Ocean Energy Management

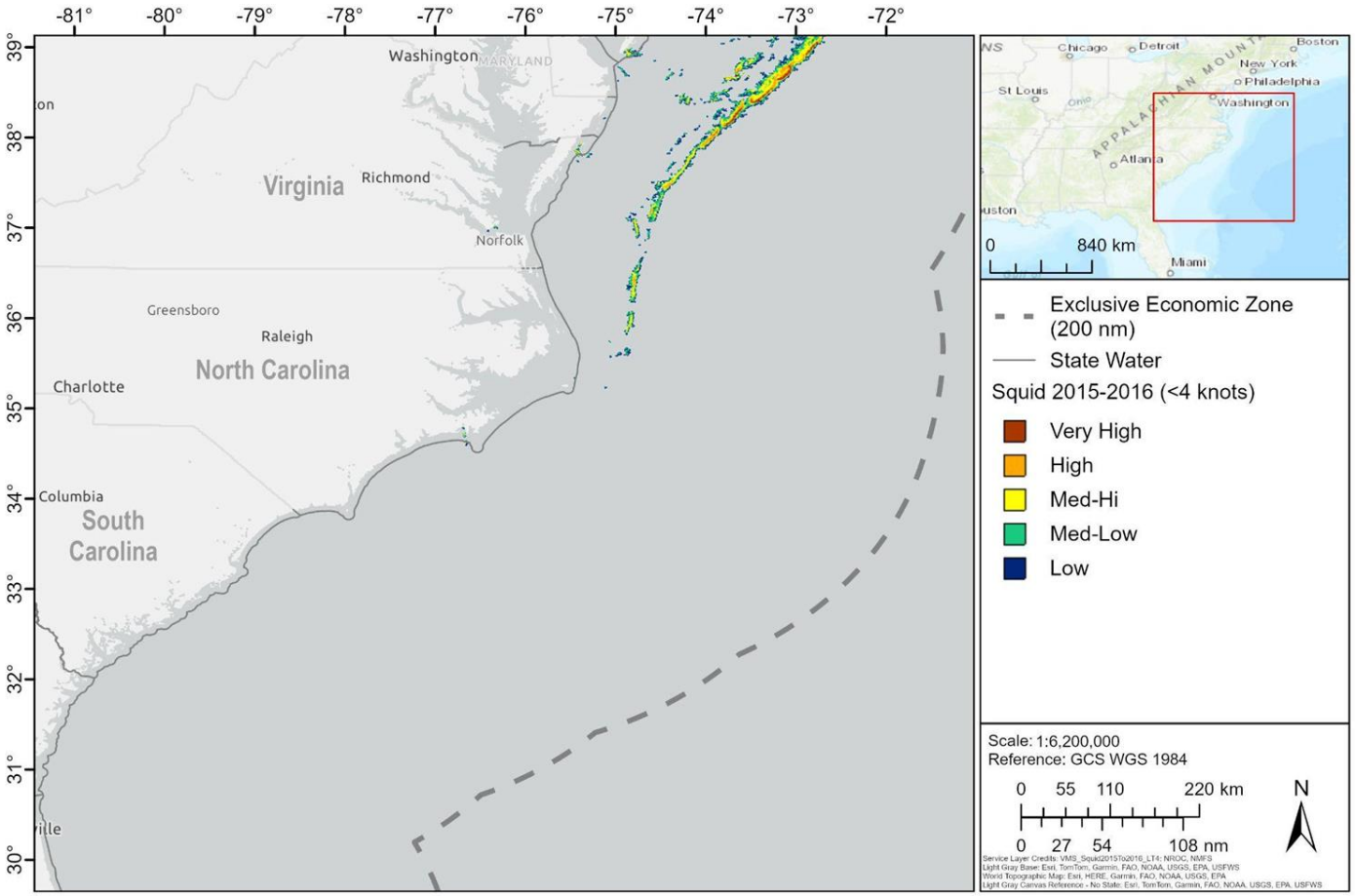
NOAA

Vessel Monitoring System (VMS) -

Squid

Description: NMFS describes VMS as a satellite surveillance system primarily used to monitor the location and movement of commercial fishing vessels in the US. This data source characterizes the density of commercial fishing vessel activity for the Multispecies, Monkfish, Herring, Scallop, Surfclam, Ocean Quahog, and Squid/Mackerel/Butterfish fisheries, as well as for vessels not declaring into one of these fisheries and all vessels overall.

- **Original Source:** NOAA Fisheries
- **Download Source:** Northeast Ocean Data Portal
- Data Link



BOEM Bureau of Ocean Energy Management

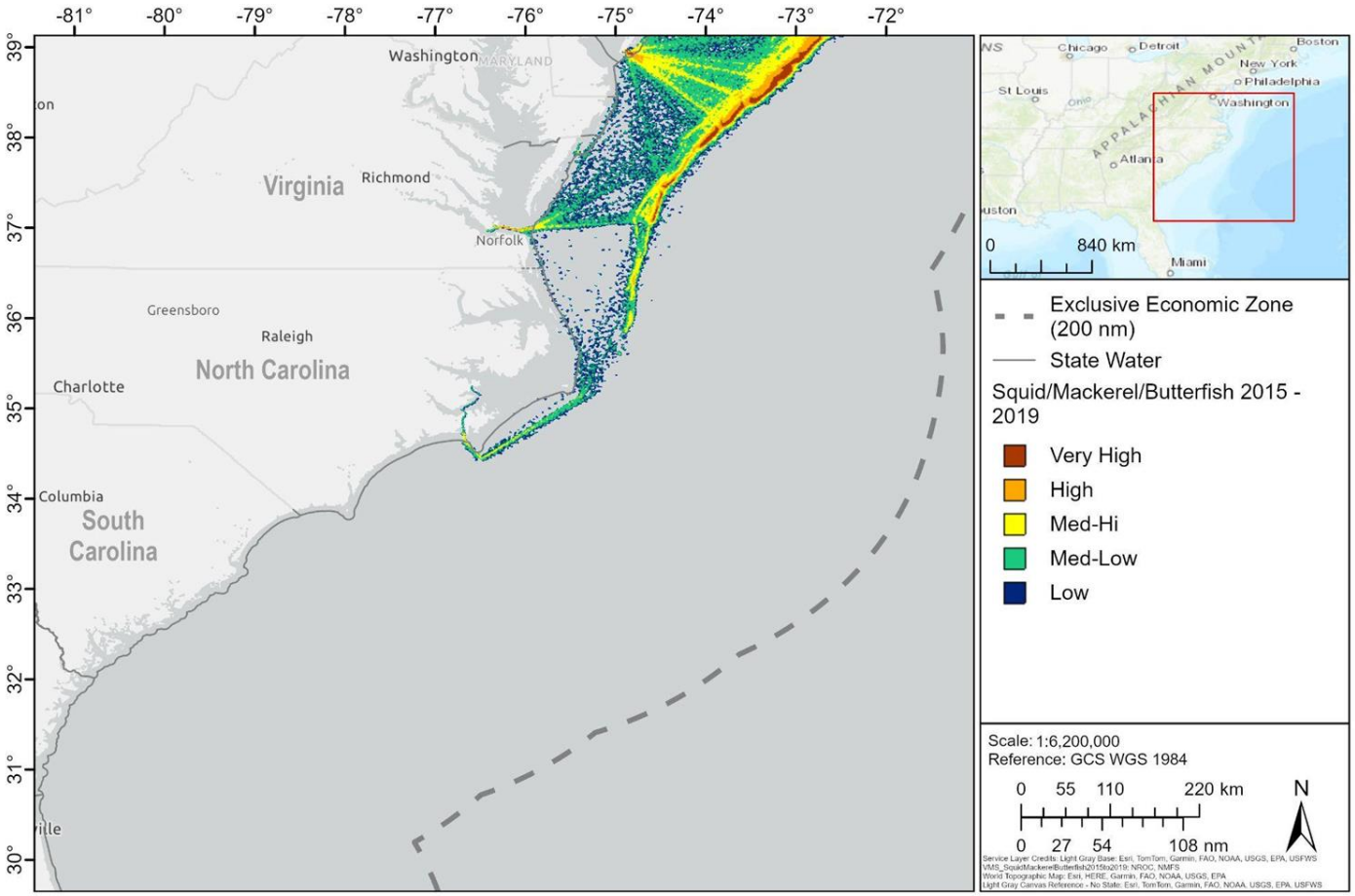
NOAA

Vessel Monitoring System (VMS) -

Squid, Mackerel, and Butterfish

Description: NMFS describes VMS as a satellite surveillance system primarily used to monitor the location and movement of commercial fishing vessels in the US. This data source characterizes the density of commercial fishing vessel activity for the Multispecies, Monkfish, Herring, Scallop, Surfclam, Ocean Quahog, and Squid/Mackerel/Butterfish fisheries, as well as for vessels not declaring into one of these fisheries and all vessels overall.

- **Original Source:** NOAA Fisheries
- **Download Source:** Northeast Ocean Data Portal
- Data Link



BOEM Bureau of Ocean Energy Management

NOAA

Southeast Region Headboat Survey (SRHS): 2014 - 2020

- **Source:** NOAA Fisheries

- **Description:** SRHS samples recreational headboats, wherein anglers pay a per-head fee to target reef fish and coastal migratory pelagic species
  - Boats typically carry more than six passengers, ranging as high as 100 passengers
  - In addition to information on the catch and operations, captains were required to report the geographic location of fishing activity in latitude and longitude degrees and minutes

- **Data type:** Data consist of trip-level logbook records submitted by captains
  - The SRHS electronic logbook was implemented in 2013 to improve data collection

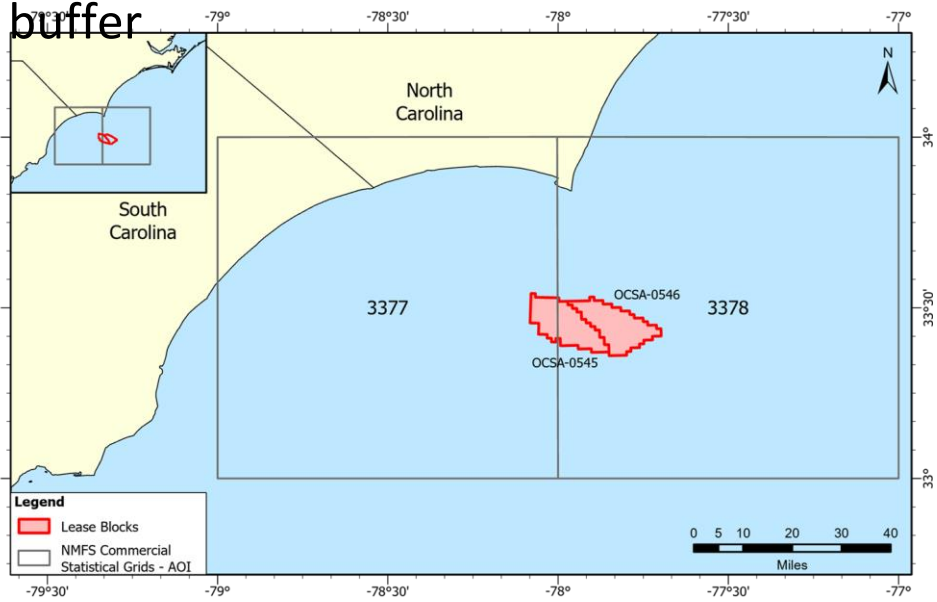
- Data Source Description Link / Metadata Link

BOEM
Bureau of Ocean Energy Management

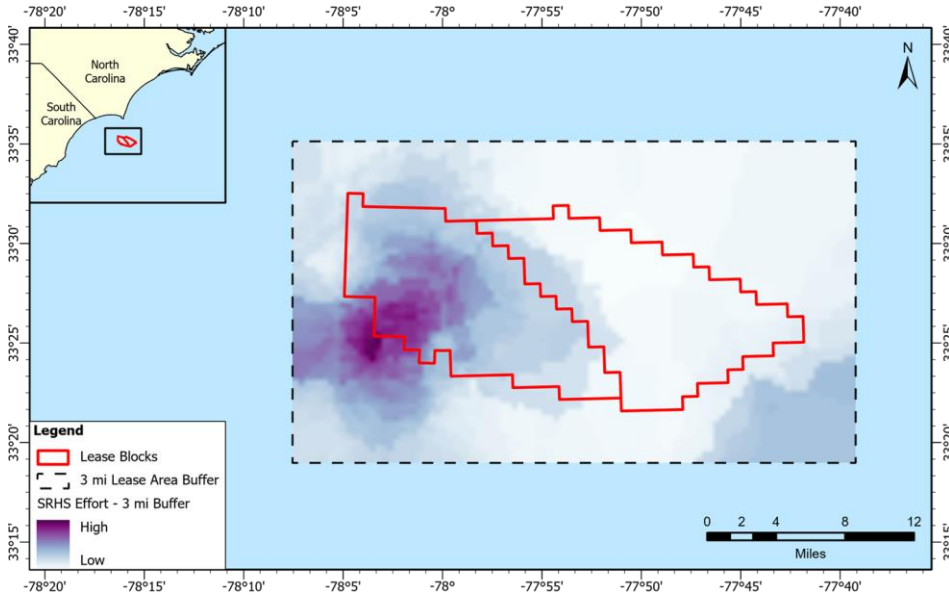
NOAA

Southeast Region Headboat Survey (SRHS)

NMFS Commercial Statistical Grids



SRHS Effort (Number of trips) – 3 mi buffer

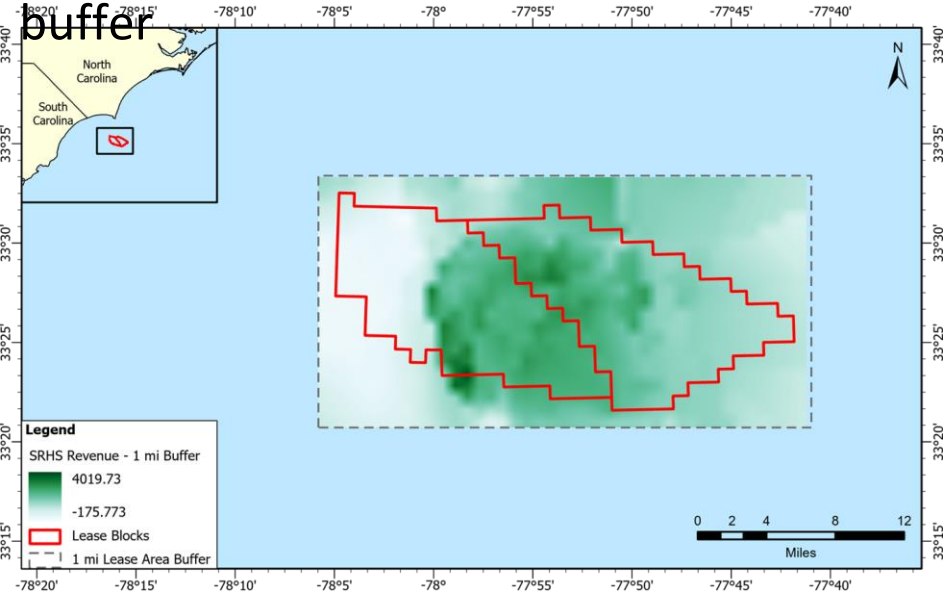


BOEM Bureau of Ocean Energy Management

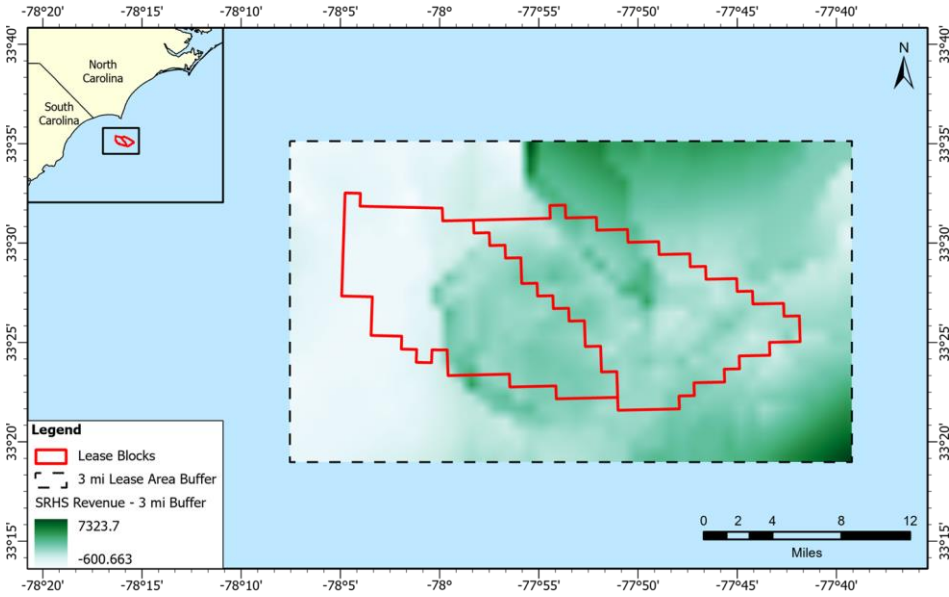
NOAA

Southeast Region Headboat Survey (SRHS)

SRHS Revenue (Per Trip) – 3 mi buffer



SRHS Revenue (Per Trip) – 1 mi buffer

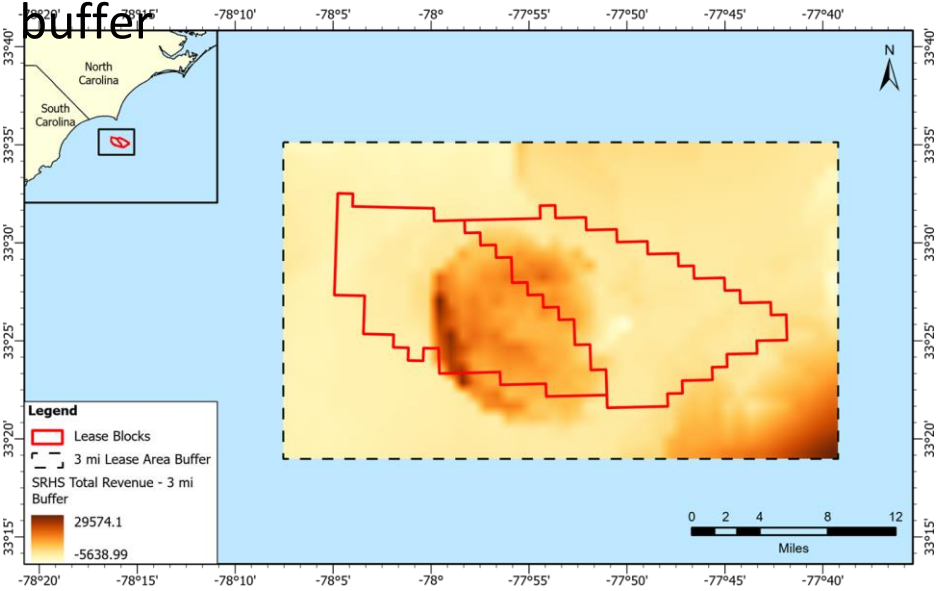


BOEM Bureau of Ocean Energy Management

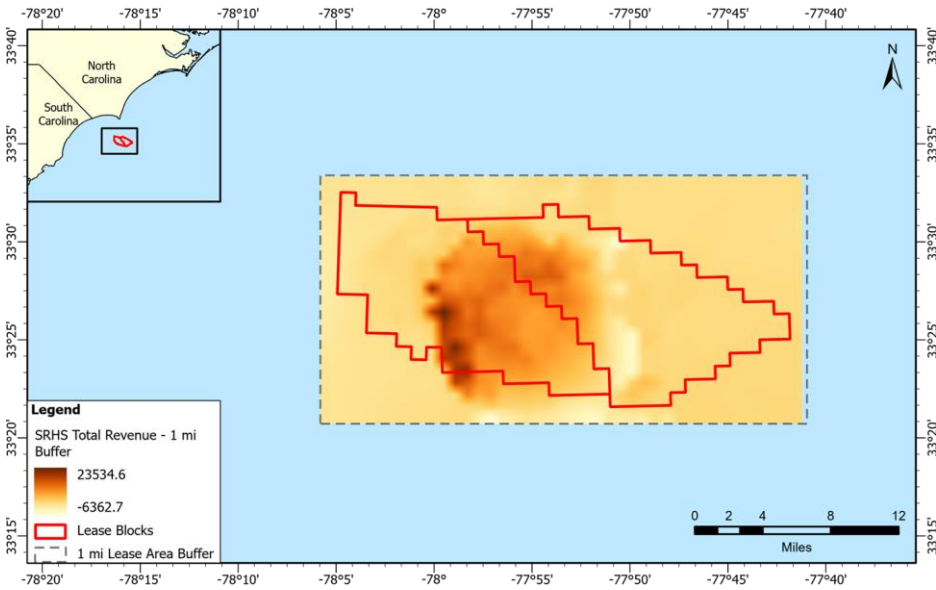
NOAA

Southeast Region Headboat Survey (SRHS)

SRHS Total Revenue – 3 mi buffer



SRHS Total Revenue – 1 mi buffer

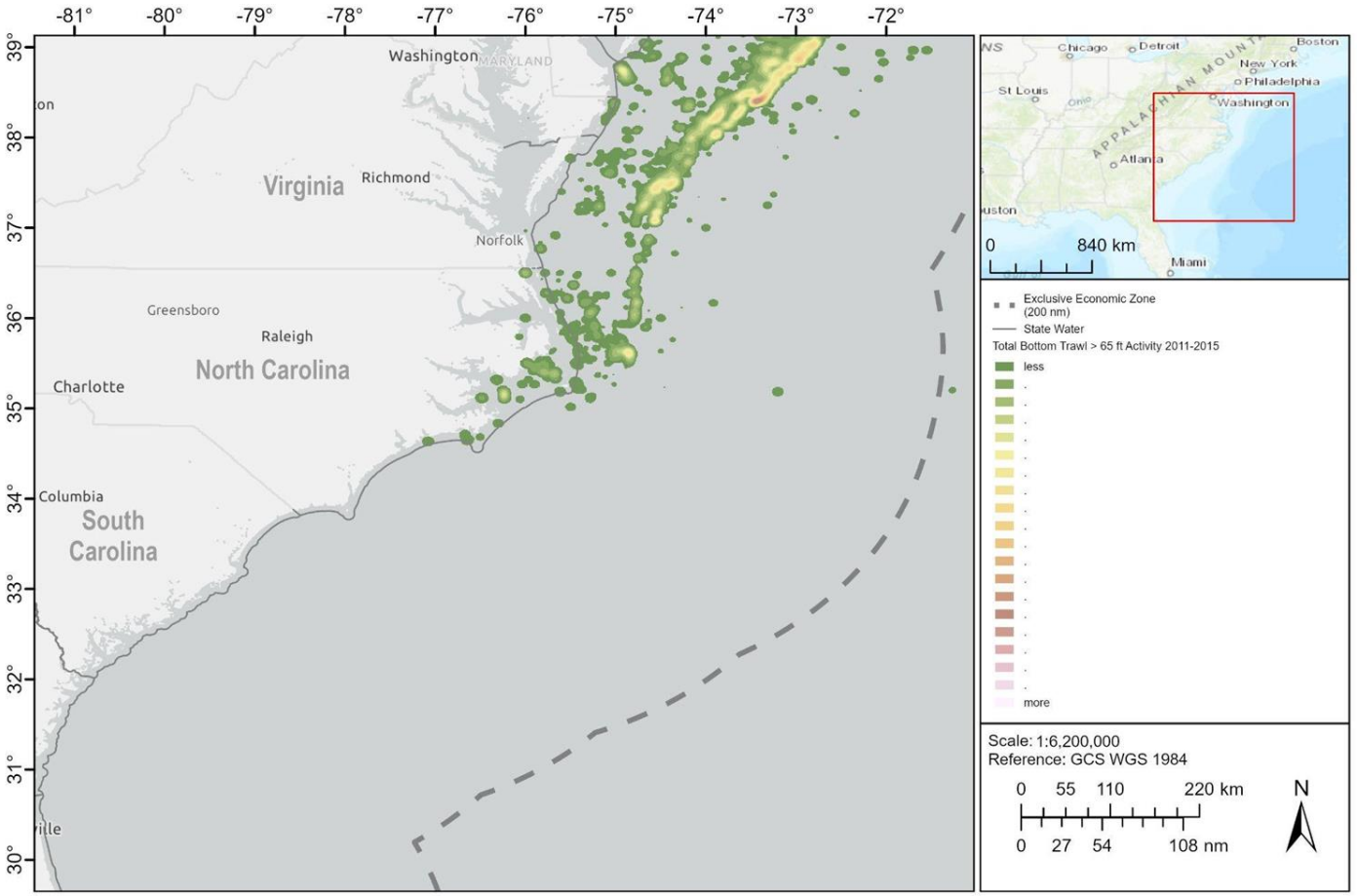


BOEM Bureau of Ocean Energy Management

NOAA

Communities at Sea (CAS) -

Total Bottom Trawl



Description: By integrating Vessel Trip Report (VTR) and permit information, scientists from Rutgers and NOAA created a new database that links fishing port communities to the places at sea where they spend the most time. Regional maps show where fishing occurred with different gear types—bottom trawl, dredge, gillnet, longline, or pots and traps.

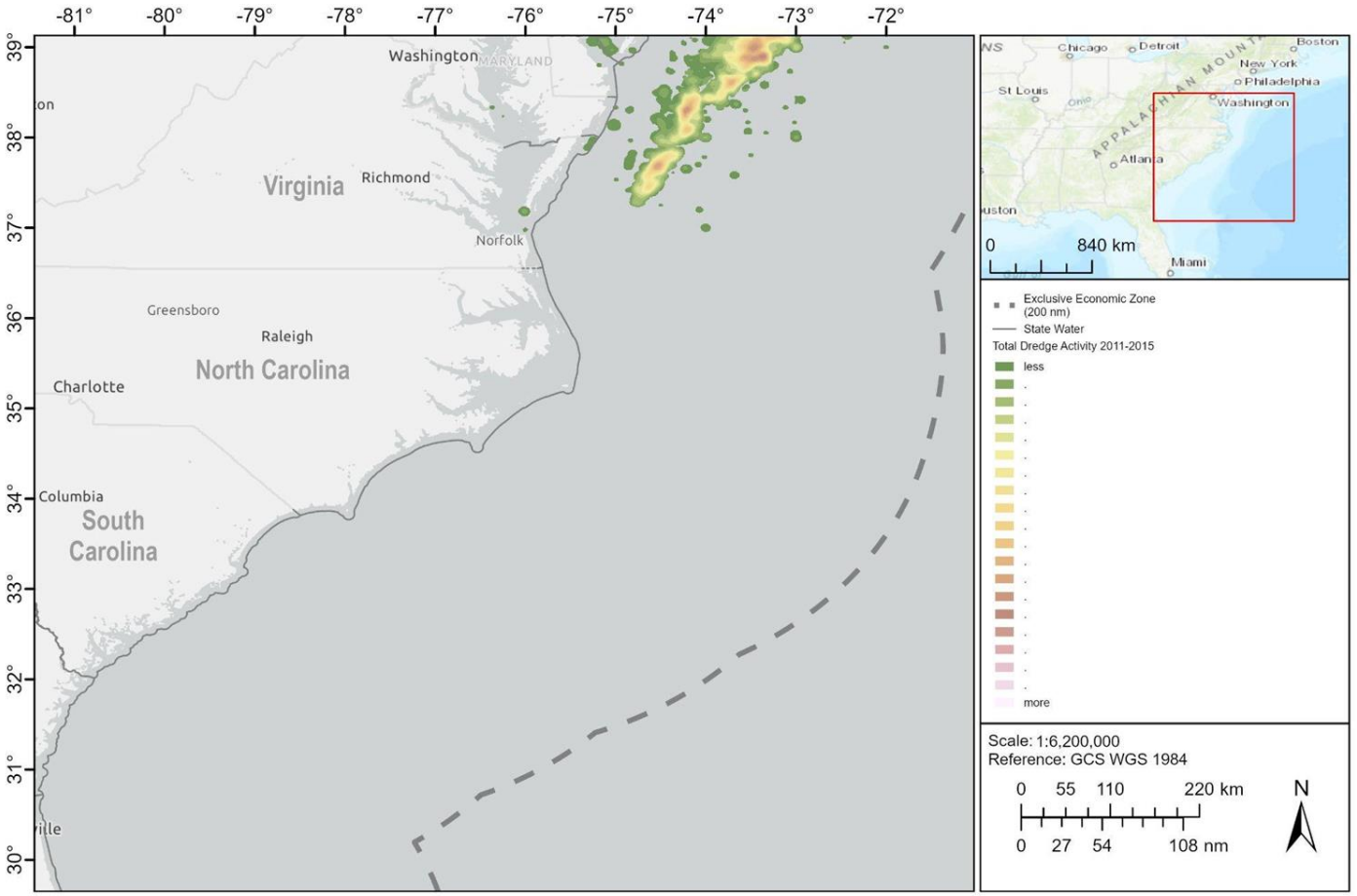
- **Original Source:** NOAA Fisheries
- **Download Source:** Northeast Ocean Data Portal
- Data Link

BOEM Bureau of Ocean Energy Management

NOAA

Communities at Sea (CAS) -

Total Dredge



Description: By integrating Vessel Trip Report (VTR) and permit information, scientists from Rutgers and NOAA created a new database that links fishing port communities to the places at sea where they spend the most time. Regional maps show where fishing occurred with different gear types—bottom trawl, dredge, gillnet, longline, or pots and traps.

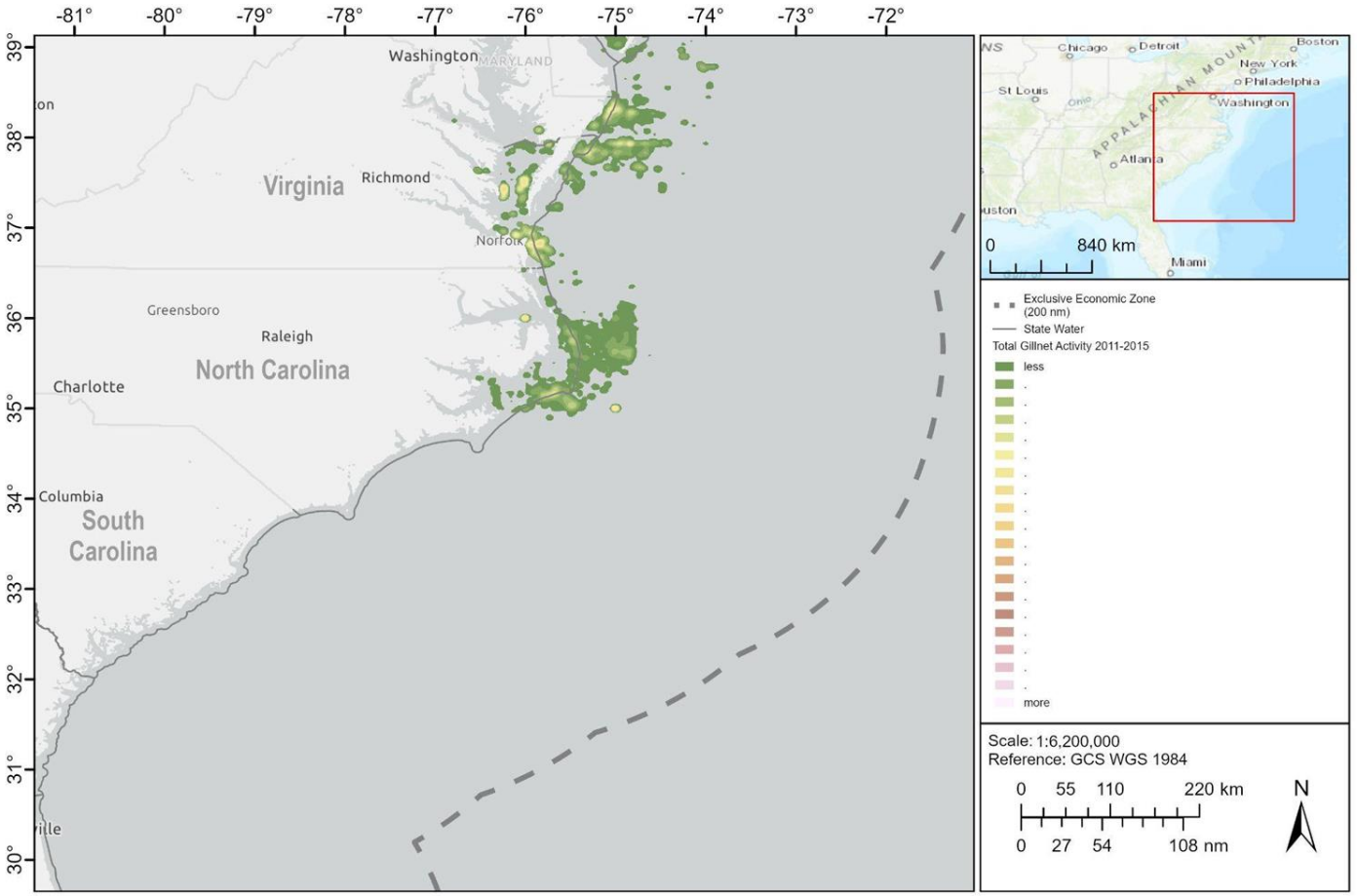
- **Original Source:** NOAA Fisheries
- **Download Source:** Northeast Ocean Data Portal
- Data Link

BOEM Bureau of Ocean Energy Management

NOAA

Communities at Sea (CAS) -

Total Gillnet



Description: By integrating Vessel Trip Report (VTR) and permit information, scientists from Rutgers and NOAA created a new database that links fishing port communities to the places at sea where they spend the most time. Regional maps show where fishing occurred with different gear types—bottom trawl, dredge, gillnet, longline, or pots and traps.

- **Original Source:** NOAA Fisheries
- **Download Source:** Northeast Ocean Data Portal
- Data Link

BOEM Bureau of Ocean Energy Management

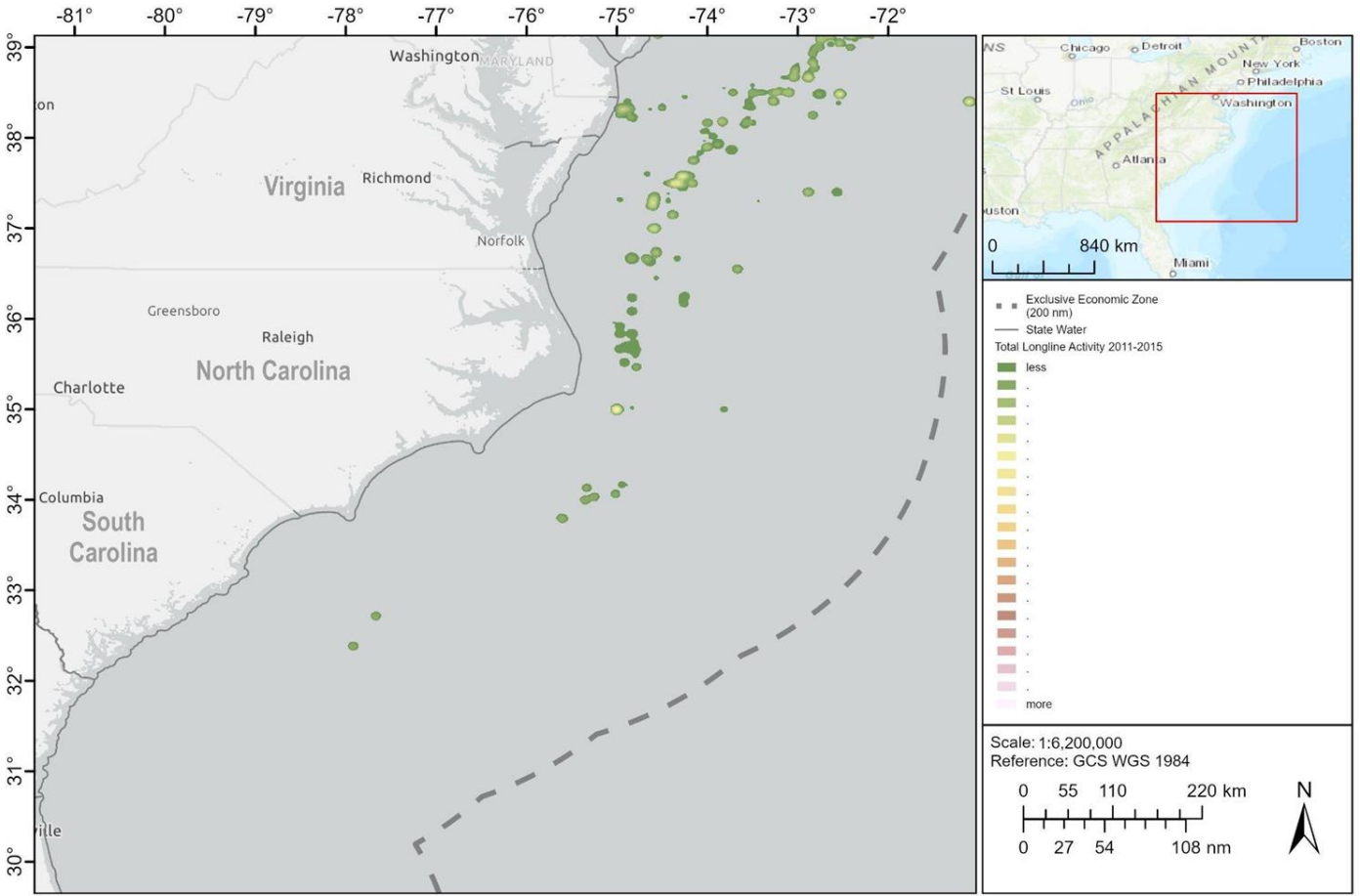
NOAA

Communities at Sea (CAS) -

Total Longline

Description: By integrating Vessel Trip Report (VTR) and permit information, scientists from Rutgers and NOAA created a new database that links fishing port communities to the places at sea where they spend the most time. Regional maps show where fishing occurred with different gear types—bottom trawl, dredge, gillnet, longline, or pots and traps.

- **Original Source:** NOAA Fisheries
- **Download Source:** Northeast Ocean Data Portal
- [Data Link]



BOEM Bureau of Ocean Energy Management

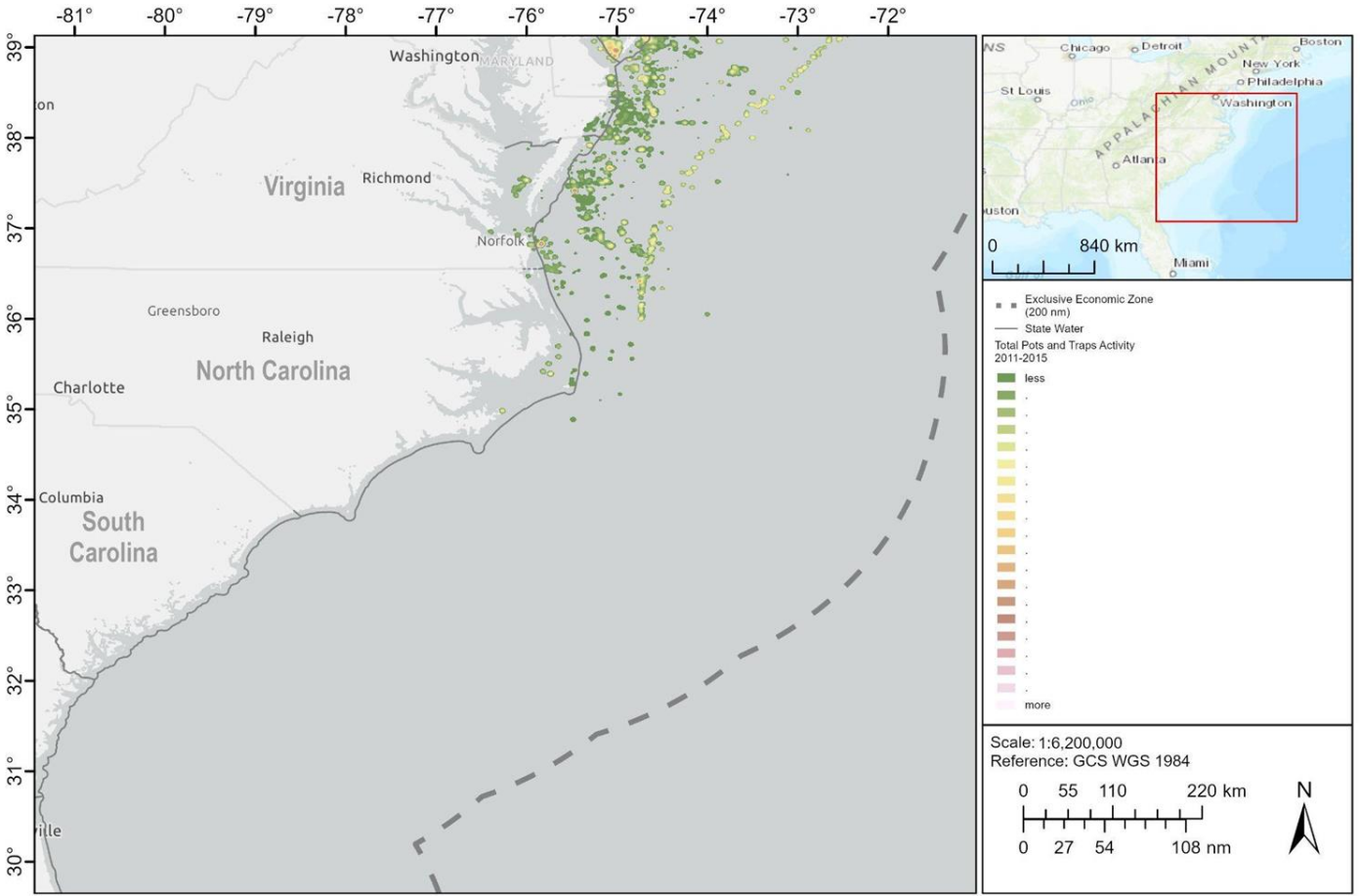
NOAA

Communities at Sea (CAS) -

Total Pots Traps

Description: By integrating Vessel Trip Report (VTR) and permit information, scientists from Rutgers and NOAA created a new database that links fishing port communities to the places at sea where they spend the most time. Regional maps show where fishing occurred with different gear types—bottom trawl, dredge, gillnet, longline, or pots and traps.

- **Original Source:** NOAA Fisheries
- **Download Source:** Northeast Ocean Data Portal
- Data Link



BOEM Bureau of Ocean Energy Management

NOAA

Additional Fishery Dependent Surveys

- **Source:** NOAA Fisheries

- Large Pelagics Survey:
  - Intercept Survey collects catch data from a random sample of private and charter boat operators to produce species-specific estimates of catch per vessel trip.
  - Telephone Survey collects effort data from a sample of the permitted vessels to produce estimates of the number of vessel trips on which anglers fished with hand-gear.
  - Biological Survey collects length and weight data and biological samples (e.g., otoliths, muscle tissue, first dorsal spines, and gonads) for Atlantic bluefin tuna.

- HMS logbook survey: commercial fishery logbook reporting for Highly Migratory Species

- Menhaden Captain's Daily Fishing Reports (CDFR): monitoring and sampling commercial fisheries for Atlantic menhaden, including captain's daily fishing reports and biological samples (fish length, age, weight) from purse seine catches of menhaden.

BOEM Bureau of Ocean Energy Management

NOAA

South Carolina - Shellfish

SC Monitoring Stations - Shellfish: includes information on monitoring stations, management areas, and corresponding Hydrologic Unit Codes.

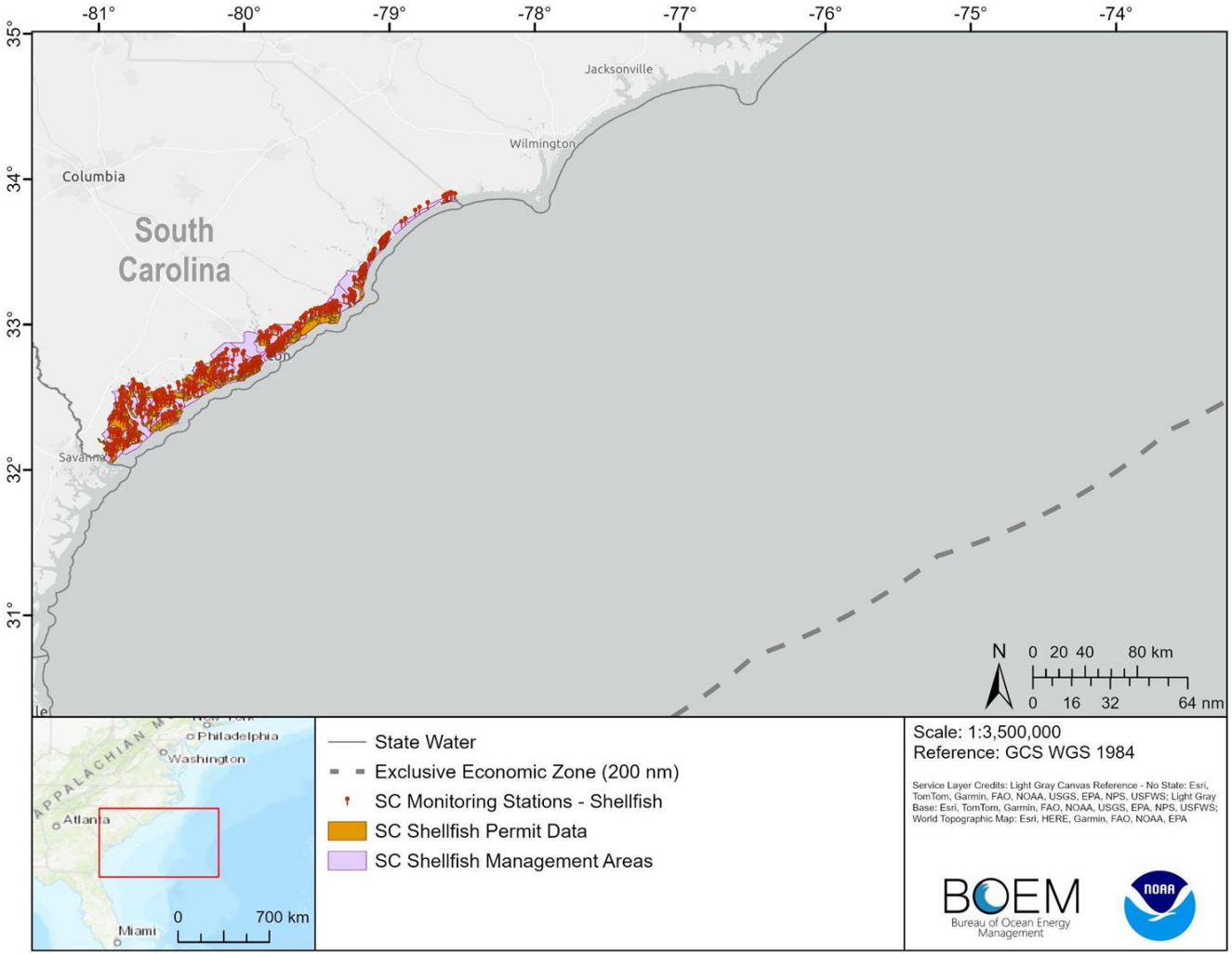
- **Original Source:** South Carolina Department of Health and Environment Control
- Data Link

SC Shellfish Permit Data: shellfish permit type and location.

- **Original Source:** South Carolina Department of Natural Resources
- Data Link

SC Shellfish Management Areas: extent, acreages, hectares, and management areas.

- **Original Source:** South Carolina Department of Health and Environment Control
- Data Link



North Carolina Shellfish

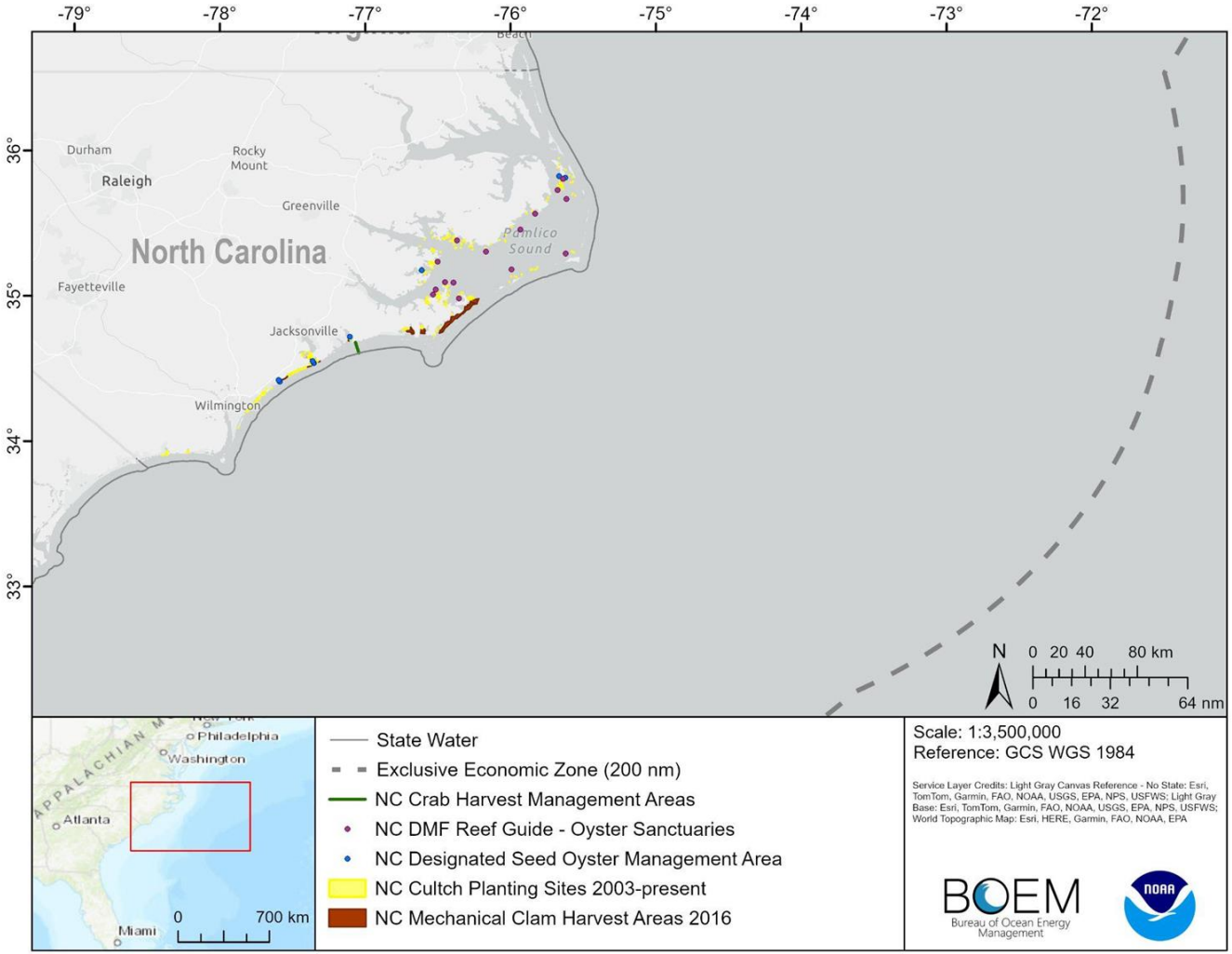
NC Crab Harvest Management Areas: Line Demarcation
- **Original Source:** North Carolina Department of Environmental Quality
- Data Link

NC Division of Marine Fisheries (DMF) Reef Guide - Oyster Sanctuaries: Locations of material deployed in Artificial Reefs and Oyster Sanctuaries by the NC DMF.
- **Original Source:** NC DMF, North Carolina Department of Environmental Quality
- Data Link / Metadata

NC Designated Seed Oyster Management Area:
- **Original Source:** North Carolina Department of Environmental Quality
- Data Link

NC Cultch Planting Sites 2003 to Present: cultch planting sites from 1981-present. For more information please contact NC Marine Fisheries Habitat Enhancement Section: 252-726-7021. DMF strives to ensure the accuracy of spatial data. However, the data from 1981 - 2002 was originally recorded on Loran.
- **Original Source:** NC DMF, North Carolina Department of Environmental Quality
- Data Link

NC Mechanical Clam Harvest Areas 2016: Mechanical Clam Harvest Areas. Updated 2021
- **Original Source:** North Carolina Department of Environmental Quality
- Data Link



Virginia - Shellfish

Summary: shellfish data in the Chesapeake Bay

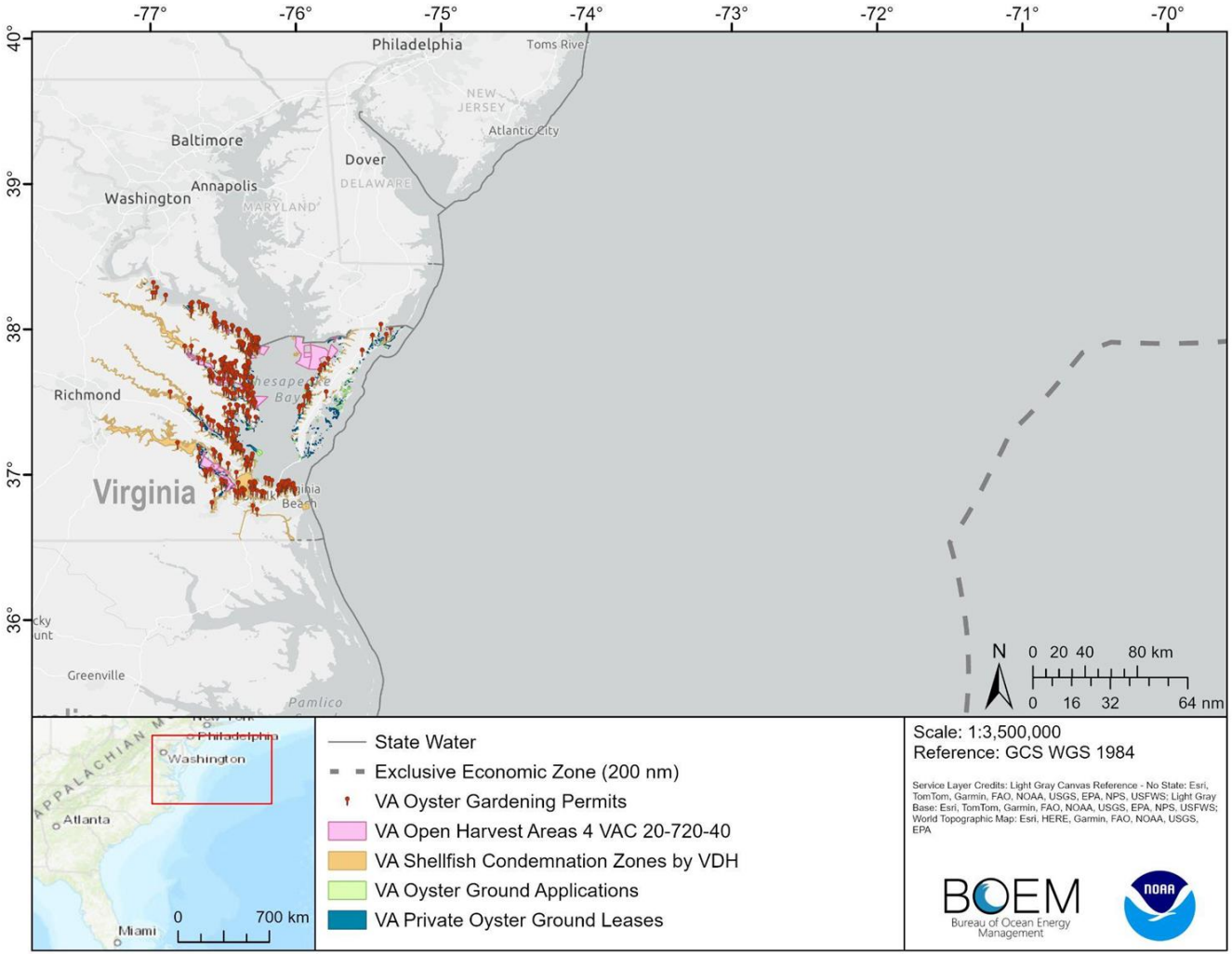
VA Oyster Gardening Permits:
- **Original Source:** Virginia Marine Resources Commission
- Data Link

VA Open Harvest Areas 4 VAC 20-720-40:
- **Original Source:** Virginia Marine Resources Commission
- Data Link

VA Shellfish Condemnation Zones by VDH:
- **Original Source:** Virginia Marine Resources Commission
- Data Link

VA Oyster Ground Applications:
- **Original Source:** Virginia Marine Resources Commission
- Data Link

VA Private Oyster Ground Leases:
- **Original Source:** Virginia Marine Resources Commission
- Data Link



North Carolina - Marine Fisheries Rules Database

Prohibited Areas

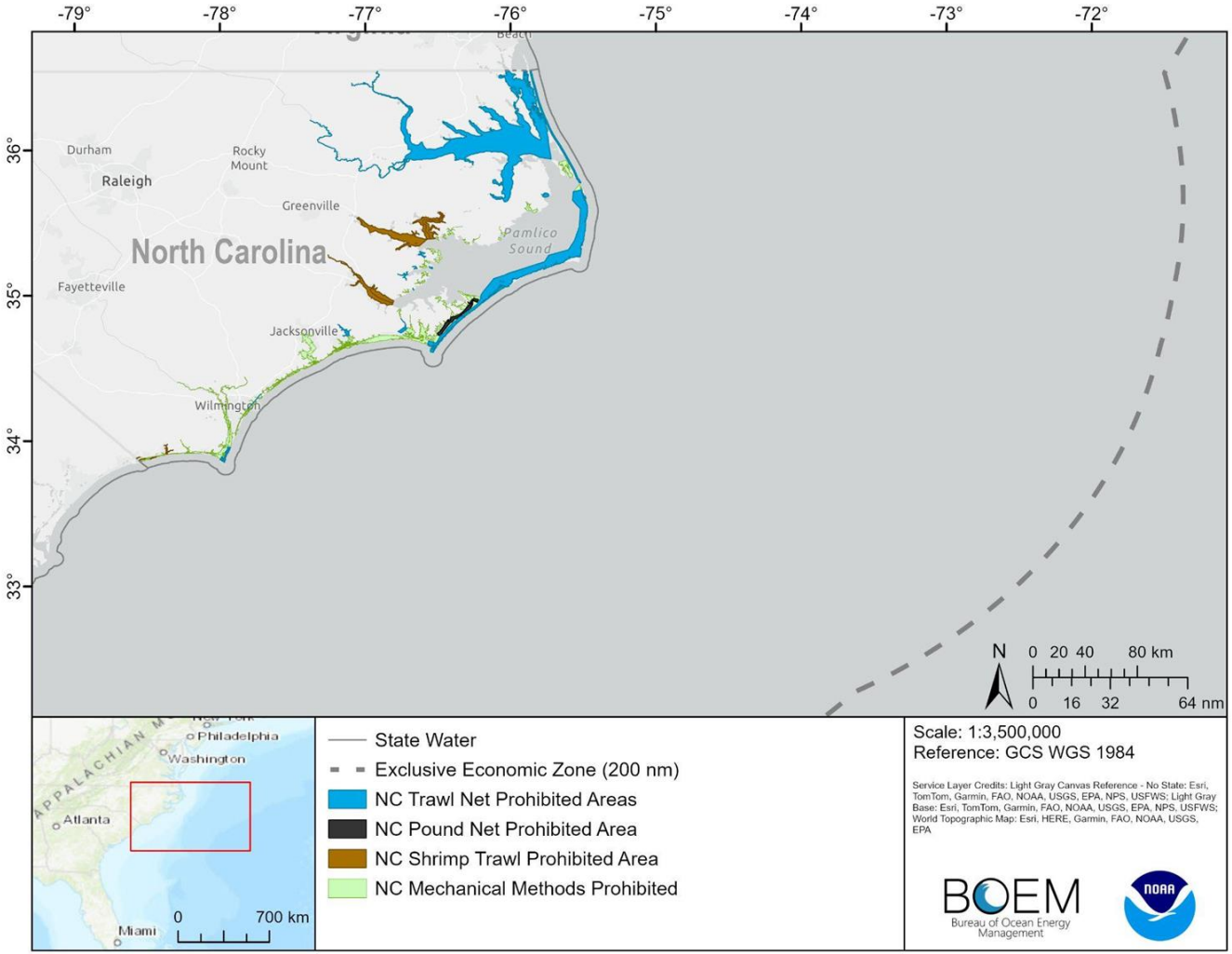
Rules: The N.C. Marine Fisheries Commission adopts rules governing activities impacting marine and estuarine resources in coastal and joint fishing waters, including the brackish waters of the State's rivers and their tributaries, sounds and bays, and in saltwater extending out to three miles offshore in the Atlantic Ocean. Another tool the state uses to manage fisheries is the proclamation. The Marine Fisheries Commission has the authority to delegate to the fisheries director the ability to issue public notices, called proclamations, suspending or implementing particular commission rules that may be affected by variable conditions. The proclamation authority granted to the fisheries director includes the ability to open and close seasons and fishing areas, set harvest and gear limits, and establish conditions governing various fishing activities. Proclamation authority and proclamation measures are codified in rules.

NC Trawl Net Prohibited Areas:
- **Original Source:** North Carolina Department of Environmental Quality
- Data Link

NC Pound Net Prohibited Area:
- **Original Source:** North Carolina Department of Environmental Quality
- Data Link

NC Shrimp Trawl Prohibited Area:
- **Original Source:** North Carolina Department of Environmental Quality
- Data Link

NC Mechanical Methods Prohibited:
- **Original Source:** North Carolina Department of Environmental Quality
- Data Link



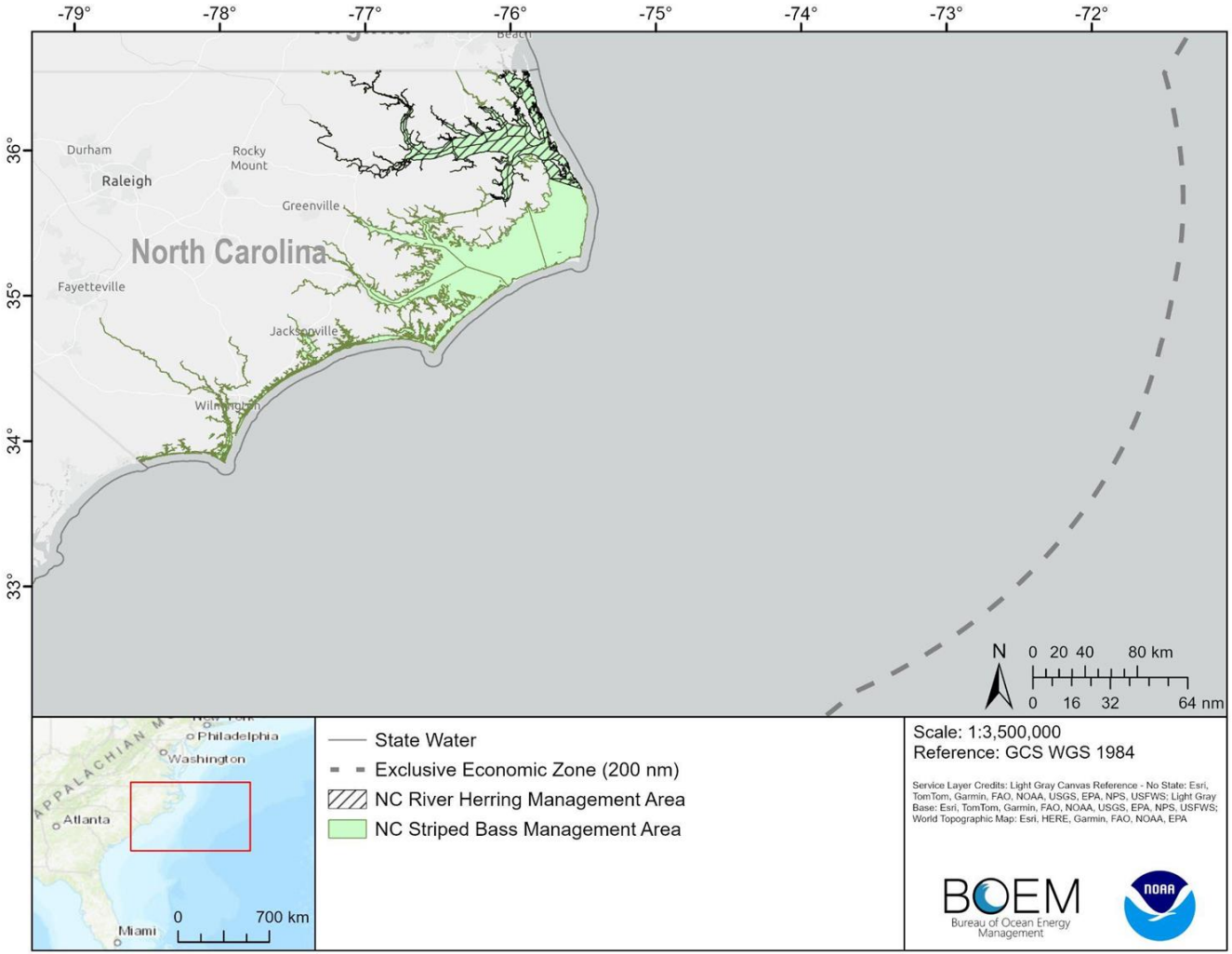
North Carolina - Fish Management Areas

NC River Herring Management Area: includes extent, location names, rule names, and more.

- **Original Source:** North Carolina Department of Environmental Quality
- Data Link

Striped Bass Herring Management Area: includes extent, area size, rule name, location names, and more.

- **Original Source:** North Carolina Department of Environmental Quality
- Data Link



Fishing Gear Areas

NC Crab Trawl Line : extent of trawl line.

- **Original Source:** NC Department of Environmental Quality
- Data Link

Lobster Gear Areas: four gear areas are: Gulf of Maine Gear Area, Georges Bank Gear Area, Mid-Atlantic Gear Area, and Southern New England Gear Area.

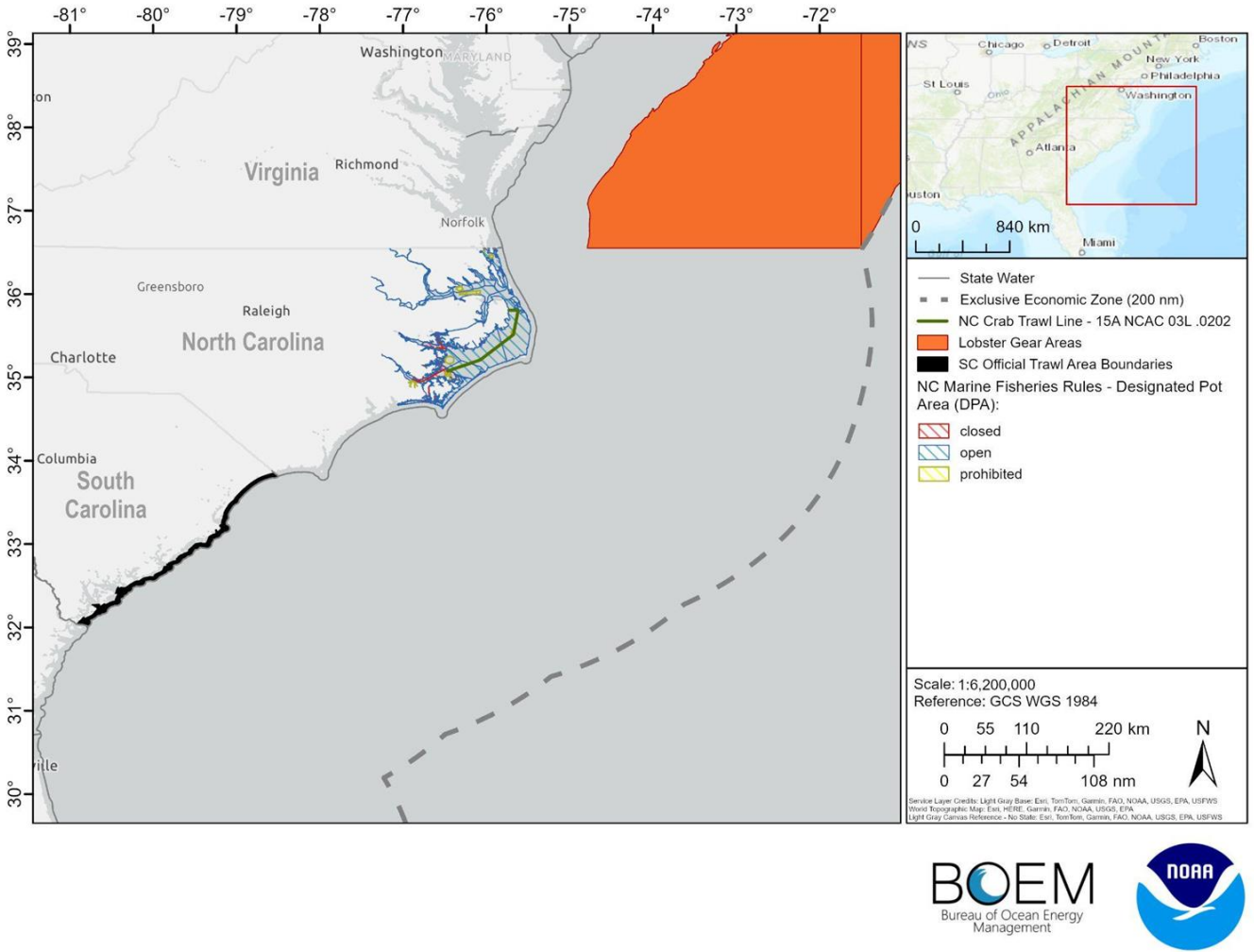
- **Original Source:** NOAA Fisheries
- Data Link / Metadata

SC Official Trawl Area Boundaries: Official regulatory boundaries for trawling within South Carolina state waters - SC Code of Laws (Section 50-5-705).

- **Original Source:** South Carolina Department of Natural Resources
- Data Link / Metadata

NC Designated Pot Area (DPA): sublayer of the NC Marine Fisheries Rules Database.

- **Original Source:** NC Department of Environmental Quality
- Data Link



BOEM Bureau of Ocean Energy Management

NOAA

Virginia - Fishery Gears

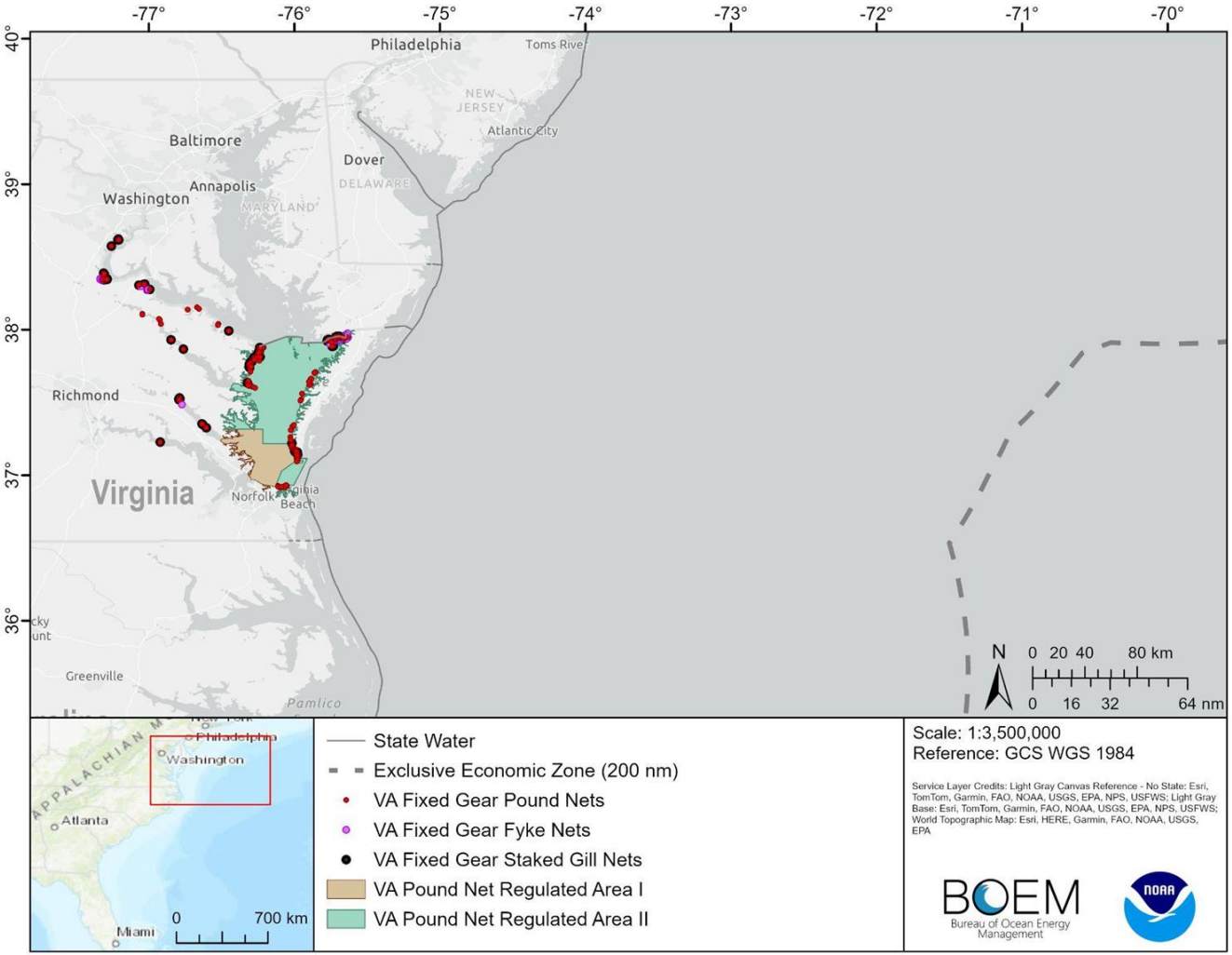
Summary: fishery gear data in the Chesapeake Bay.

VA Fixed Gear: Pound Nets:
- **Original Source:** Virginia Marine Resources Commission
- Data Link

VA Fixed Gear: Fyke Nets:
- **Original Source:** Virginia Marine Resources Commission
- Data Link

VA Fixed Gear: Staked Gill Nets :
- **Original Source:** Virginia Marine Resources Commission
- Data Link

VA Pound Net Regulated Area:
Regulated Areas I and II
- **Original Source:** Virginia Marine Resources Commission
- Data Link



Southern New England (SNE) Gear Restrictions

SNE Regulated Mesh Area: depicts the boundaries of the SNE Regulated Mesh Area.

- **Original Source:** NOAA Fisheries
- Data Link / Metadata

SNE Exemption Area: depicts the SNE Exemption Area in the Greater Atlantic Region.

- **Original Source:** NOAA Fisheries
- Data Link / Metadata

SNE Monkfish and Skate Trawl Exemption Area: depicts the SNE Monkfish and Skate Trawl Exemption Area in the Greater Atlantic Region.

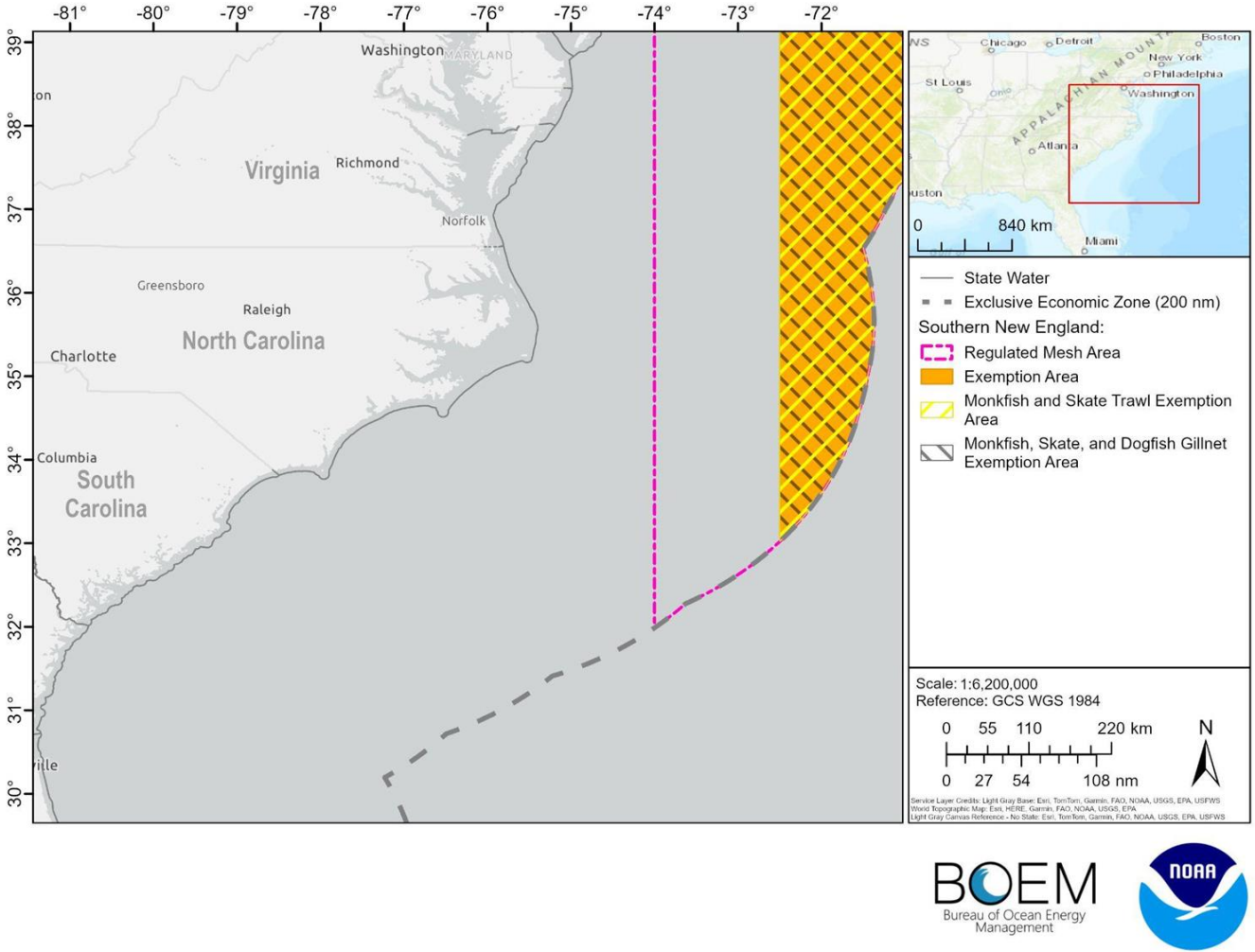
- **Original Source:** NOAA Fisheries
- Data Link / Metadata

SNE Monkfish and Skate Gillnet Exemption Area: depicts the SNE Monkfish and Skate Trawl Exemption Area in the Greater Atlantic Region.

- **Original Source:** NOAA Fisheries
- Data Link / Metadata

SNE Dogfish Gillnet Exemption Area: depicts the boundaries of the SNE Dogfish Gillnet Exemption Area.

- **Original Source:** NOAA Fisheries



BOEM Bureau of Ocean Energy Management

NOAA

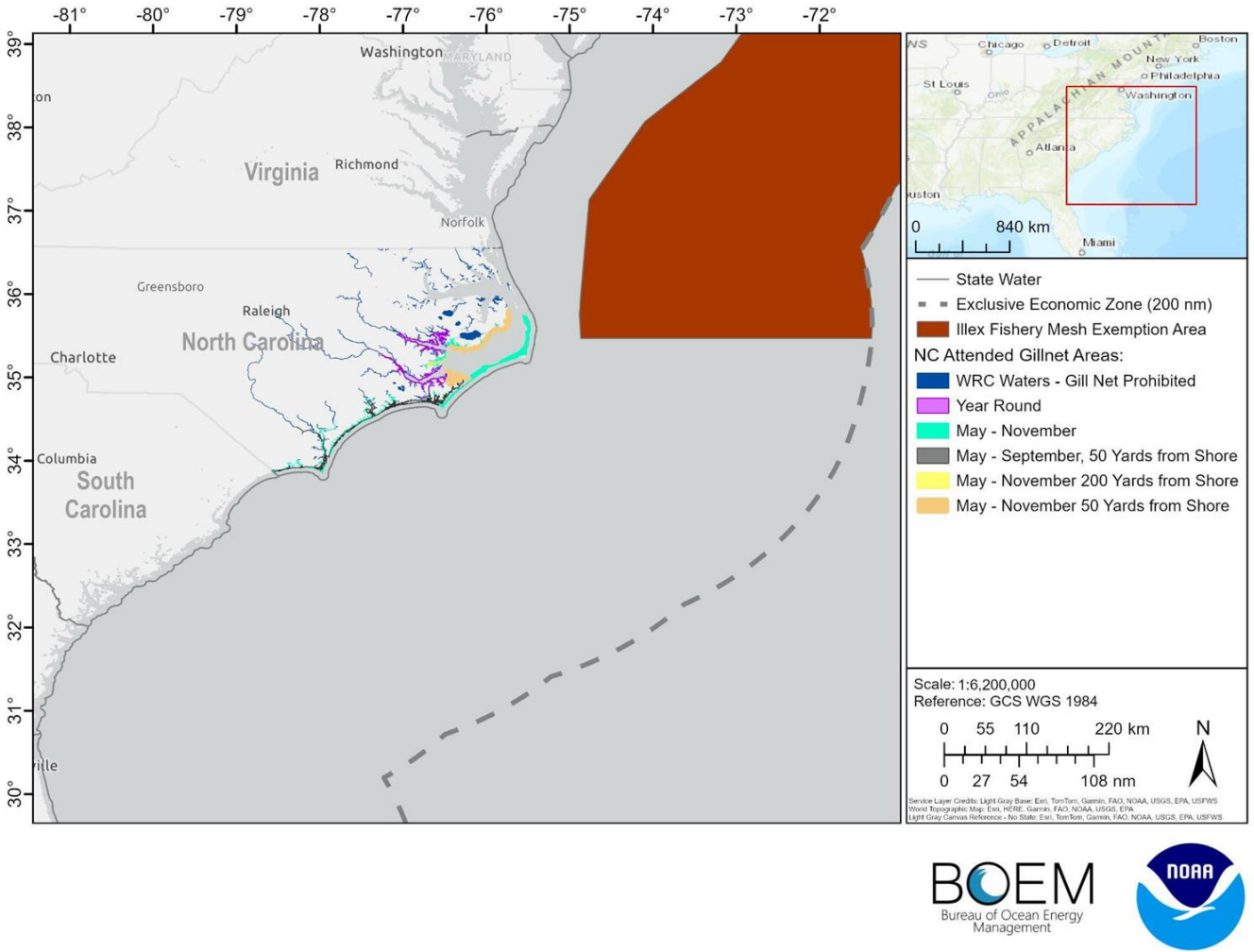
Gear Restrictions

Illex Fishery Mesh Exemption Area: extent in the Greater Atlantic Region.

- **Original Source:** NOAA Fisheries
- Data Link / Metadata

NC Attended Gillnet Areas: periods of attended gillnets

- **Original Source:** North Carolina Department of Environmental Quality
- Data Link



BOEM Bureau of Ocean Energy Management

NOAA

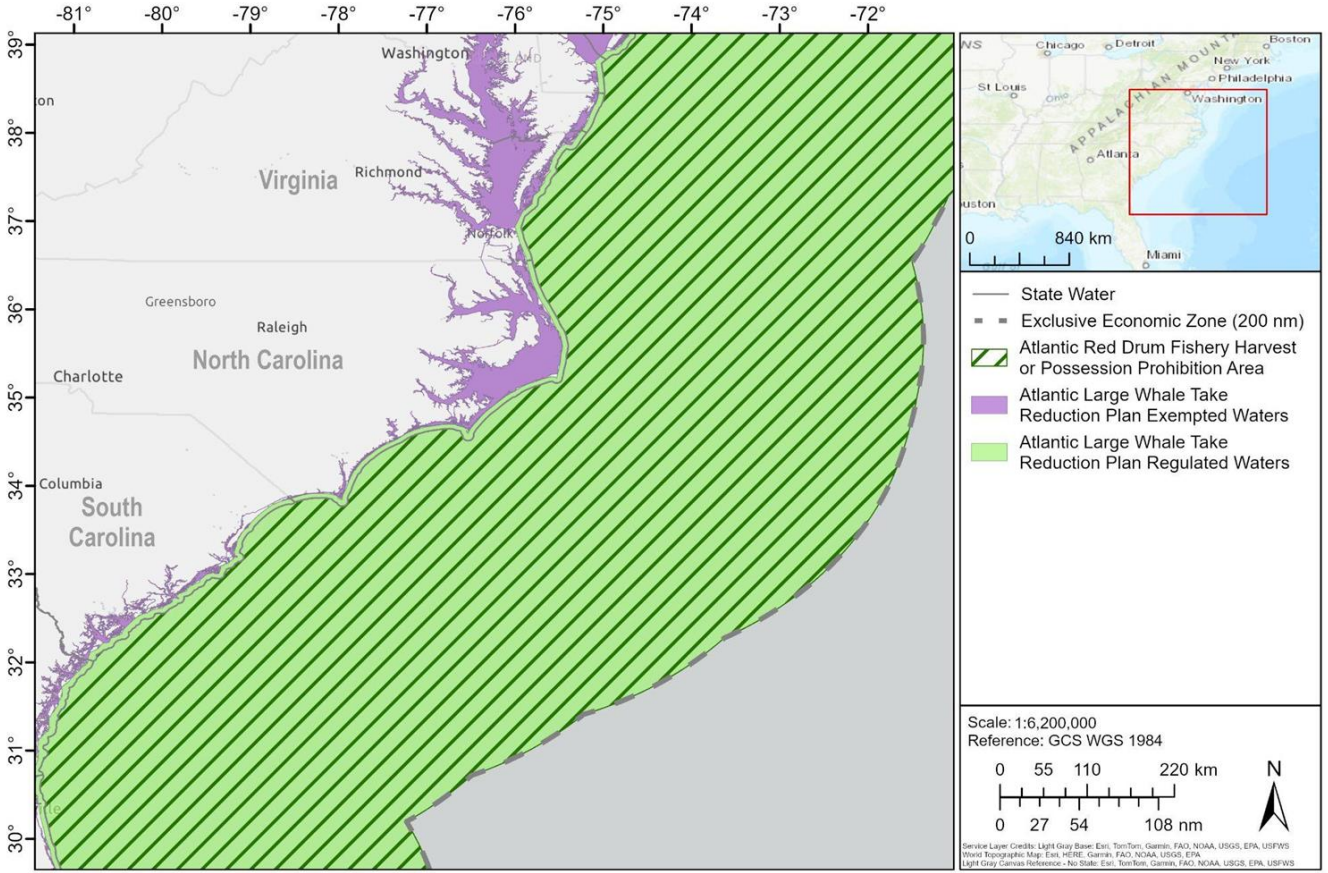
Take and Harvest Regulations

Atlantic Red Drum Fishery Harvest or Possession Prohibition Area: Beginning in 2010 and in response to mounting requests for digital depictions of NMFS Regulated Areas in Northeast and Mid-Atlantic Waters (Regulated Areas), the NMFS Greater Atlantic Regional Fisheries Office (GARFO) Geographic Information Systems (GIS) Committee launched a project to standardize the development, publication and regular updating of GIS files depicting Regulated Area boundaries. This dataset is a product of that initiative.

- **Original Source:** NOAA Fisheries
- Data Link / Metadata

Atlantic Large Whale Take Reduction: NOAA Fisheries implemented the Atlantic Large Whale Take Reduction Plan (ALWTRP) to reduce injuries and deaths of humpback, fin, and right whales due to incidental entanglement in fishing gear from Maine to Florida. The ALWTRP is an evolving plan that changes as NOAA Fisheries learns more about why whales become entangled and how fishing practices might be modified to reduce the risk of entanglement.

- **Original Source:** NOAA Fisheries
- **Download Source:** Northeast Ocean Data Portal
- Data Link



BOEM Bureau of Ocean Energy Management

NOAA

Coral Habitat Areas of Particular Concern (HAPC) Fishery Management Areas

Blake Ridge Diapir Deepwater Coral HAPC Fishery Management Area:

- **Original Source:** NOAA Fisheries
- Data Link

Stetson-Miami Terrace Deepwater Coral HAPC Fishery Management Area: representing the Stetson Reefs, Savannah and East Florida Lithotherms, and Miami Terrace (Stetson-Miami Terrace) Deepwater Coral (HAPC)

- **Original Source:** NOAA Fisheries
- Data Link

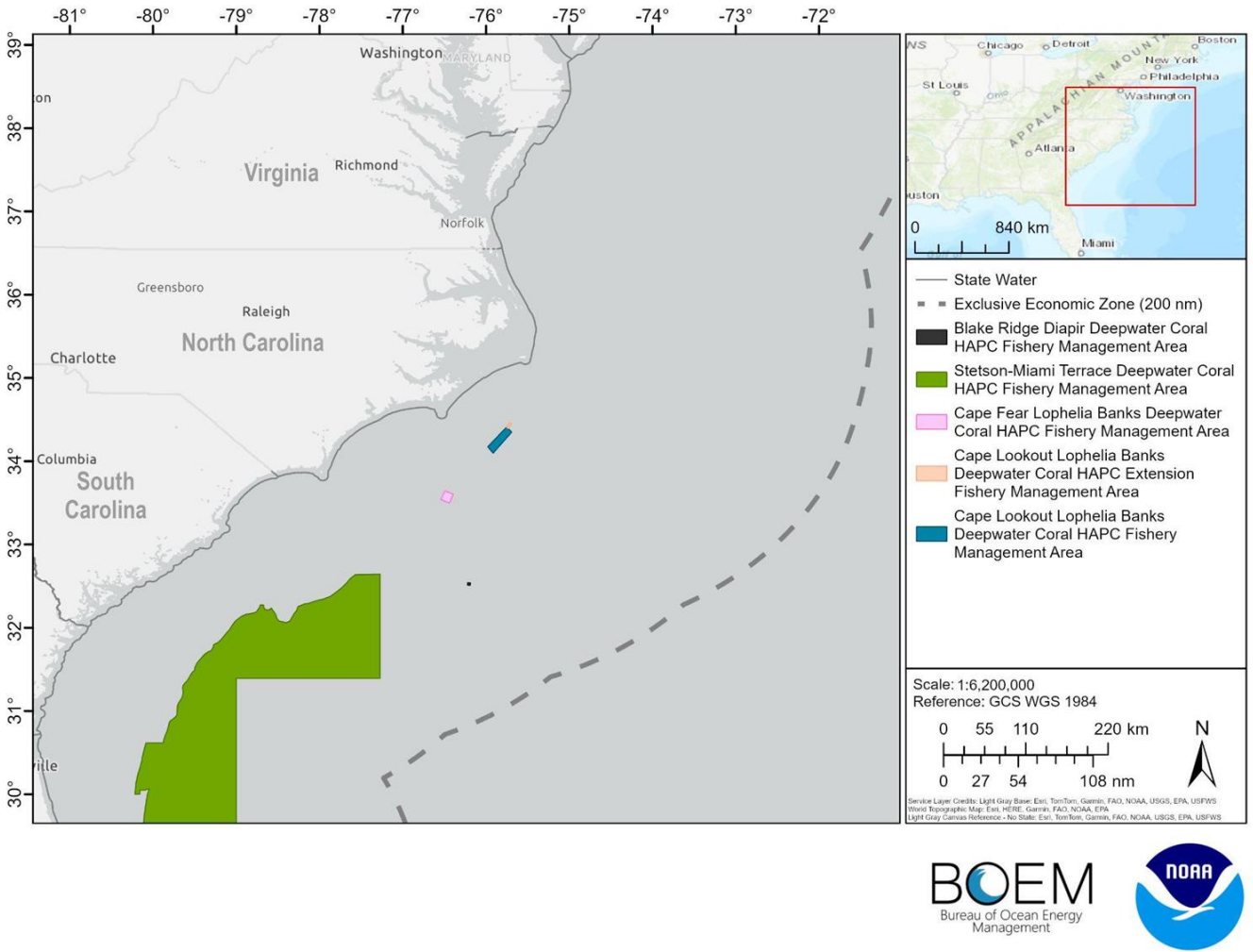
Cape Fear Lophelia Banks Deepwater Coral HAPC Fishery Management Area:

- **Original Source:** NOAA Fisheries
- Data Link

Cape Lookout Lophelia Banks Deepwater Coral HAPC Extension Fishery Management Area:

- **Original Source:** NOAA Fisheries
- Data Link

Cape Lookout Lophelia Banks Deepwater Coral HAPC Fishery Management Area:



BOEM Bureau of Ocean Energy Management

NOAA

Fishery Management Areas

Spawning Special Management Zones (SMZs) Fishery Management Area: spawning SMZs for the snapper-grouper fishery management areas in the South Atlantic Region.

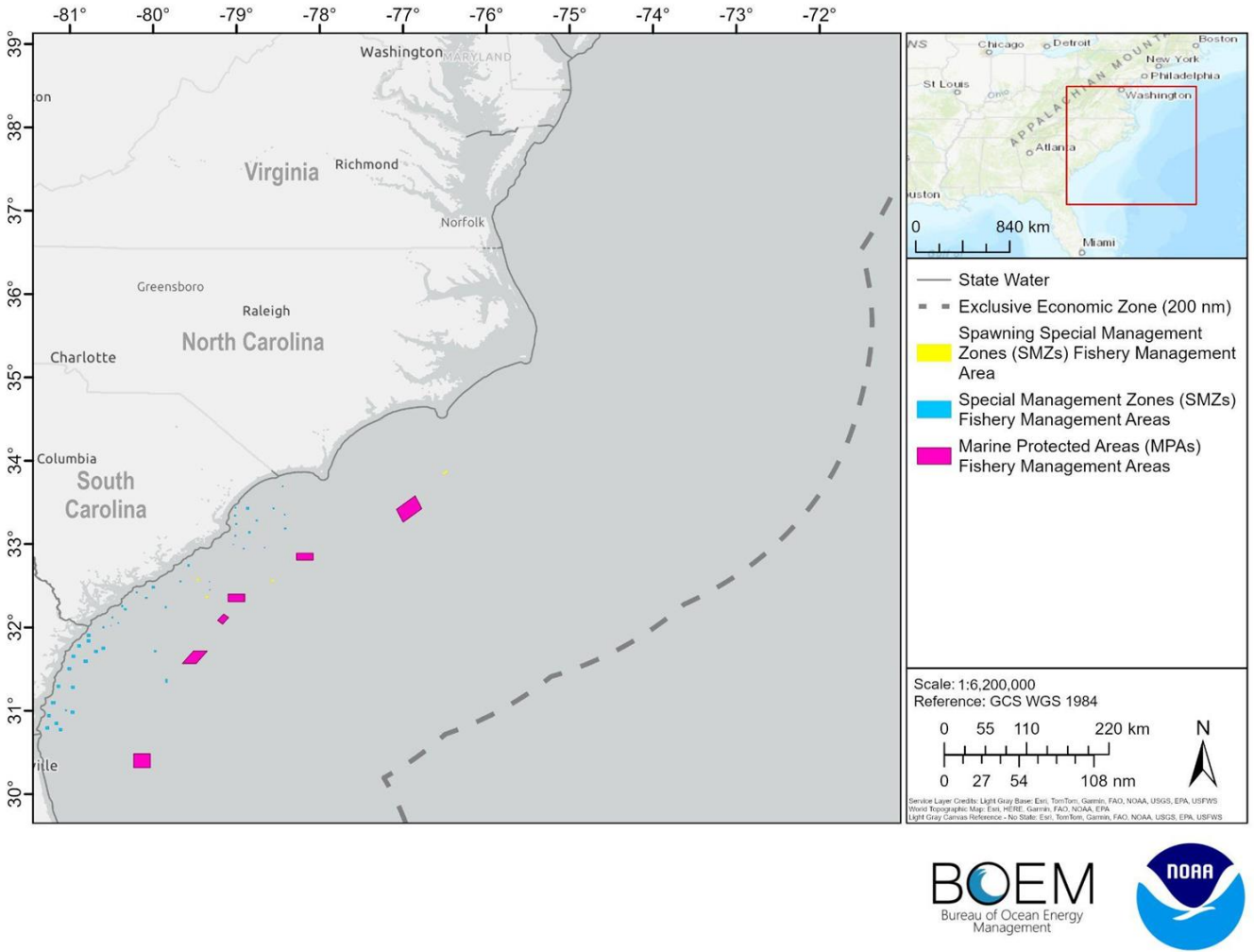
- **Original Source:** NOAA Fisheries
- Data Link

Special Management Zones (SMZs) Fishery Management Areas:

- **Original Source:** NOAA Fisheries
- Data Link

Marine Protected Areas (MPAs) Fishery Management Areas: MPAs for the snapper-grouper fishery management areas in the South Atlantic Region.

- **Original Source:** NOAA Fisheries
- Data Link



BOEM Bureau of Ocean Energy Management

NOAA

Fishery Management Areas

Charleston Bump Closed Area Fishery Management Area: pelagic longline closed area fishery management area in the South Atlantic Region.

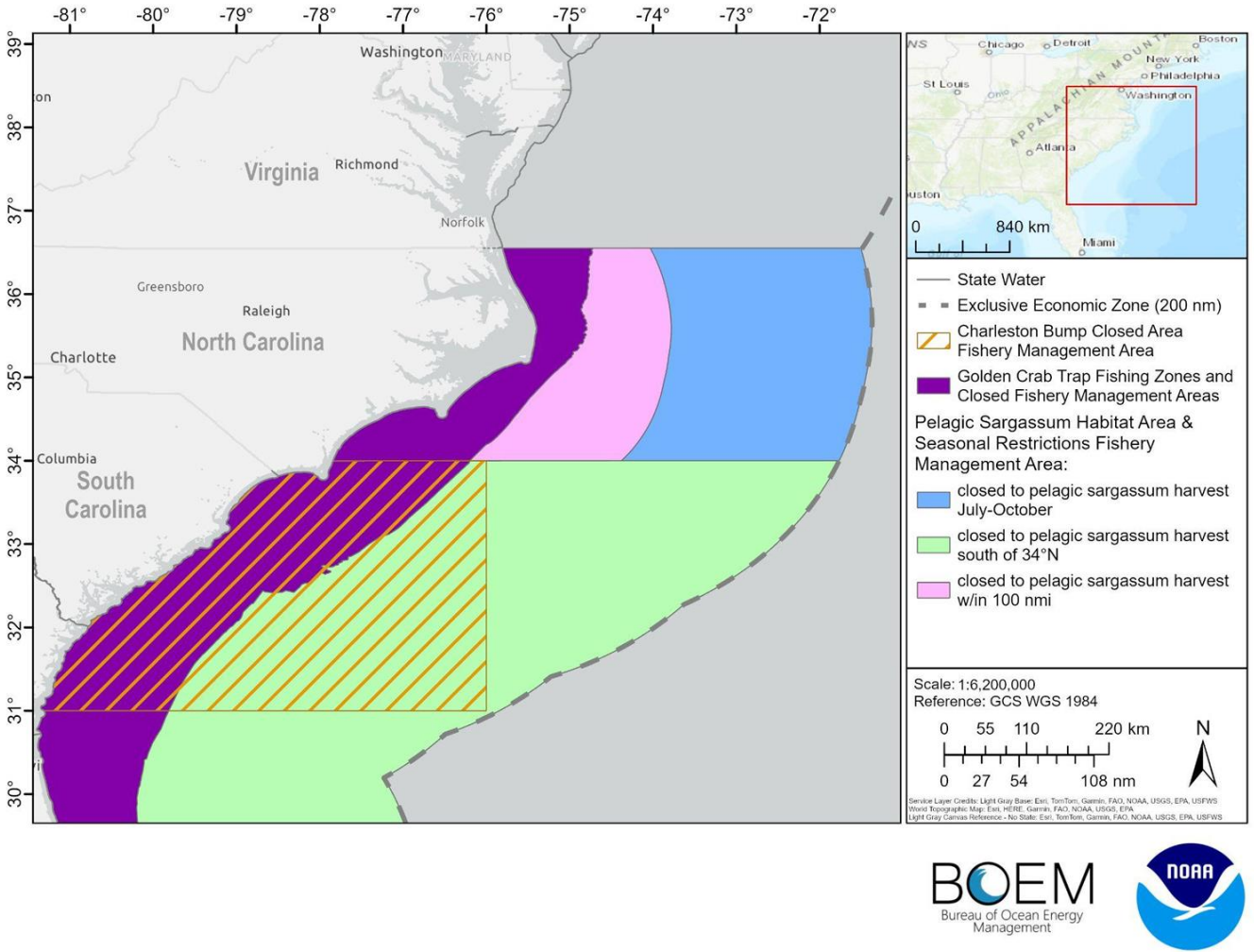
- **Original Source:** NOAA Fisheries
- Data Link

Golden Crab Trap Fishing Zones and Closed Fishery Management Areas: controlled access fishing zones and closed areas in the South Atlantic Region.

- **Original Source:** NOAA Fisheries
- Data Link

Pelagic Sargassum Habitat Area & Seasonal Restrictions Fishery Management Area: pelagic sargassum habitat area and seasonal harvest restrictions in the South Atlantic Region.

- **Original Source:** NOAA Fisheries
- Data Link



BOEM Bureau of Ocean Energy Management

NOAA

Fishery Management Areas

Longline Prohibited Areas Fishery Management Areas: longline prohibited gear-restricted areas for the snapper-grouper fishery management areas in the South Atlantic Region.

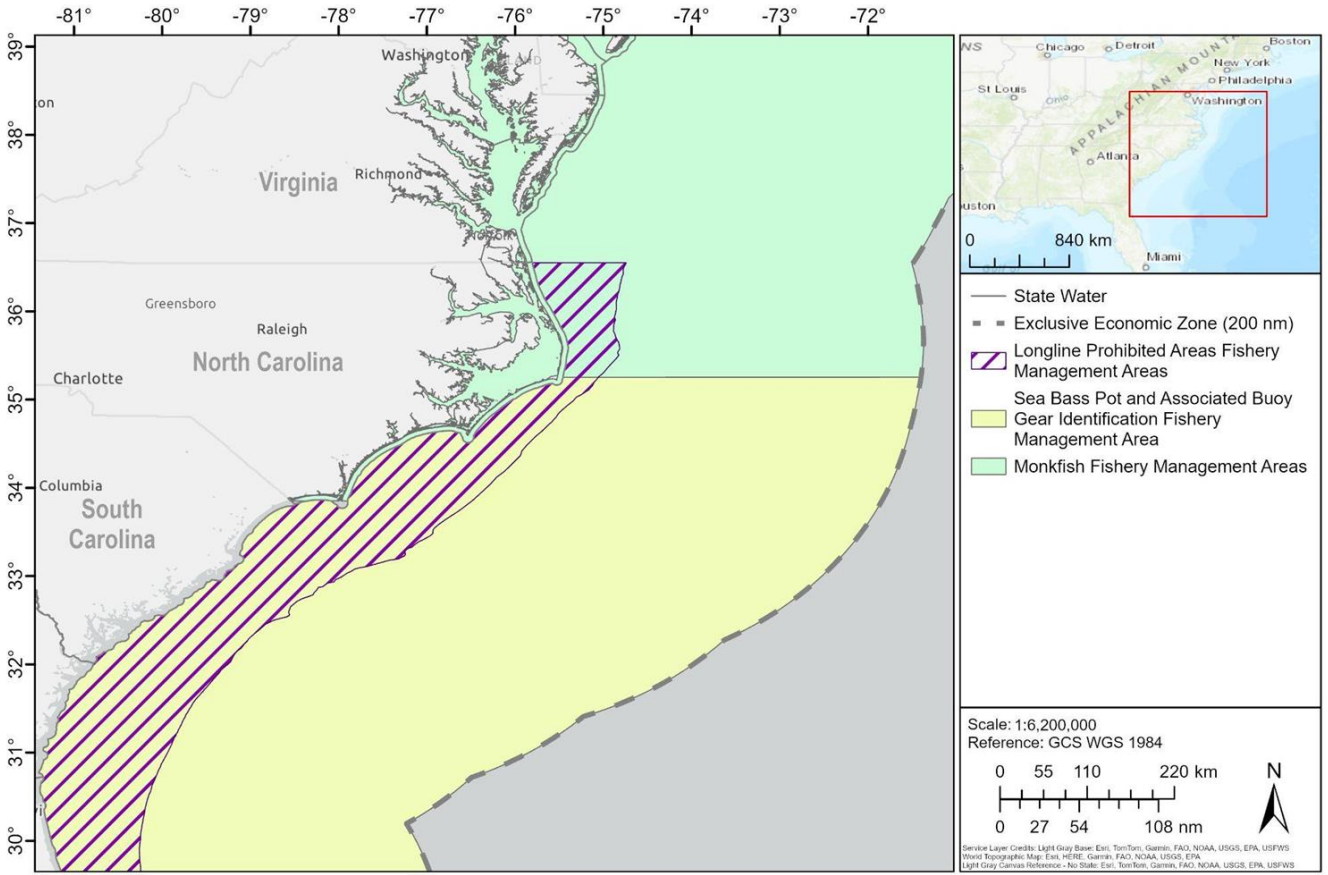
- **Original Source:** NOAA Fisheries
- Data Link

Sea Bass Pot and Associated Buoy Gear Identification Fishery Management Area: sea bass pots and associated buoys gear identification area for the snapper-grouper fishery management area in the South Atlantic Region.

- **Original Source:** NOAA Fisheries
- Data Link

Monkfish Fishery Management Areas: includes boundaries for the following Regulated Areas: Northern Fishery Management Area, Southern Fishery Management Area

- **Original Source:** NOAA Fisheries
- Data Link



BOEM Bureau of Ocean Energy Management

NOAA

Fishery Closures and Rotations

Commercial Black Sea Bass Pot Closure for November & April Fishery Management Area: seasonal closure of the commercial black sea bass pot component of the snapper-grouper fishery for November 1-30 and April 1-30 in the South Atlantic Region.

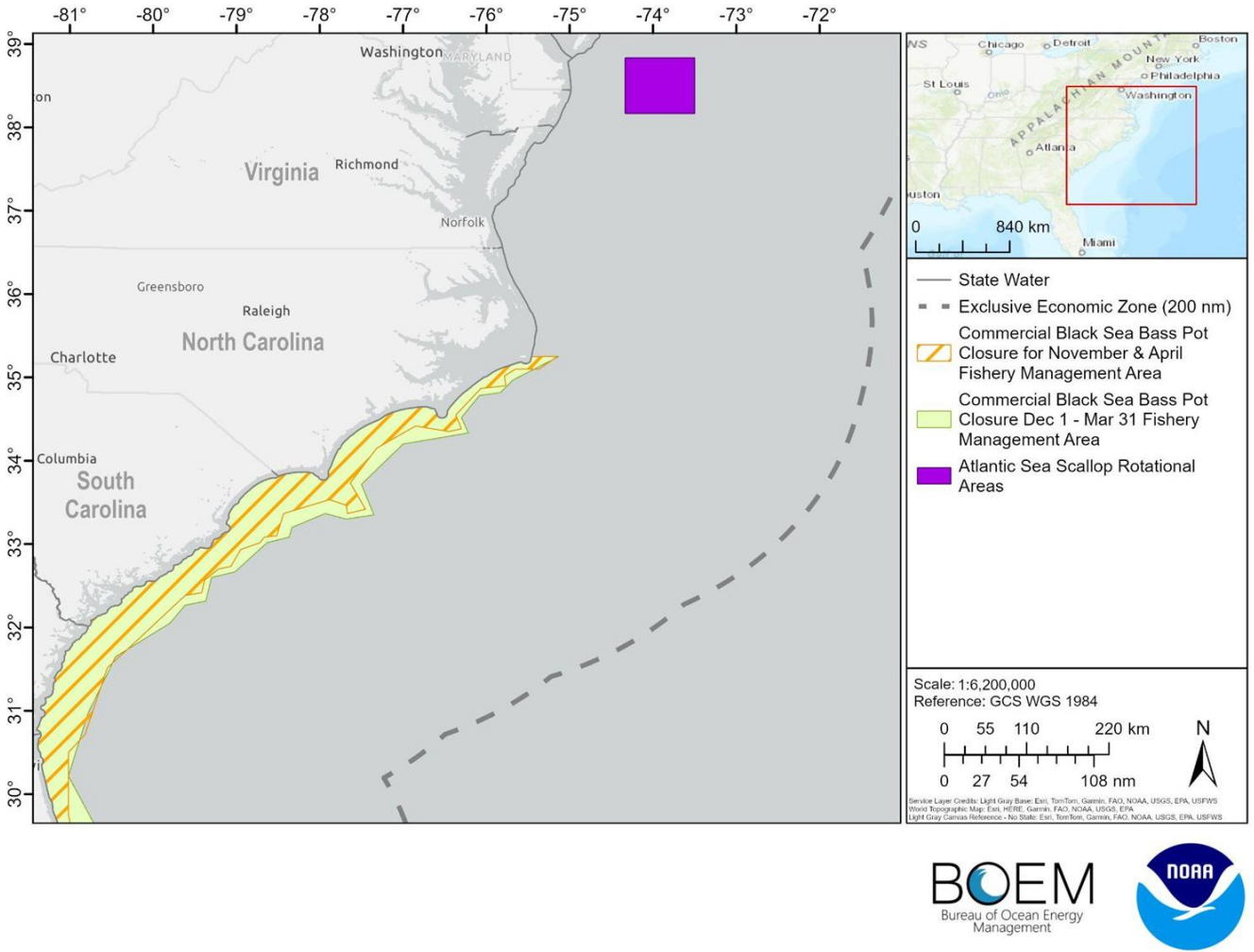
- **Original Source:** NOAA Fisheries
- Data Link

Commercial Black Sea Bass Pot Closure Dec 1 - Mar 31 Fishery Management Area: seasonal closure of the commercial black sea bass pot component of the snapper-grouper fishery from December 1 through March 31 in the South Atlantic Region.

- **Original Source:** NOAA Fisheries
- Data Link

Atlantic Sea Scallop Rotational Areas: This dataset depicts the boundaries of the Atlantic Sea Scallop Managed Waters Fishing Year 2023 in ESRI shapefile format for the NOAA Fisheries Greater Atlantic Regional Fisheries Office (GARFO). These areas are part of the scallop access area rotational program - when the area is open, vessels are allocated a specific number of trips in a given fishing year into the area. This shapefile includes boundaries for the following Regulated Areas: Area II Scallop Rotational Area, Nantucket Lightship North Scallop Rotational Area, Area I Scallop Rotational Area, New York Bight Scallop Rotational Area, Nantucket Lightship West Scallop Rotational Area, Elephant Trunk Scallop Rotational Area.

- **Original Source:** NOAA Fisheries
- Data Link / Metadata



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NOAA

Fishery Restrictions

Summary: The South Atlantic Fishery Management Council's (SAFMC) role is to develop fishery management plans needed to manage fishery resources within the Exclusive Economic Zone (EEZ) extending from state waters (three miles in the south Atlantic) to 200 nautical miles. The 1996 Sustainable Fisheries Act (SFA) was passed by Congress to protect marine fish stocks with requirements to prevent and stop overfishing, minimize bycatch, and protect habitat.

Octocoral Gear Restrictions:

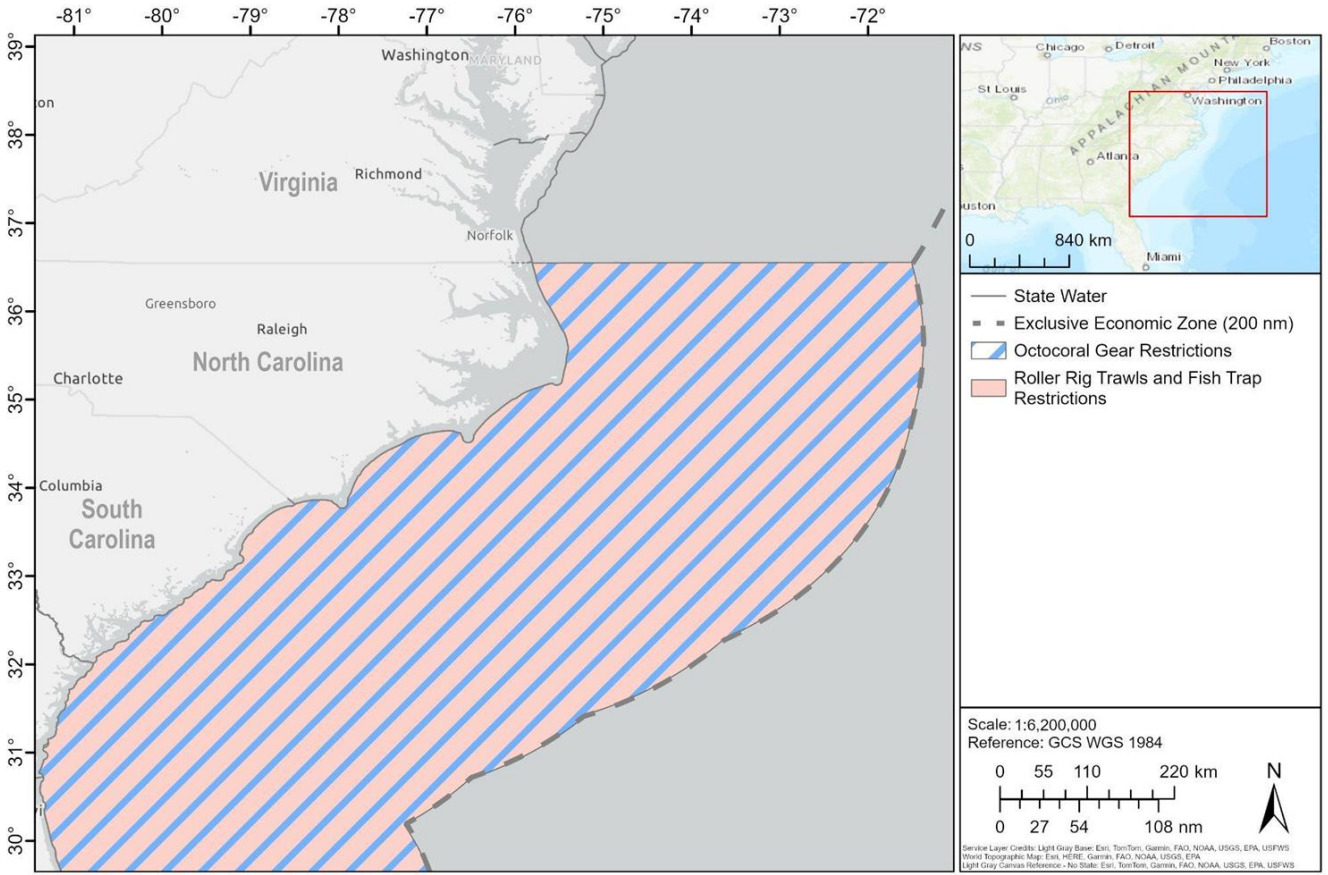
- **Original Source:** FWC, FWRI ISM, SAFMC
- **Download Source:** SECOORA
- Data Link / Metadata

Roller Rig Trawls Restrictions:

- **Original Source:** Florida Fish and Wildlife Conservation Commission (FWC) Fish and Wildlife Research Institute (FWRI) Information Science and Management (ISM), South Atlantic Fishery Management Council (SAFMC)
- **Download Source:** SECOORA
- Data Link / Metadata

Fish Traps Restrictions:

- **Original Source:** FWC, FWRI ISM, SAFMC
- **Download Source:** SECOORA
- Data Link / Metadata



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NOAA

Fishery Restrictions

SAFMC Restrictions: combination of various gear and species restrictions in SAFMC's jurisdiction

- **Original Source:** SAFMC
- **Download Source:** Tina.Udouj (AGOL)
- Data Link

Bottom Longlines Restrictions:

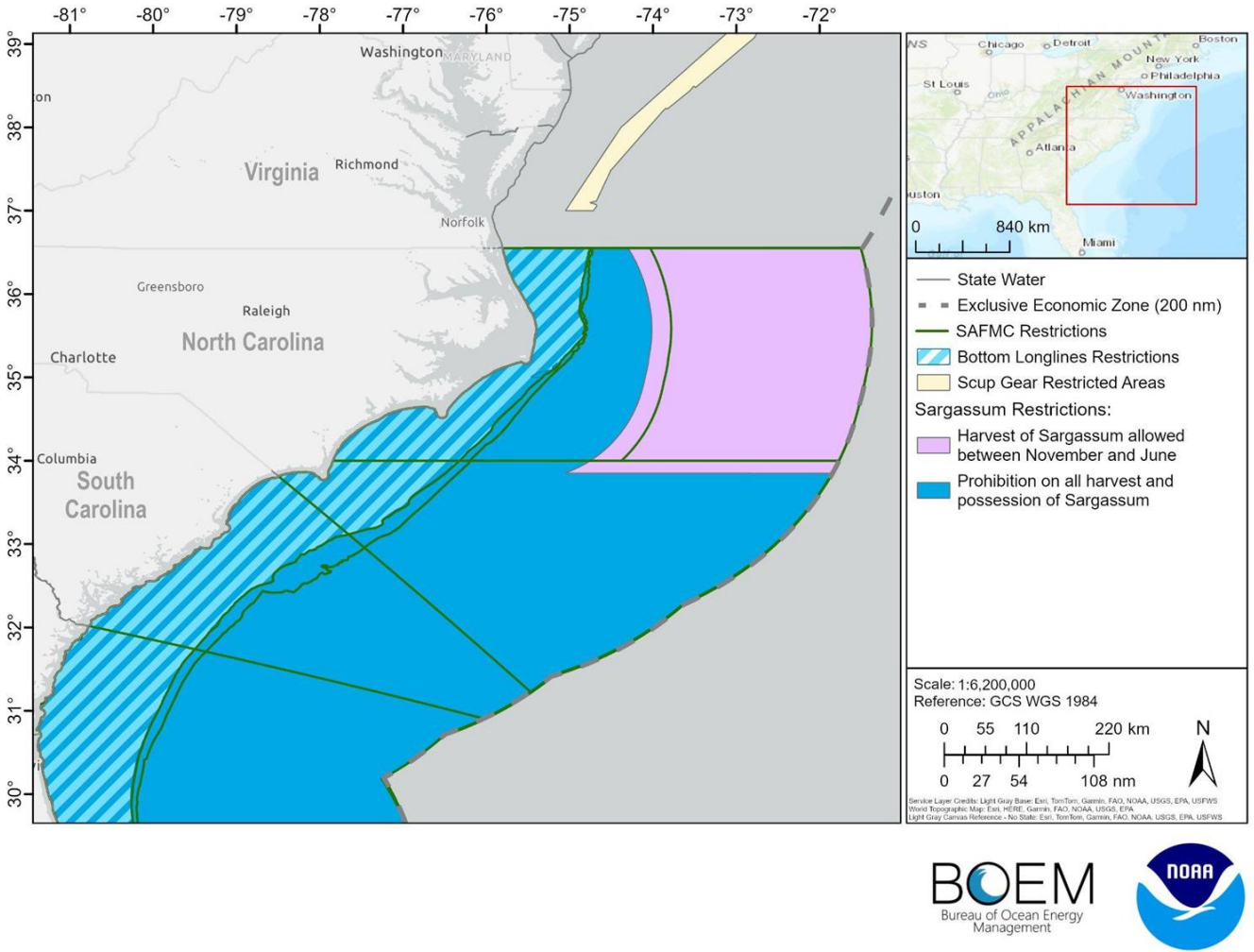
- **Original Source:** FWC, FWRI ISM, SAFMC
- **Download Source:** SECOORA
- Data Link / Metadata

Scup Gear Restricted Areas: depicts the boundaries of the Scup Gear Restricted Areas.

- **Original Source:** NOAA Fisheries
- Data Link / Metadata

Sargassum Restrictions:

- **Original Source:** FWC, FWRI ISM, SAFMC
- **Download Source:** SECOORA
- Data Link / Metadata



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Management Units

Scup Transfer-at-Sea Boundary: dataset depicts the boundaries of the Scup Transfer-at-Sea.

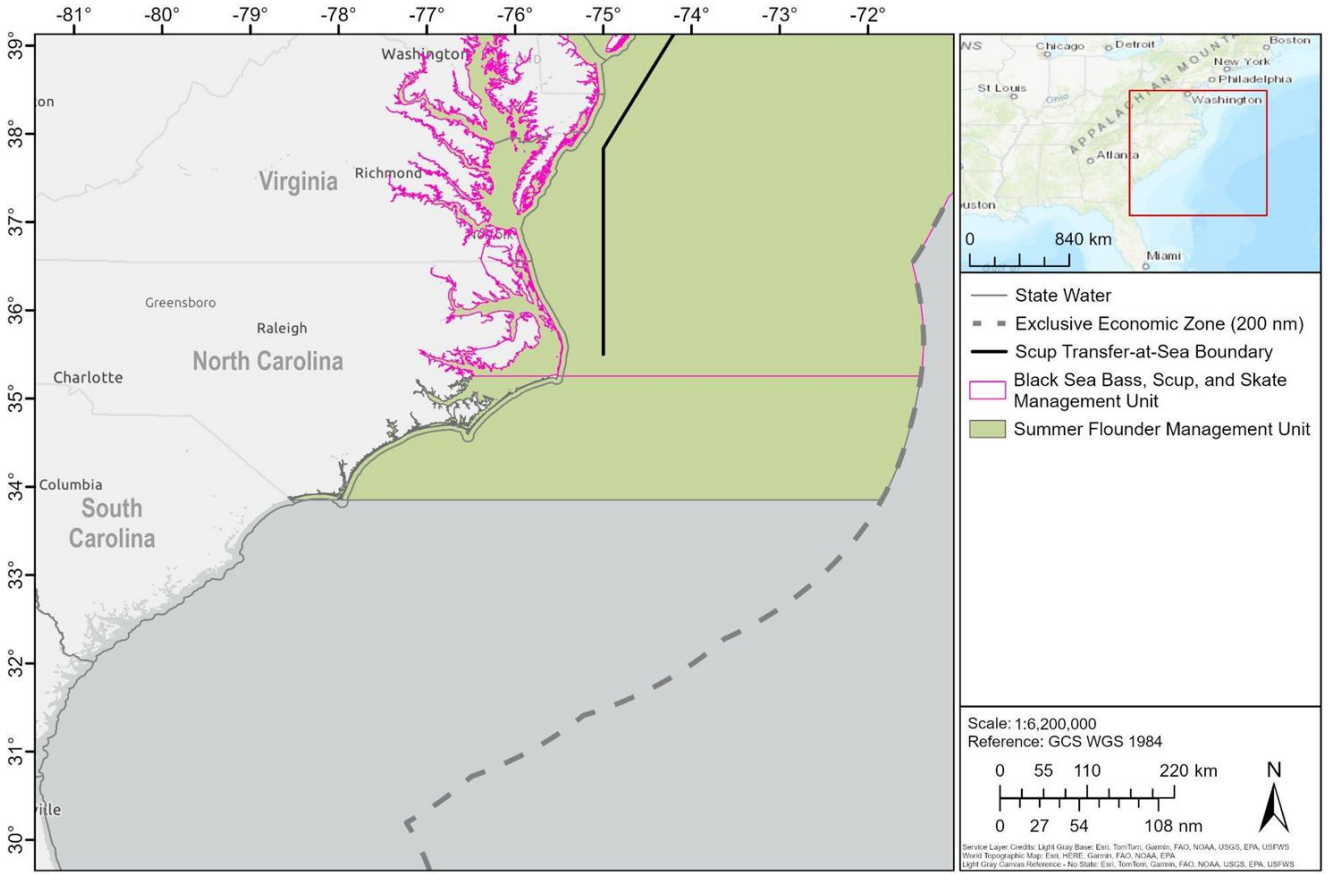
- **Original Source:** NOAA Fisheries
- Data Link / Metadata

Management Units for Summer Flounder, Scup, and Black Sea Bass: depicts the boundaries of the Management Units for Summer Flounder, Scup, and Black Sea Bass.

- **Original Source:** NOAA Fisheries
- Data Link / Metadata

Skate Management Unit: depicts the boundaries of the Skate Management Unit.

- **Original Source:** NOAA Fisheries
- Data Link / Metadata



BOEM Bureau of Ocean Energy Management

NOAA

Public Access

NC WRC Public Fishing Areas: Point locations of Public Fishing Areas (PFA) constructed and maintained by the North Carolina Wildlife Resources Commission (NCWRC) and in partnership with other entities. These areas provide free access to public waters in North Carolina for fishing-related activities.

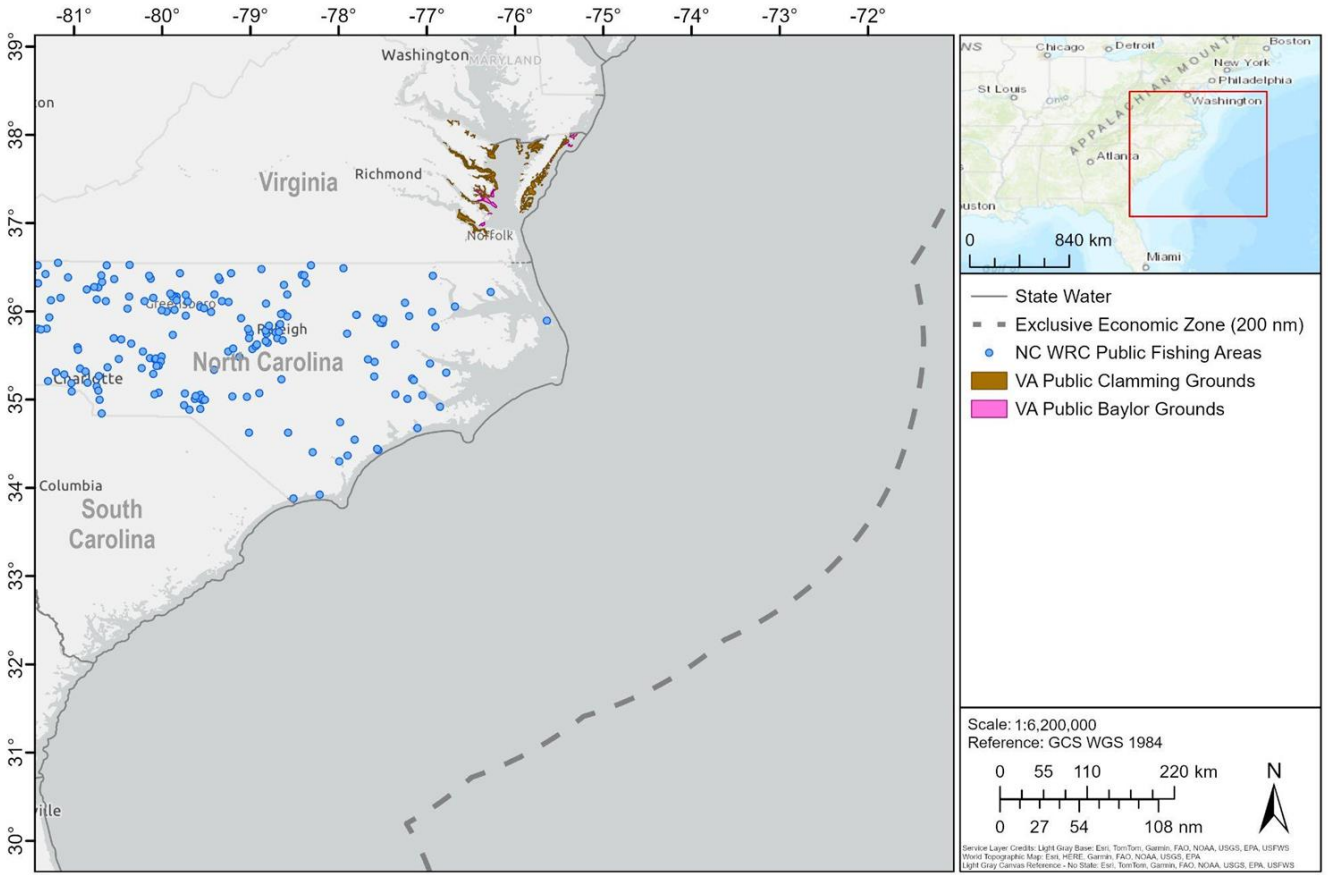
- **Original Source:** North Carolina Wildlife Resources Commission
- Data Link / Metadata

VA Public Clamming Grounds:

- **Original Source:** Virginia Marine Resources Commission
- Data Link

VA Public Baylor Grounds:

- **Original Source:** Virginia Marine Resources Commission
- Data Link



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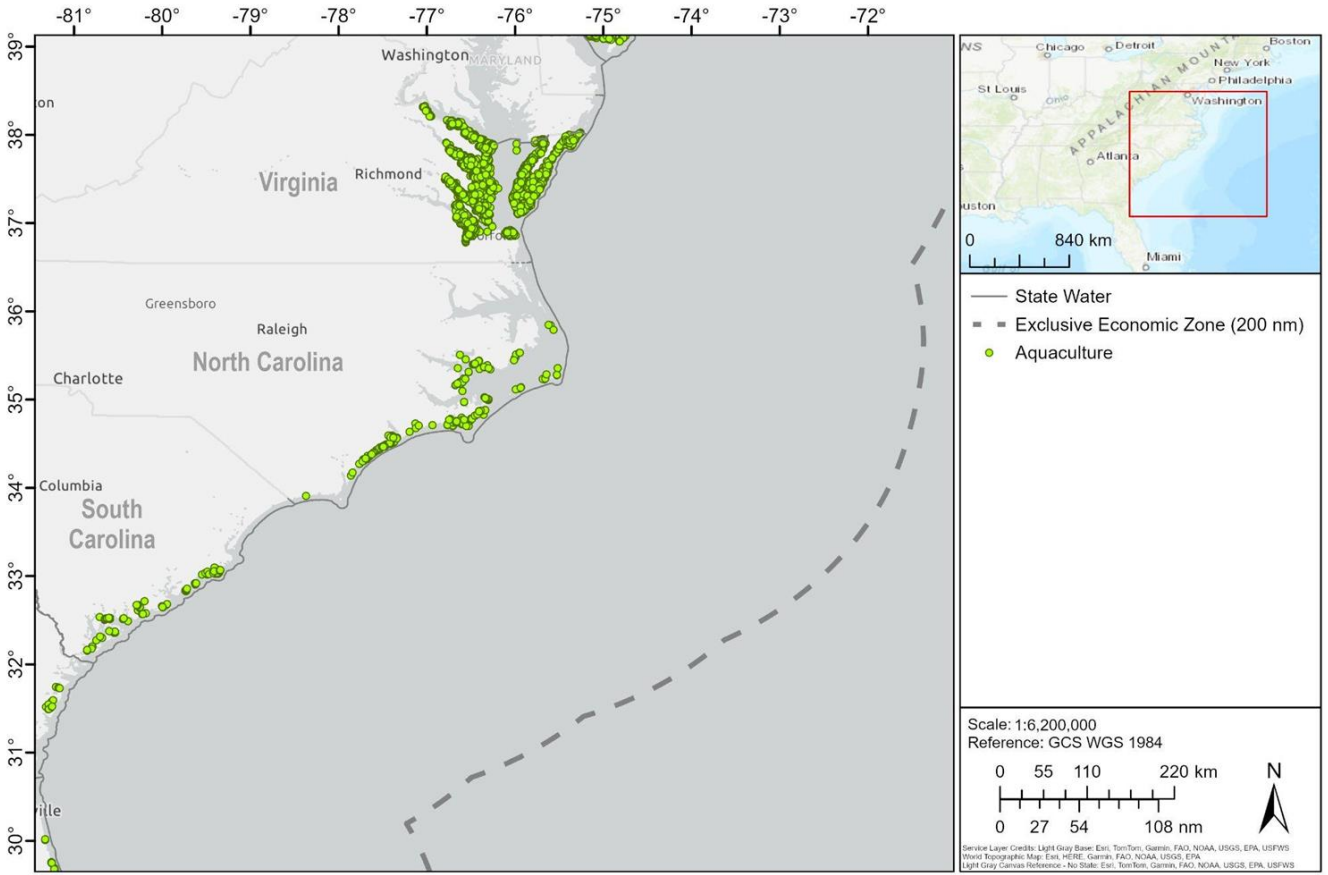
NOAA

Aquaculture

Aquaculture: location of aquaculture operations within coastal and offshore waters of the United States. Aquaculture types may include aquatic organisms such as fish, crustaceans, mollusks, and aquatic plants. Records were acquired from multiple sources, however source data was not available from all coastal states.

- **Original Source:** NOAA Office for Coastal Management
- **Download Source:** Marine Cadastre
- Data Link / Metadata



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NOAA

Cultural and Social Resources

Cultural uses of the environment, social vulnerability, demographic data, archaeological sites

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Virginia Recreation

Virginia Beach Bikeways and Trails

- **Original Source:** City of Virginia Beach Parks & Recreation Department Planning, Design & Development Division
- Data Link / Metadata Link

Fishing Piers

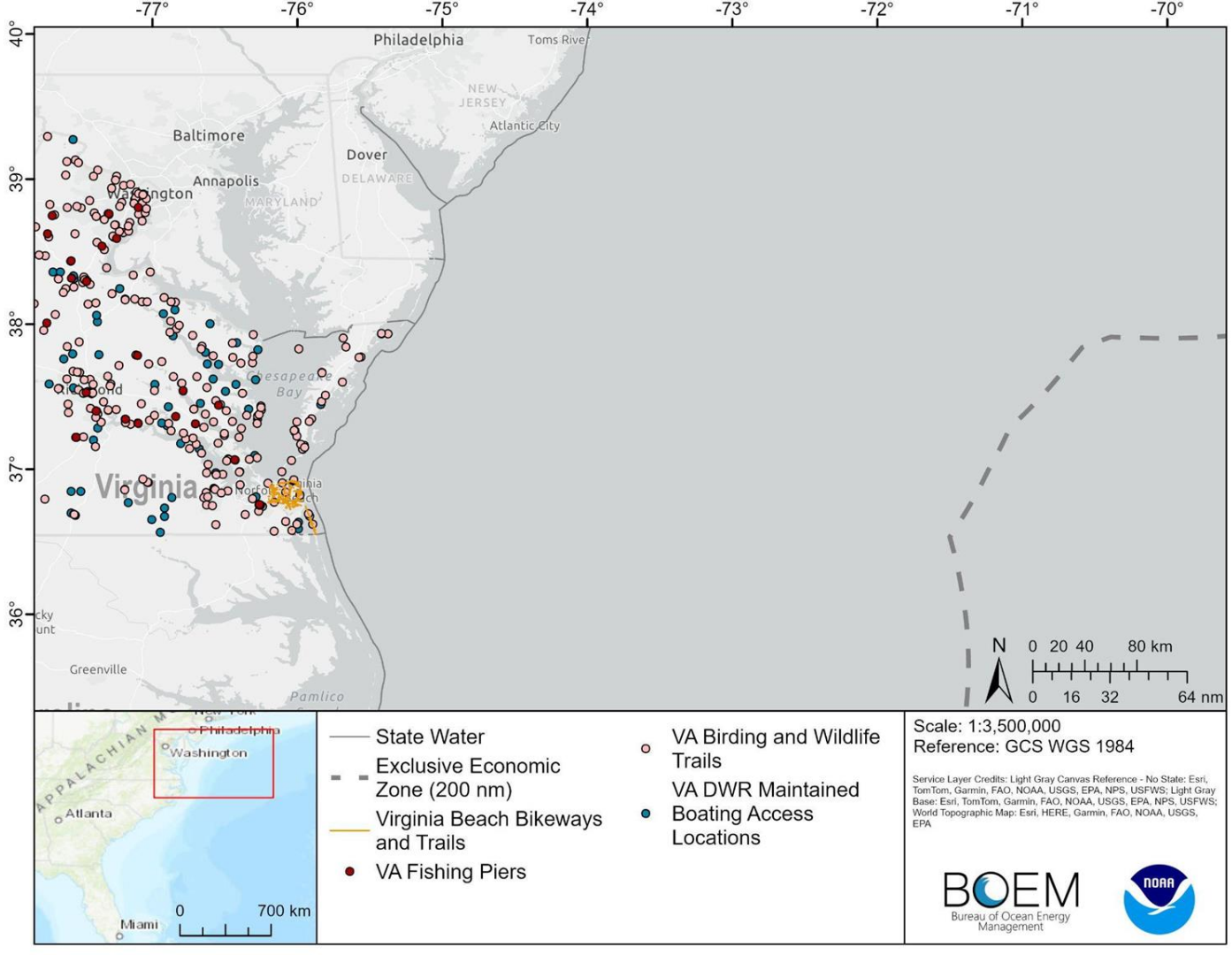
- **Original Source:** Virginia Department of Wildlife Resources
- Data Link / Metadata Link

Birding and Wildlife Trails

- **Original Source:** Virginia Department of Wildlife Resources
- Data Link / Metadata Link

VA Department of Wildlife Resources Boating Access Locations

- **Original Source:** Virginia Department of Wildlife Resources
- Data Link / Metadata Link



North Carolina Recreation

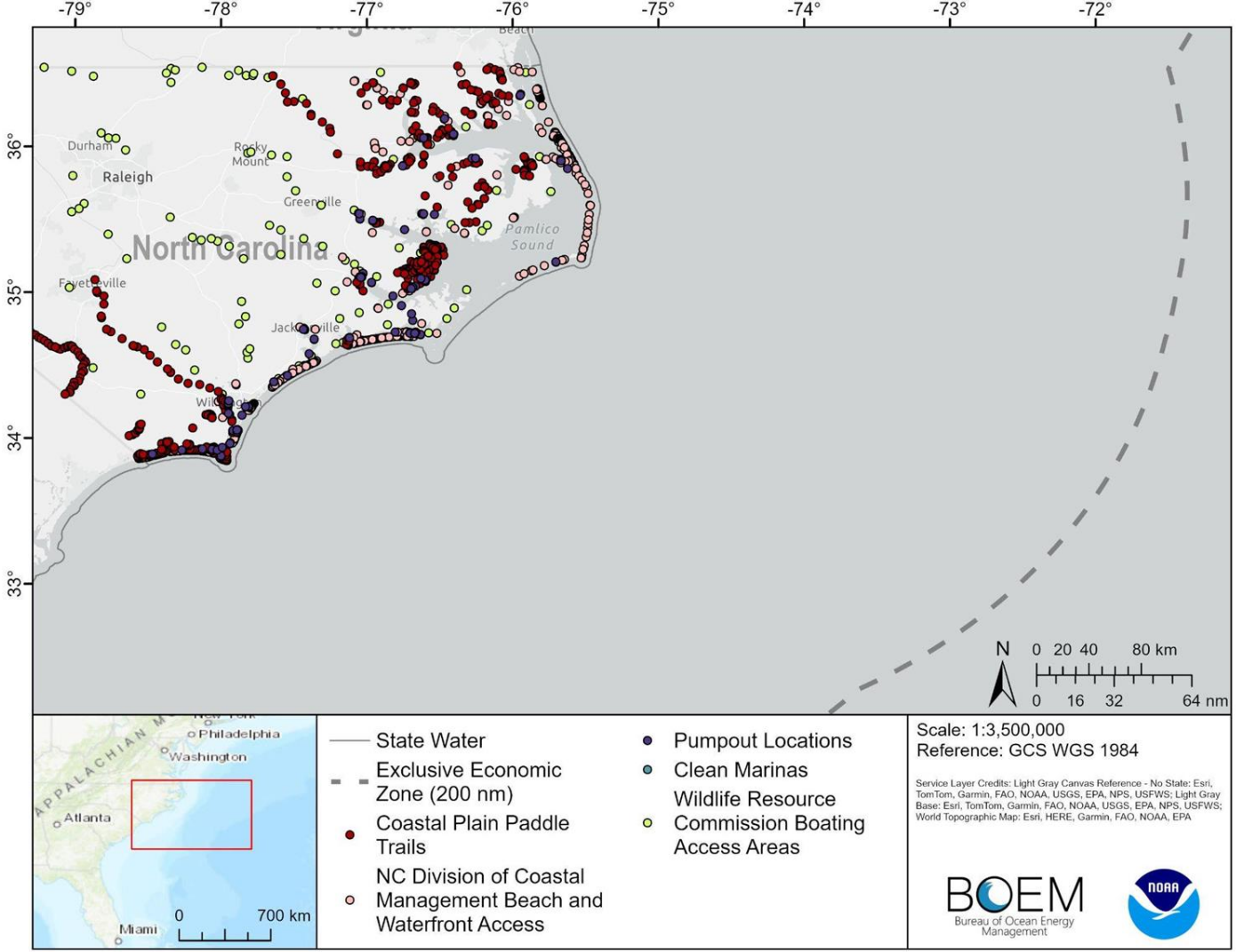
Coastal Plain Paddle Trails
- **Original Source:** North Carolina Department of Environmental Quality
- Data Link / Metadata Link

NC Division of Coastal Management Beach and Waterfront Access
- **Original Source:** North Carolina Department of Environmental Quality
- Data Link / Metadata Link

Pumpout Locations
- **Original Source:** North Carolina Department of Environmental Quality
- Data Link / Metadata Link

Clean Marinas
- **Original Source:** North Carolina Department of Environmental Quality
- Data Link / Metadata Link

Wildlife Resource Commission Boating Access Areas
- **Original Source:** North Carolina Wildlife Resources Commission
- Data Link / Metadata Link



South Carolina Recreation

Scenic Rivers

- **Original Source:** South Carolina Department of Natural Resources
- Data Link / Metadata Link

Beaches

- **Original Source:** South Carolina Department of Health and Environmental Control
- Data Link / Metadata Link

Marinas with Pumpout Stations

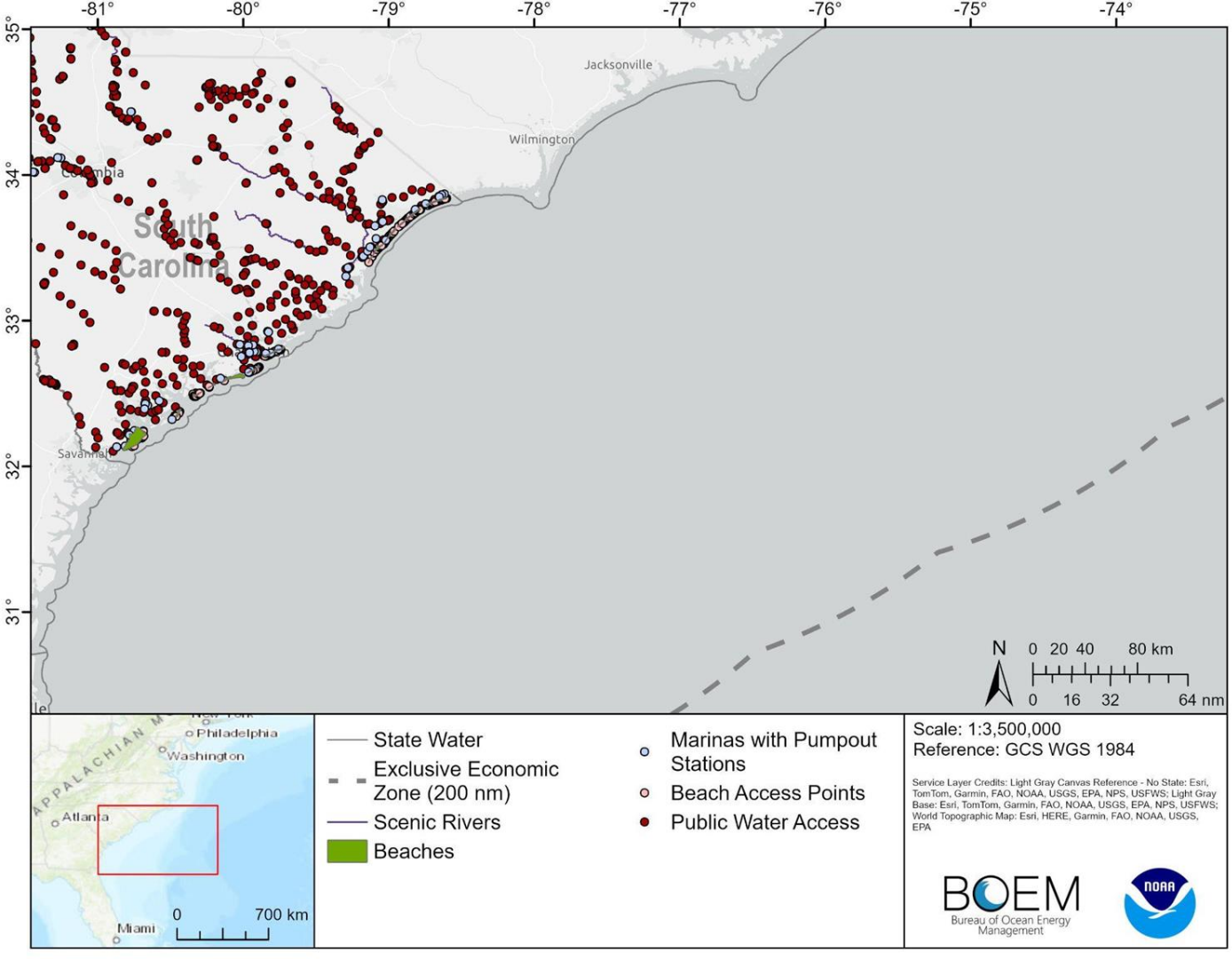
- **Original Source:** South Carolina Department of Natural Resources
- Data Link / Metadata Link

Beach Access Points

- **Original Source:** South Carolina Department of Health and Environmental Control
- Data Link / Metadata Link

Public Water Access

- **Original Source:** South Carolina Department of Natural Resources
- Data Link / Metadata Link



Recreational Boating Routes & Whale Watching Areas

Long Distance Sailing Races

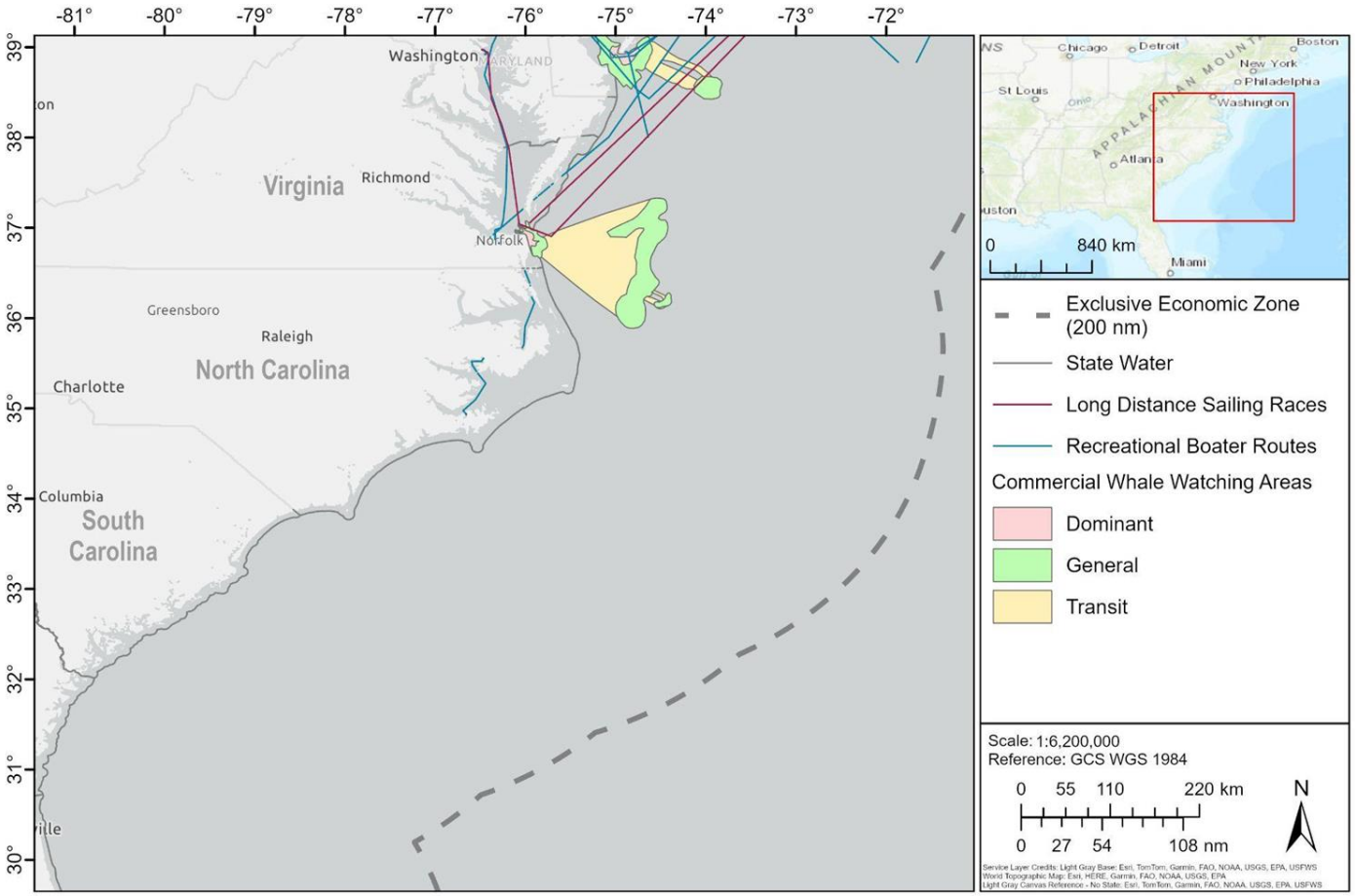
- **Original Source:** Northeast Regional Ocean Council
- Data Link / Metadata Link

Recreational Boater Routes

- **Original Source:** Northeast Regional Ocean Council
- Data Link / Metadata Link

Commercial Whale Watching Areas

- **Original Source:** Northeast Regional Ocean Council
- Data Link / Metadata Link



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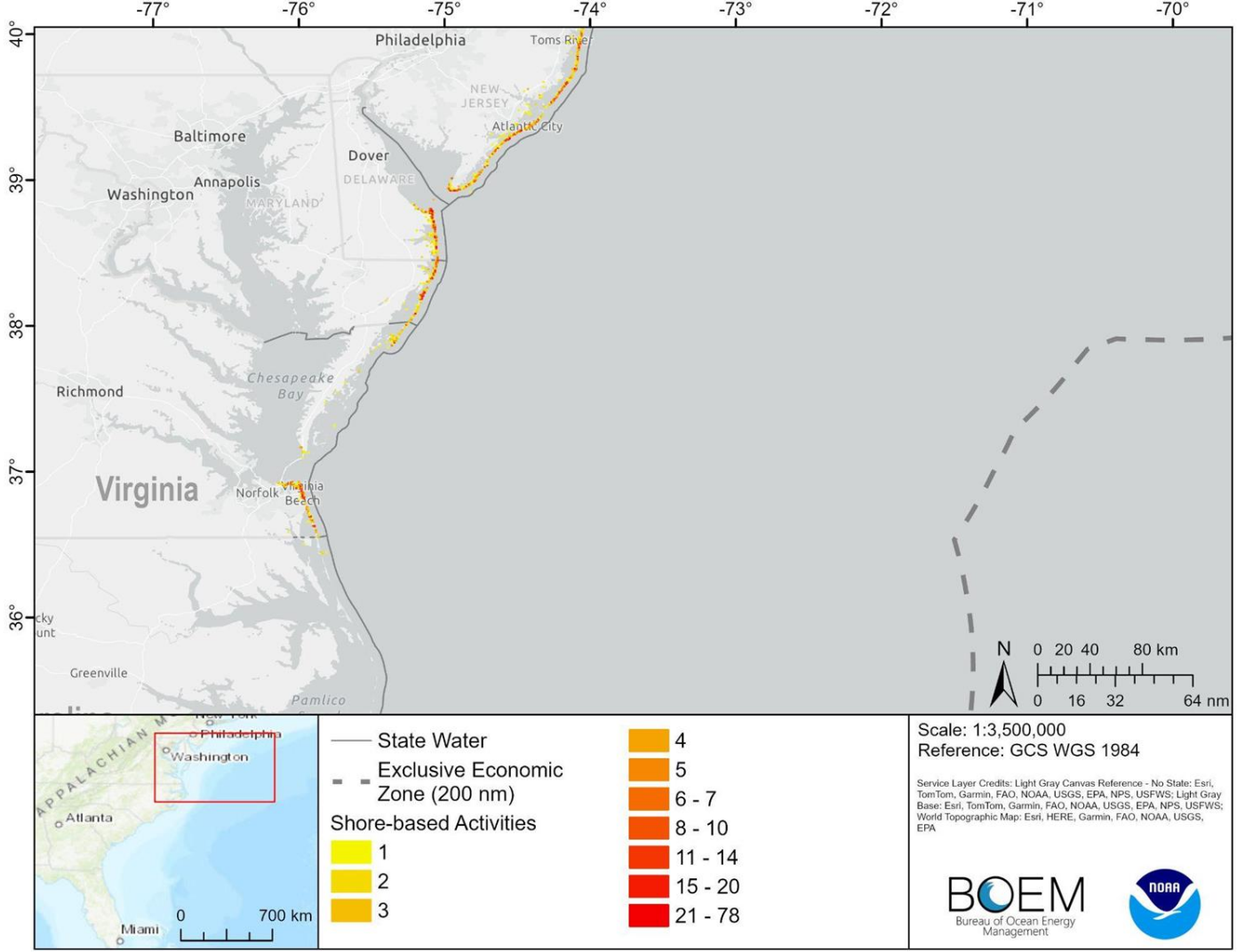
NOAA

Coastal Recreation - Shore-based Activities

Description: This dataset shows a 1 kilometer by 1 kilometer planning unit grid that shore-based activity points were summarized to. The activity points used for this shore-based grouping were beach going, biking/hiking, camping, and collection of non-living resources/beachcombing. The data were collected through an online survey deployed from July 1, 2013 to December 31, 2013 where survey respondents provided spatial information by placing a marker to indicate where they recreated on the coast in the last 12 months.

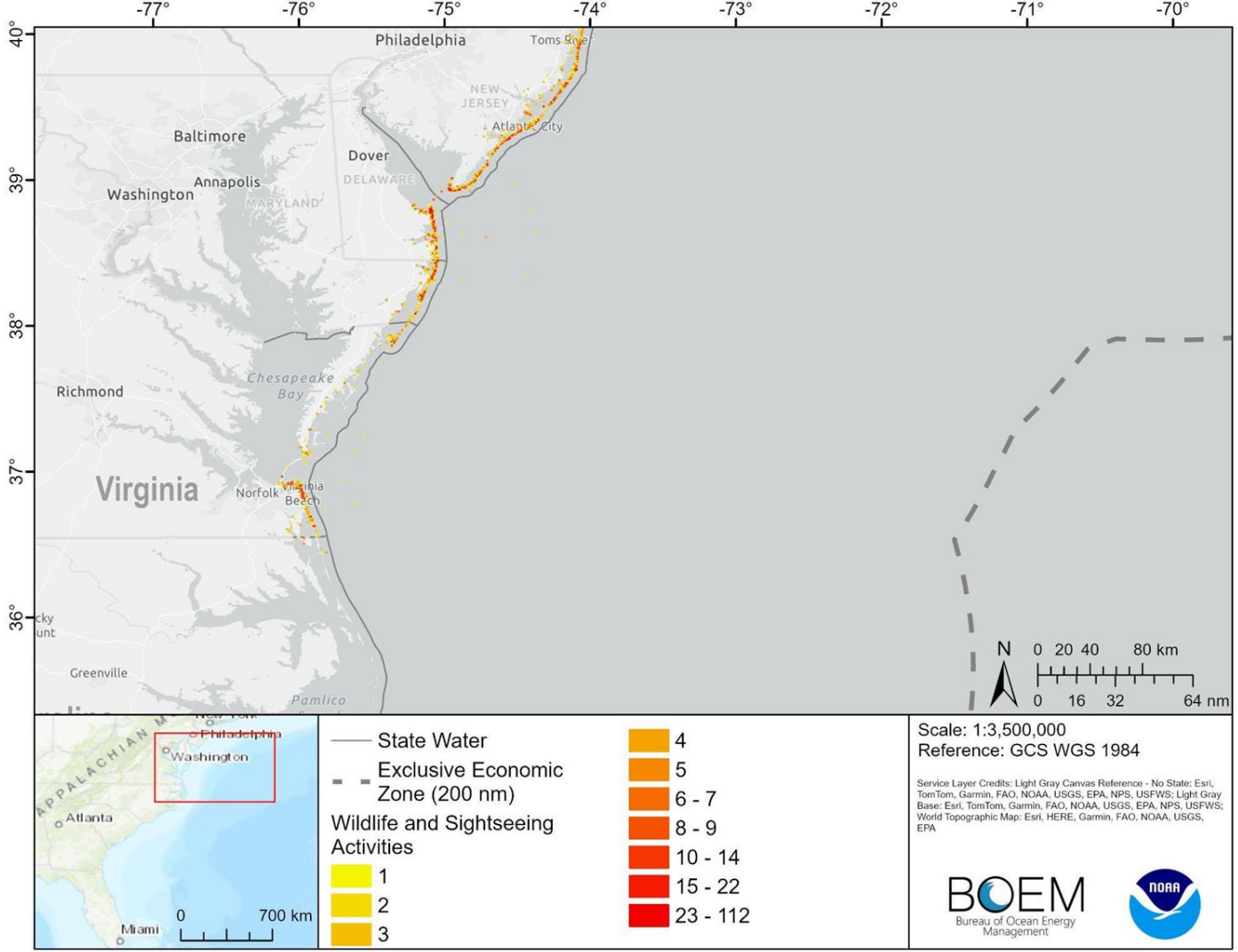
- **Original Source:** Point 97, Surfrider Foundation, Urban Coast Institute at Monmouth University, and The Nature Conservancy
- **Download Source:** Mid-Atlantic Ocean Data Portal
- Data Link / Metadata Link



Coastal Recreation - Wildlife and Sightseeing

Description: This dataset shows a 1 kilometer by 1 kilometer planning unit grid that sightseeing activity points were summarized to. The activity points used for this sightseeing activities group were sitting in your car watching the scene, scenic enjoyment, photography, and wildlife viewing. The data were collected through an online survey deployed from July 1, 2013 to December 31, 2013 where survey respondents provided spatial information by placing a marker to indicate where they recreated on the coast in the last 12 months.

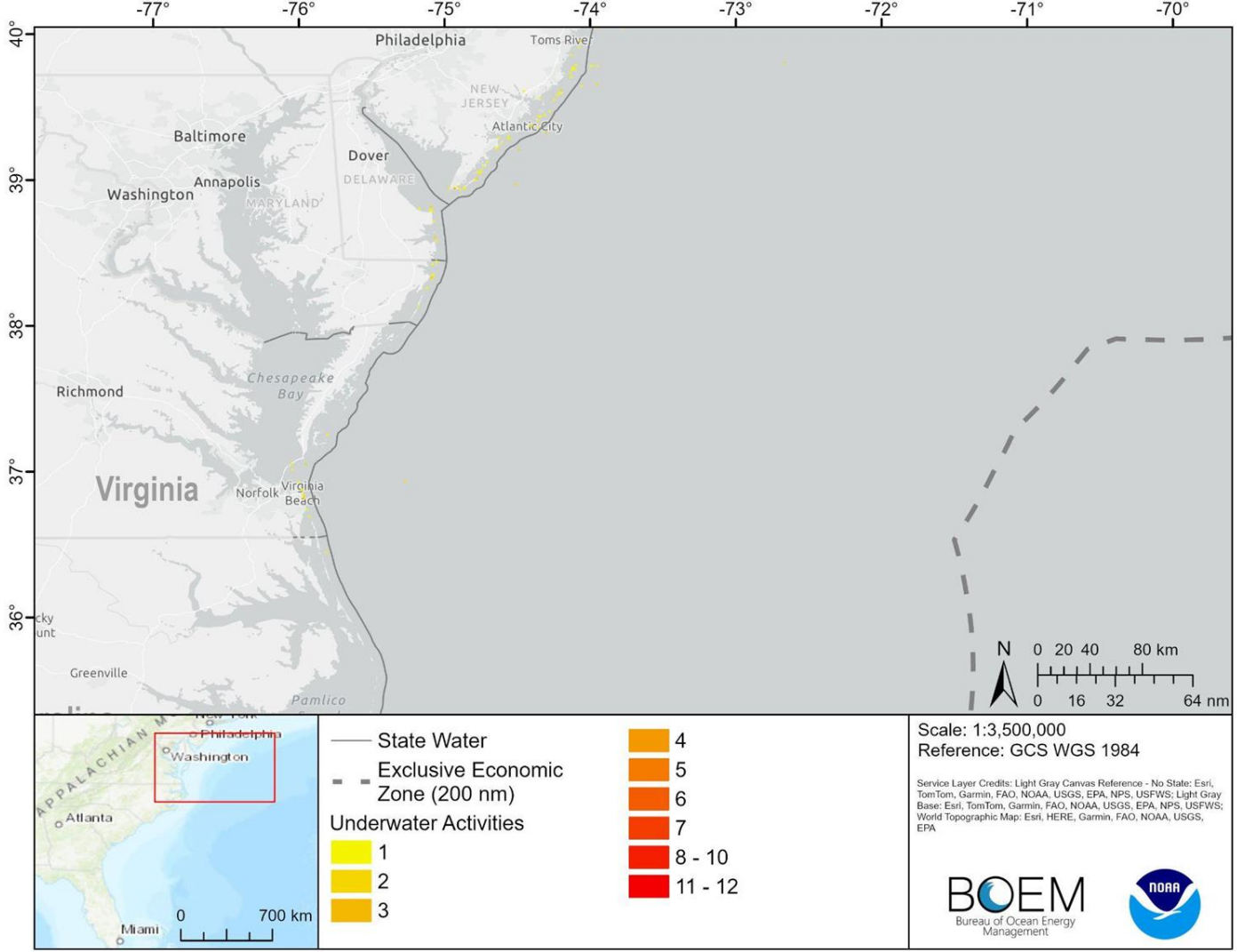
- **Original Source:** Point 97, Surfrider Foundation, Urban Coast Institute at Monmouth University, and The Nature Conservancy
- **Download Source:** Mid-Atlantic Ocean Data Portal
- Data Link / Metadata Link



Coastal Recreation - Underwater Activities

Description: This dataset shows a 1 kilometer by 1 kilometer planning unit grid that underwater activity points were summarized to. The activity points used for this underwater activities group were SCUBA diving from a charter boat, SCUBA diving from shore or a boat, and free diving/snorkeling. The data were collected through an online survey deployed from July 1, 2013 to December 31, 2013 where survey respondents provided spatial information by placing a marker to indicate where they recreated on the coast in the last 12 months.

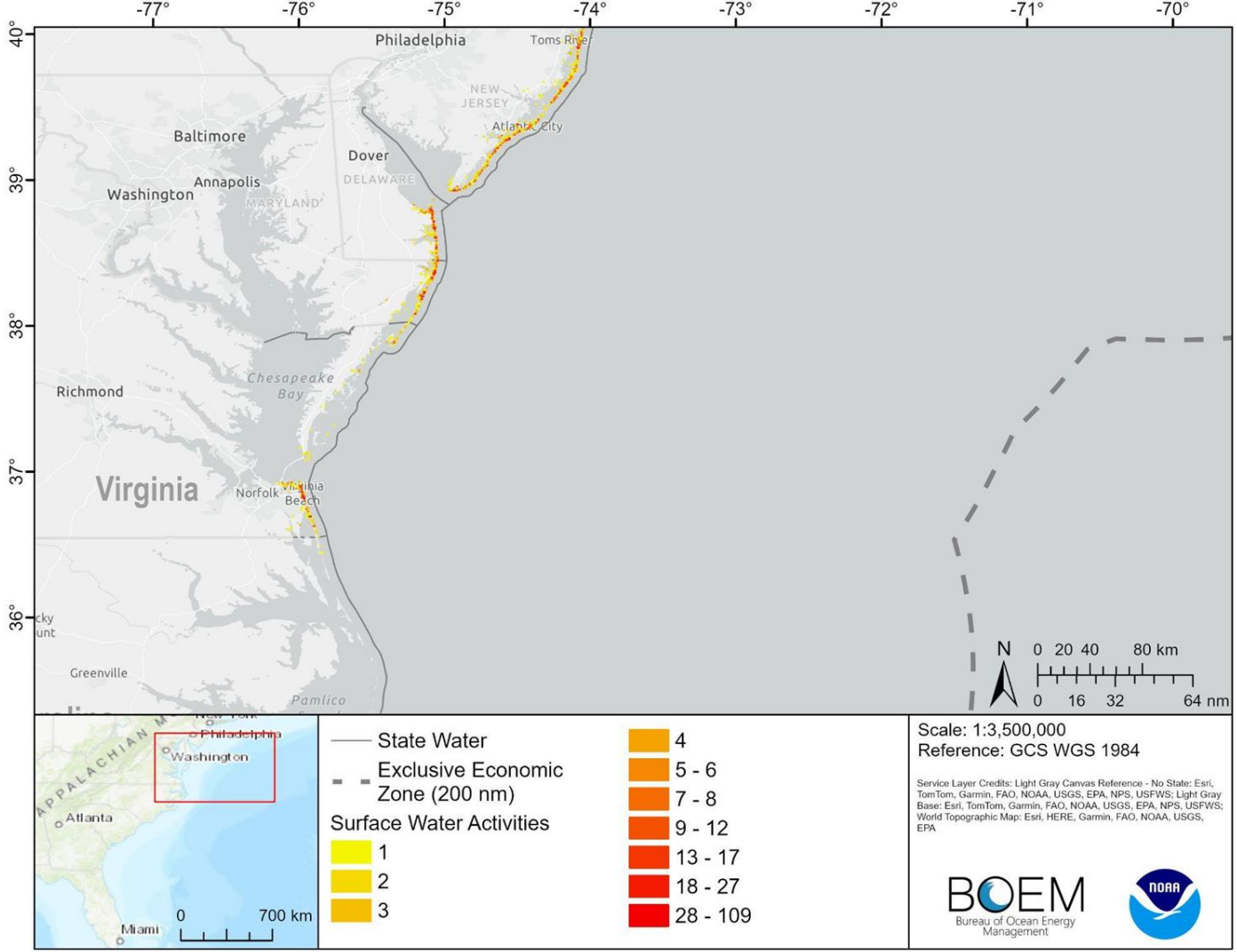
- **Original Source:** Point 97, Surfrider Foundation, Urban Coast Institute at Monmouth University, and The Nature Conservancy
- **Download Source:** Mid-Atlantic Ocean Data Portal
- Data Link / Metadata Link



Coastal Recreation - Surface Water Activities

Description: This dataset shows a 1 kilometer by 1 kilometer planning unit grid that surface water-based activity points were summarized to. The activity points used for this surface water grouping were kayaking/paddling, swimming, windsurfing, kiteboarding, skimboarding, and surfing. These data were collected through an online survey deployed from July 1, 2013 to December 31, 2013 where survey respondents provided spatial information by placing a marker to indicate where they recreated on the coast in the last 12 months.

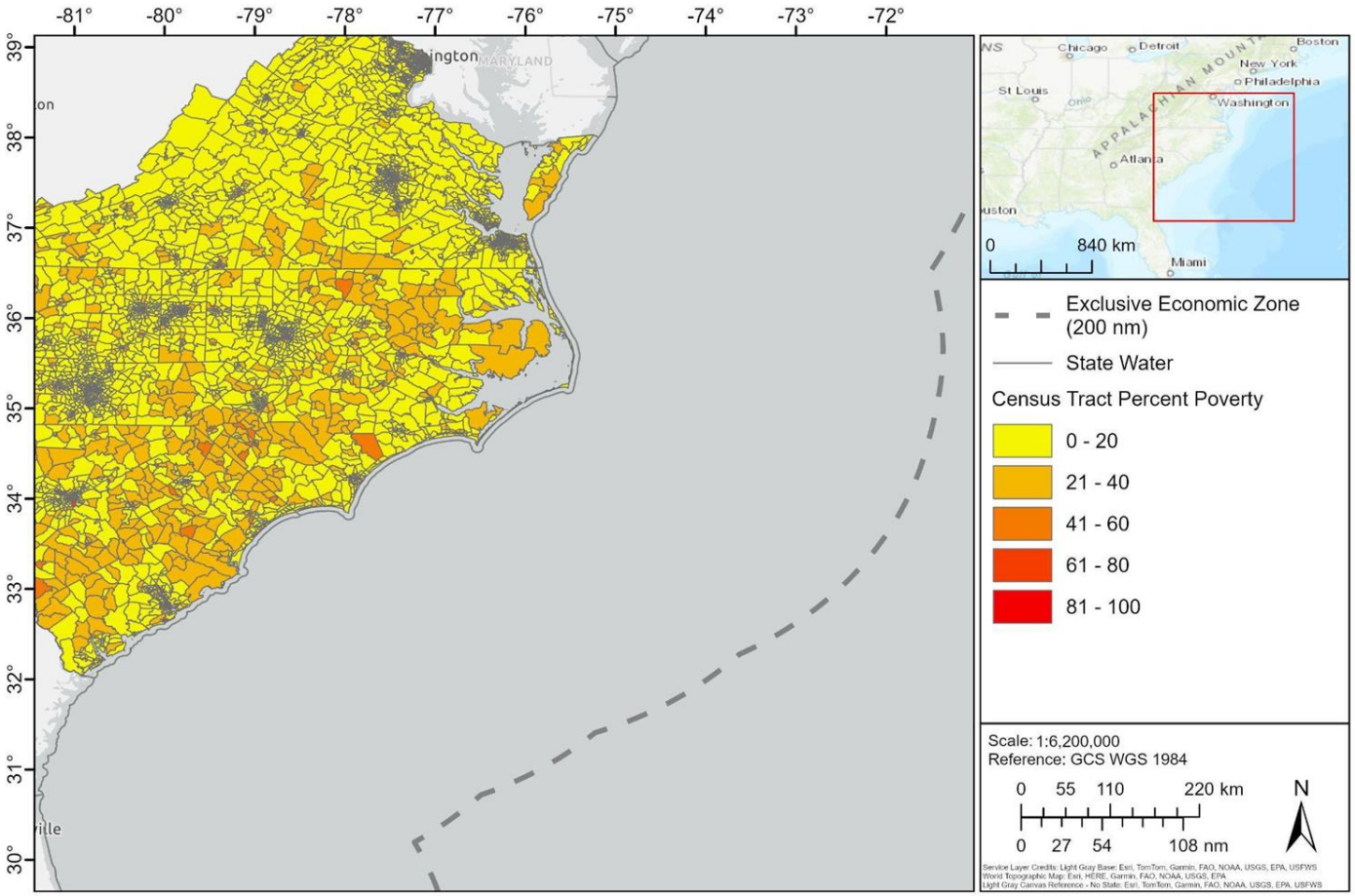
- **Original Source:** Point 97, Surfrider Foundation, Urban Coast Institute at Monmouth University, and The Nature Conservancy
- **Download Source:** Mid-Atlantic Ocean Data Portal
- Data Link / Metadata Link



Social Vulnerability Index 2010 (Census Tracts)

Description: This index measures and maps the social vulnerability of coastal counties in regard to environmental hazards. Geographic variations are highlighted, as are differences in preparation, response, and recovery times, and areas where natural resources could reduce vulnerability. American Community Survey 2006-2010 data were processed at the Census tract level to create this data product. The methodology was developed by the University of South Carolina's Hazards and Vulnerability Research Institute.

- **Original Source:** University of South Carolina Hazards and Vulnerability Research Institute
- **Download Source:** NOAA Office for Coastal Management Digital Coast
- Data Link for VA
- Data Link for NC
- Data Link for SC
- Metadata Link



BOEM Bureau of Ocean Energy Management

NOAA

Historical Infrastructure

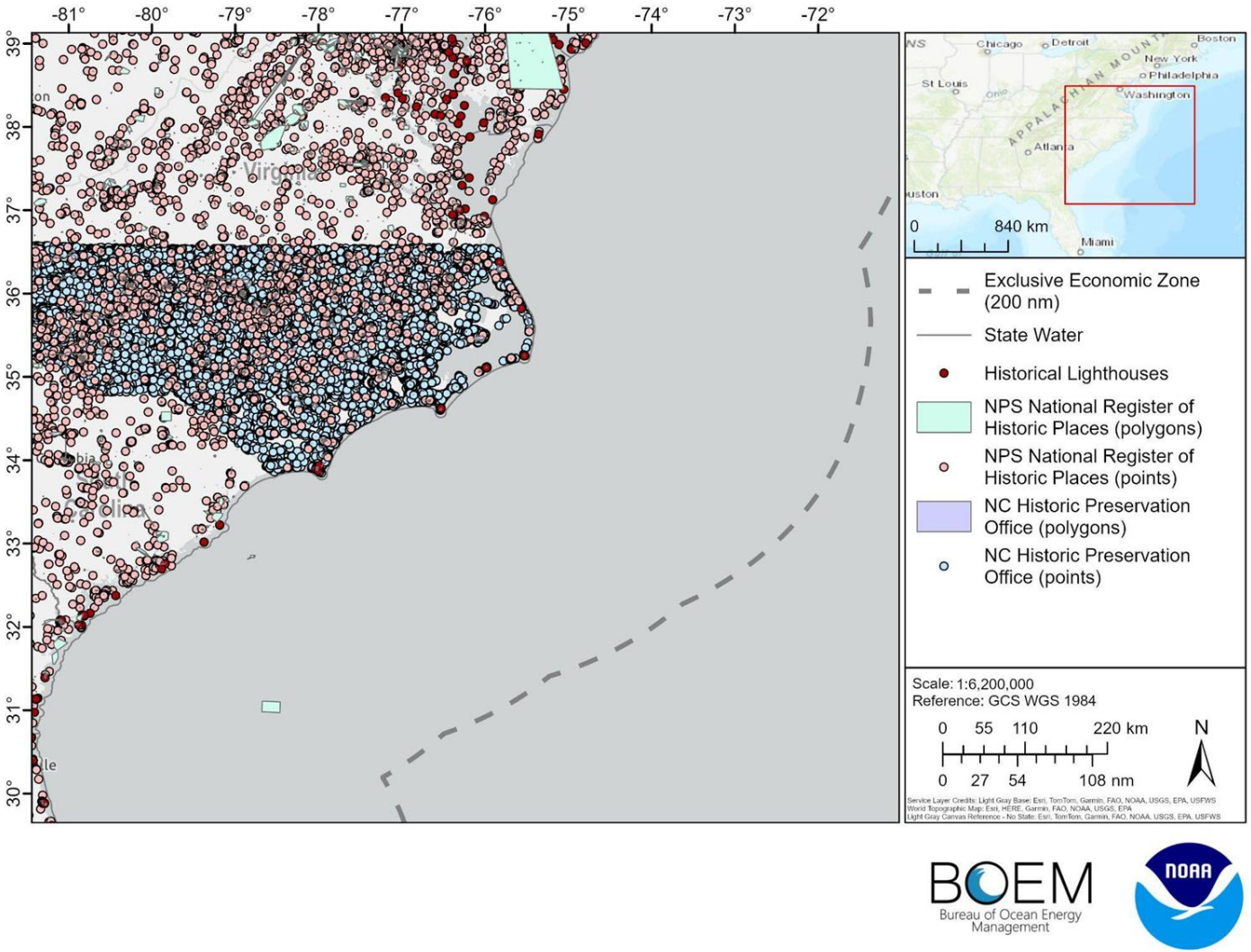
Historical Lighthouses
- **Original Source:** NOAA Office for Coastal Management
- Data Link / Metadata Link

NPS National Register of Historic Places (polygons)
- **Original Source:** National Park Service
- Data Link / Metadata Link

NPS National Register of Historic Places (points)
- **Original Source:** National Park Service
- Data Link / Metadata Link

NC Historic Preservation Office (polygons)
- **Original Source:** North Carolina State Historic Preservation Office
- Data Link / Metadata Link

NC Historic Preservation Office (points)
- **Original Source:** North Carolina State Historic Preservation Office
- Data Link / Metadata Link



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NOAA

National Security

Locations of various military operation areas

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NOAA NCCOS NATIONAL CENTERS FOR COASTAL OCEAN SCIENCE

Military Operating Areas & Other Zones

Military Installations, Ranges, and Training Areas
- **Source:** U.S.Department of Defense
- Data Link / Metadata Link

Military Operating Areas
- **Source:** U.S. Navy
- Data Link / Metadata Link

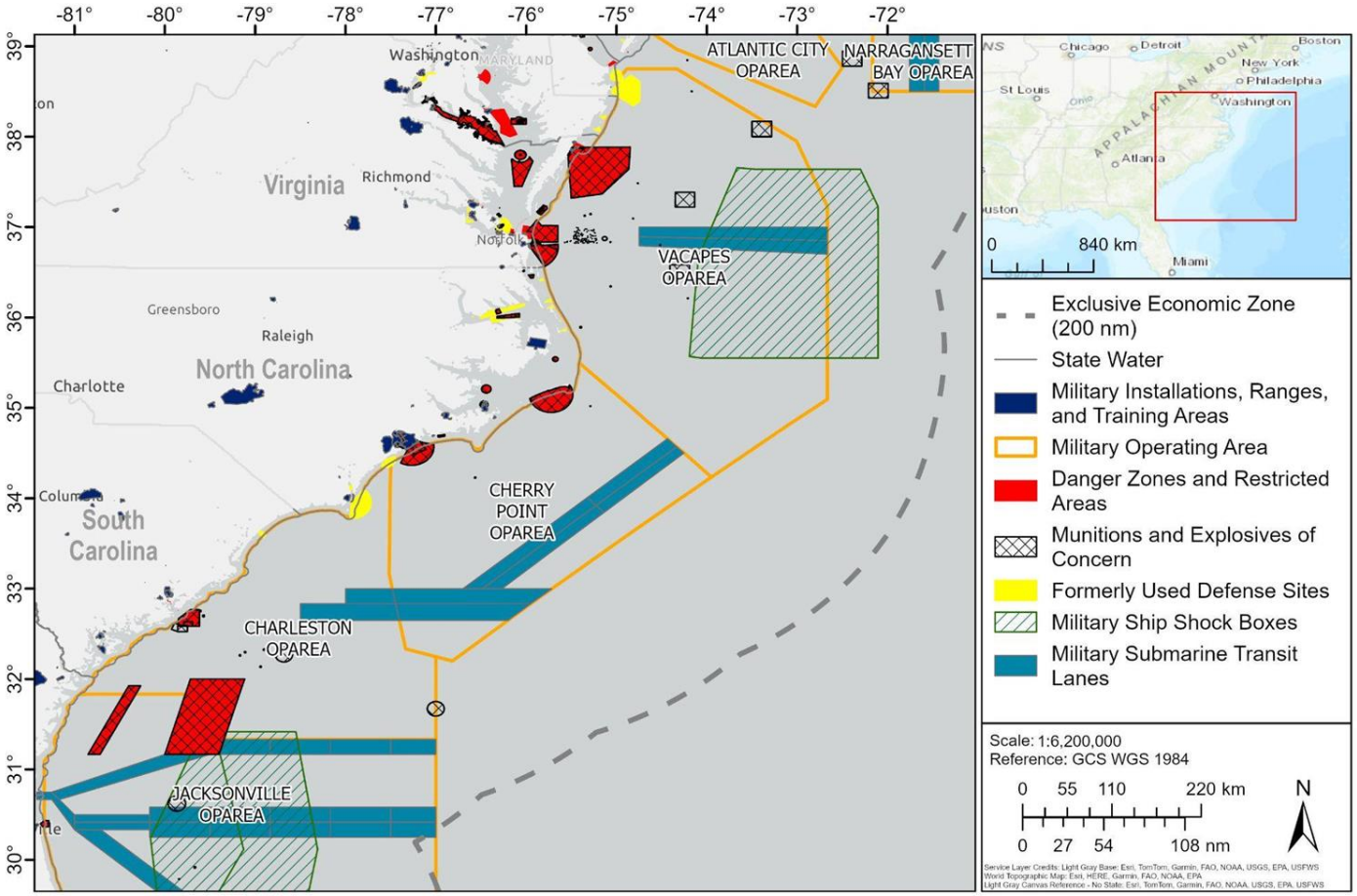
Danger Zones and Restricted Areas:
- **Source:** NOAA Office for Coastal Management
- Data Link / Metadata Link

Munitions and Explosives of Concern
- **Source:** NOAA Office for Coastal Management
- Data Link / Metadata Link

Formerly Used Defense Sites
- **Source:** NOAA Office for Coastal Management
- Data Link / Metadata Link

Military Ship Shock Boxes
- **Source:** U.S. Navy
- Data Link / Metadata Link

Military Submarine Transit Lanes
- **Source:** U.S. Navy
- Data Link / Metadata Link



BOEM Bureau of Ocean Energy Management

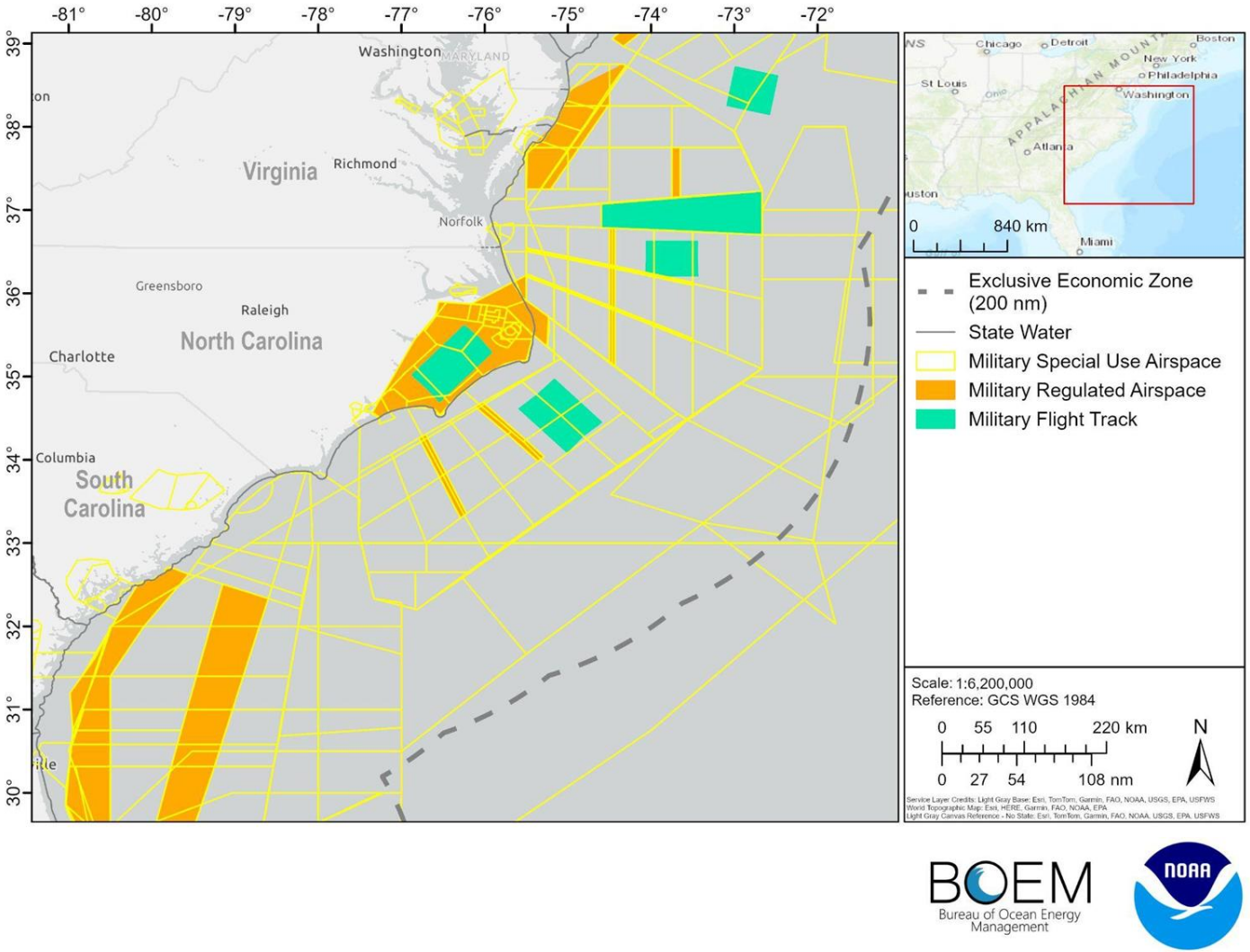
NOAA

Military Airspace

Military Special Use Airspaces:
- **Source:** U.S. Navy
- Data Link / Metadata Link

Military Regulated Airspace:
- **Source:** U.S. Navy
- Data Link / Metadata Link

Military Flight Track:
- **Source:** U.S. Navy
- Data Link / Metadata Link



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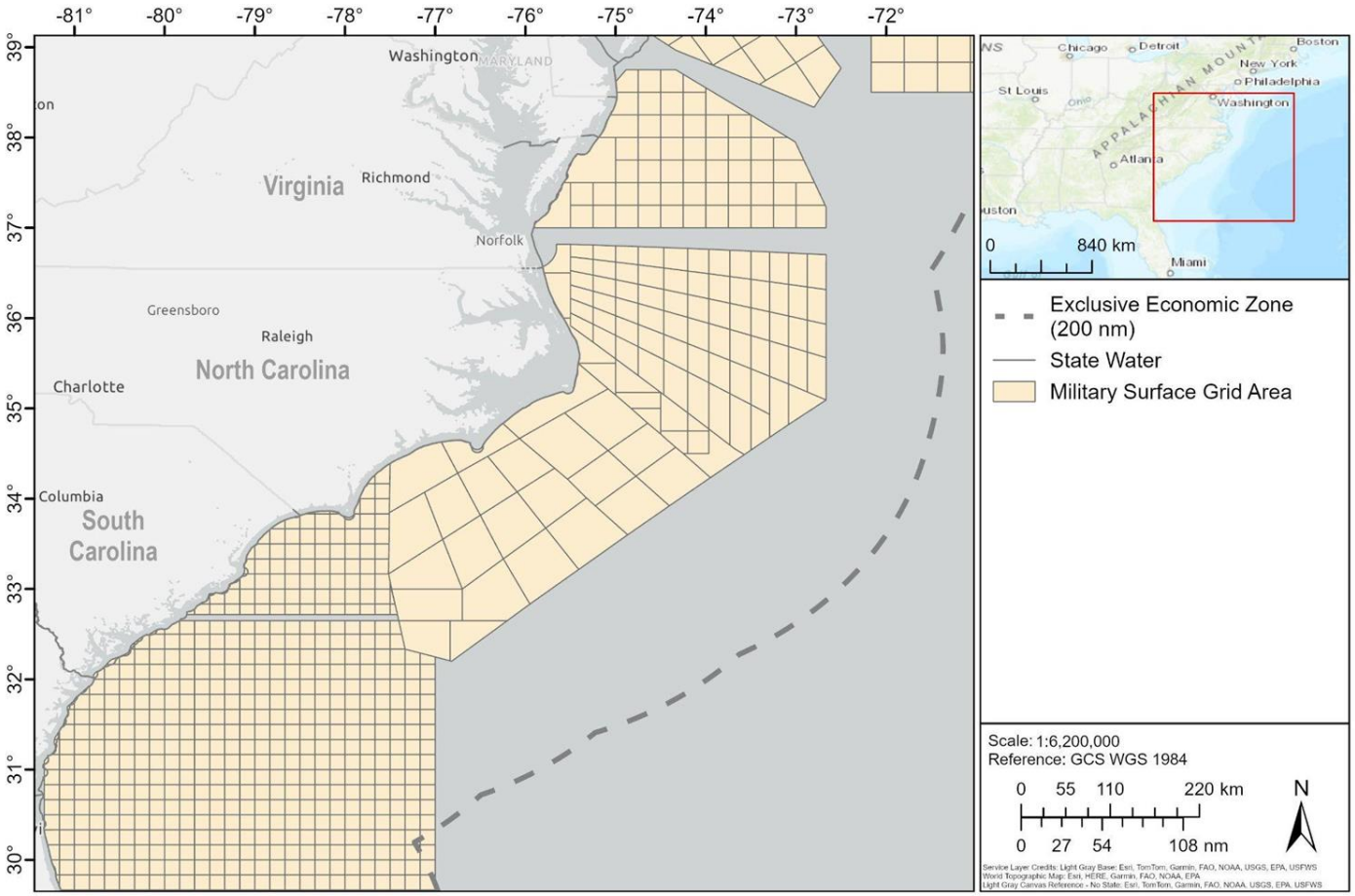
NOAA

Military Surface Grid

Military Surface Grid Area:

- Data Link / Metadata Link



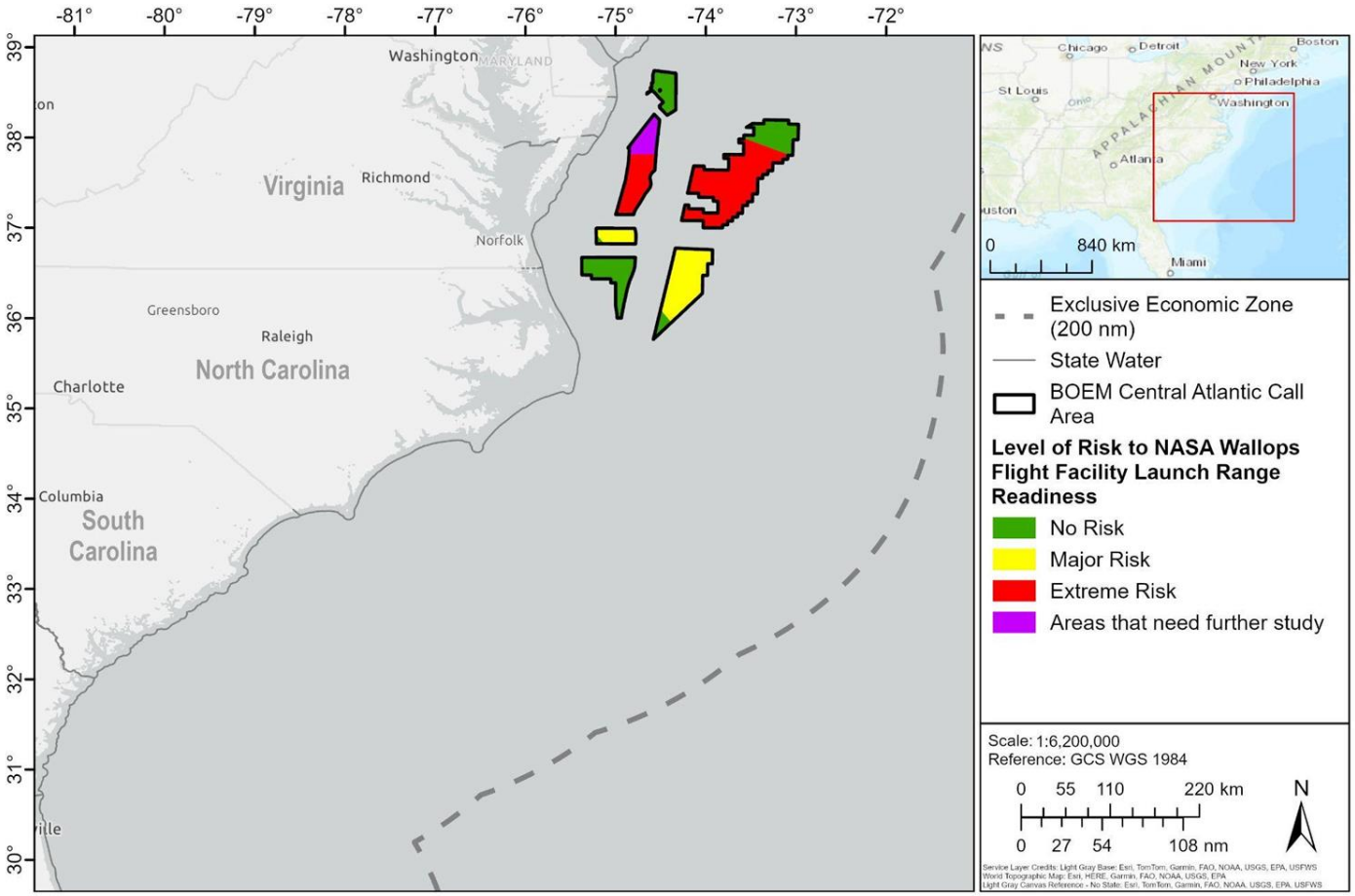
BOEM Bureau of Ocean Energy Management

NOAA

BOEM Central Atlantic NASA Mission Compatibility Assessment

NASA Mission Compatibility Assessments:

- **Source:** NASA



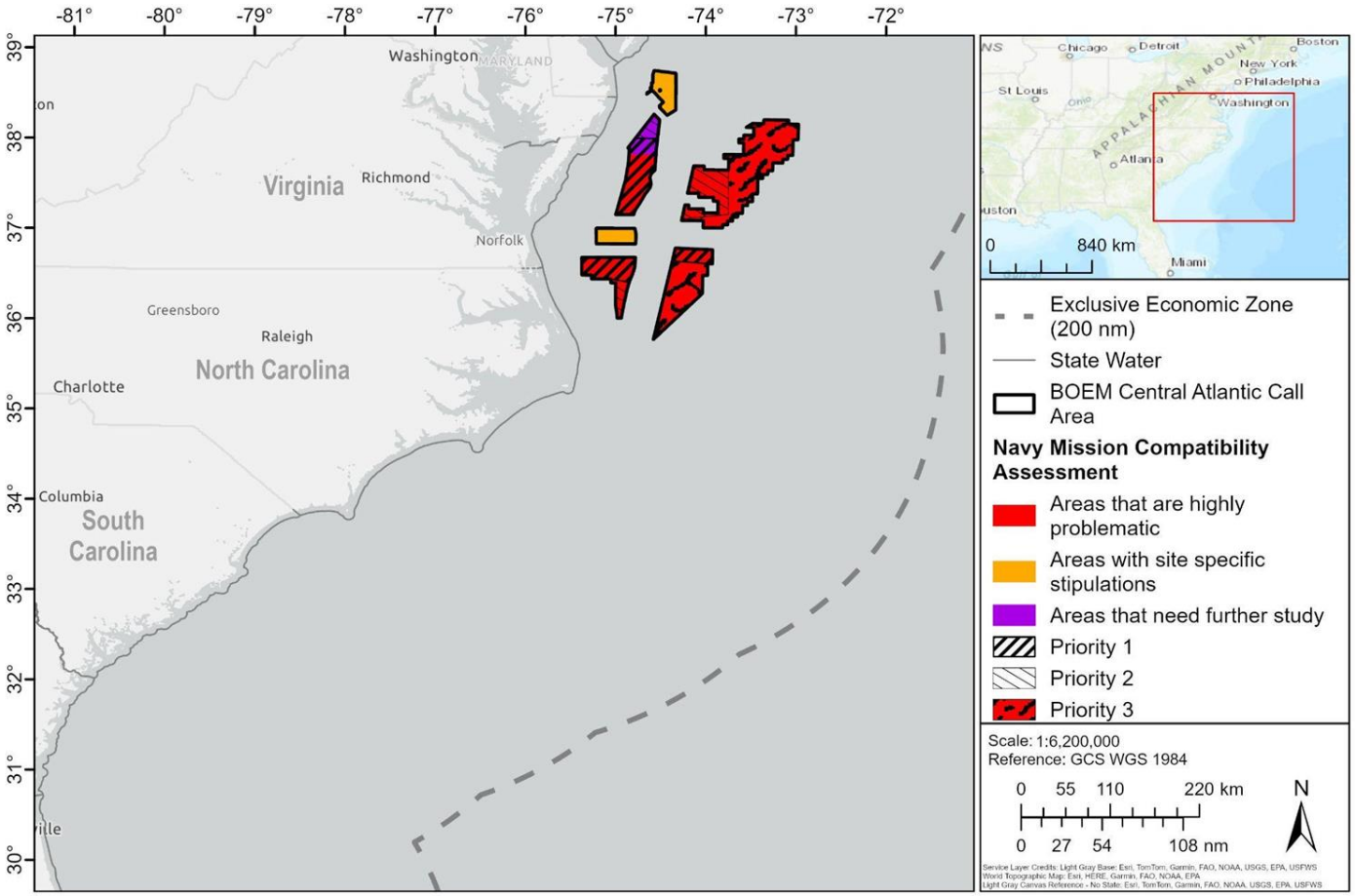
BOEM Bureau of Ocean Energy Management

NOAA

BOEM Central Atlantic Navy Mission Compatibility Assessment

Navy Mission Compatibility Assessments:

- **Source:** U.S. Navy
- Data Link / Metadata Link



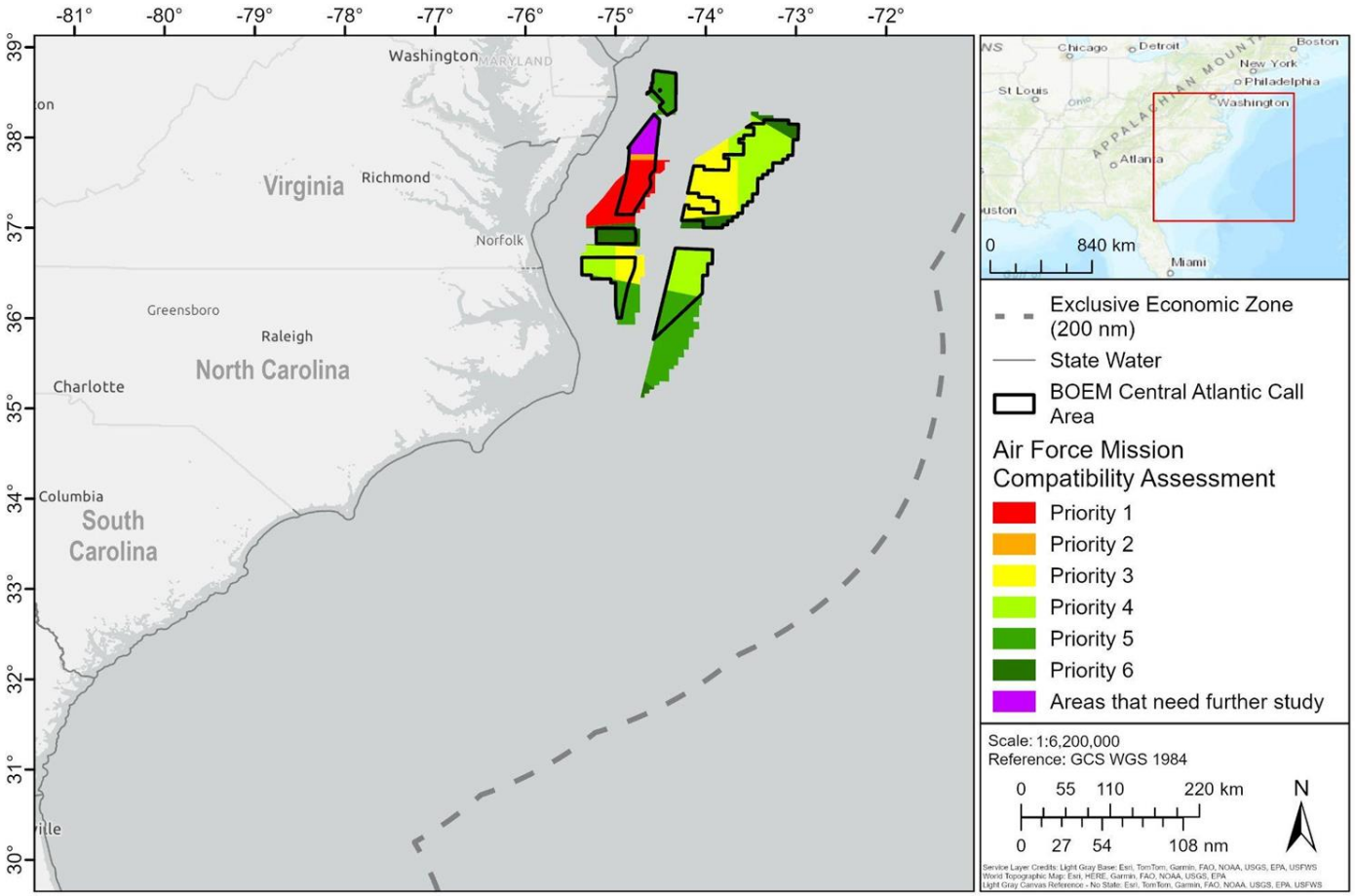
BOEM Bureau of Ocean Energy Management

NOAA

BOEM Central Atlantic Air Force Mission Compatibility Assessment

Air Force Mission Compatibility:

- **Source:** U.S. Department of the Air Force
- Data Link / Metadata Link



BOEM Bureau of Ocean Energy Management

NOAA

Metocean and Other

Meteorological and oceanographic data, geological features and seafloor substrate, bathymetry, and boundaries

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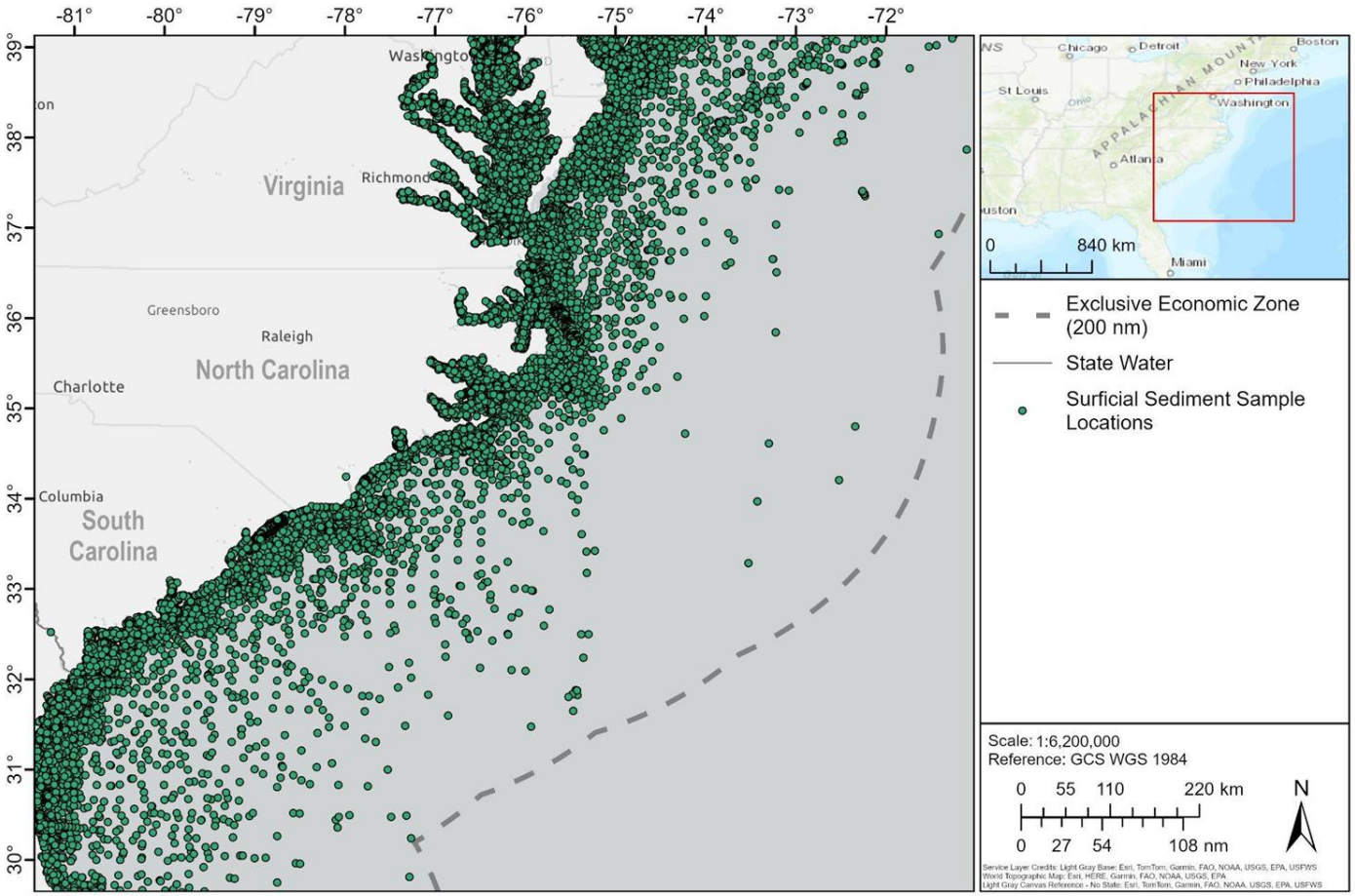
Surficial Sediment Sample Locations

Surficial Sediment: These data show point sample sediment location and texture within the United States Exclusive Economic Zone. This is an aggregate data product compiled from the USGS usSEABED and the East Coast Sediment Texture Database, and NOAA Electronic Navigational Charts.

- **Original Source:** Office for Coastal Management
- **Download Source:** Marine Cadastre
- Data Link / Metadata Link



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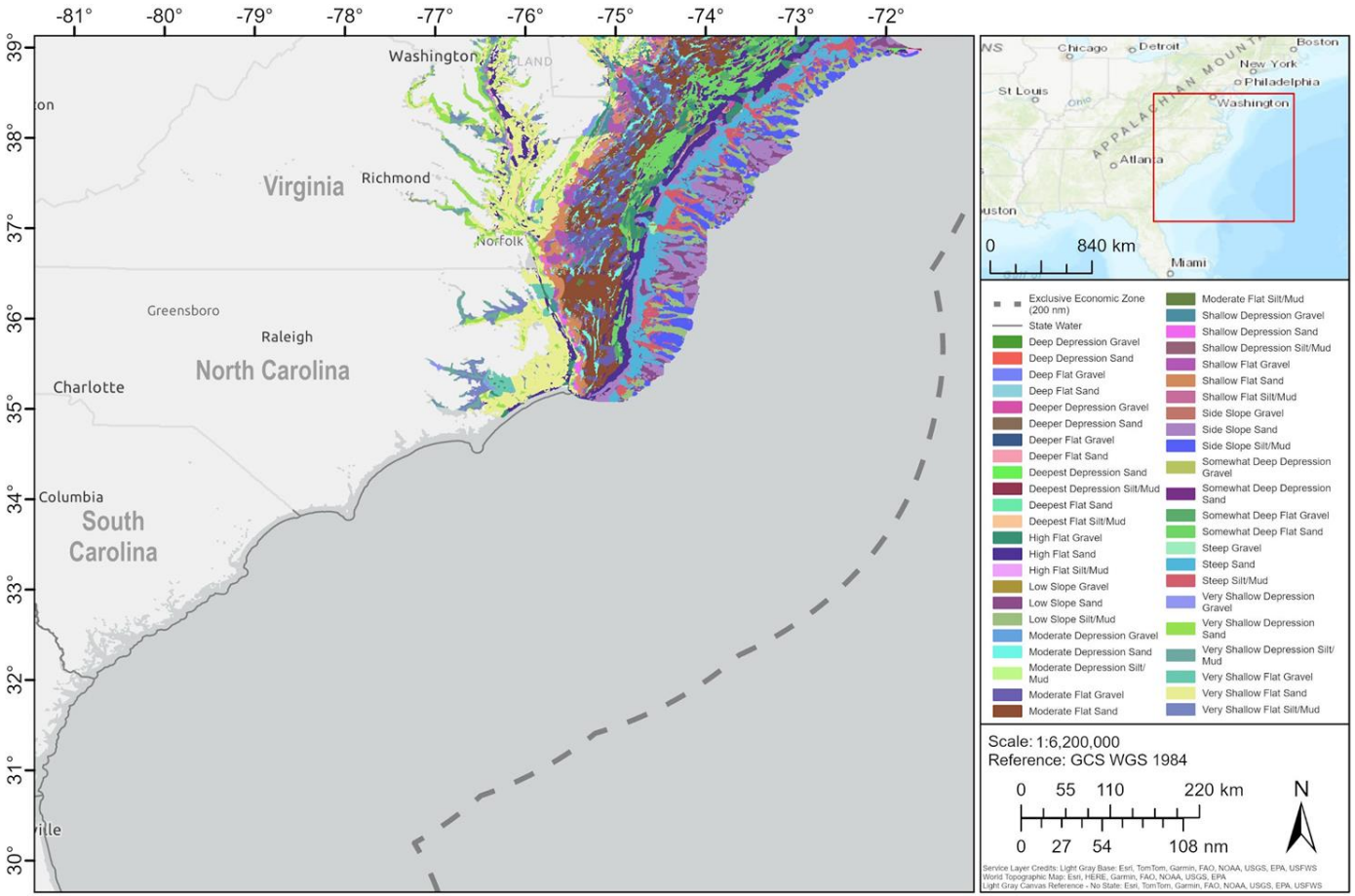
NOAA

Benthic Geology

Description: Benthic habitats are based on Ecological Marine Units (EMUs), which represent the three-way combination of depth, sediment grain size and seabed forms based on the ecological thresholds revealed by the organism relationships. Benthic habitats are combinations of EMUs considered with their species assemblages. Thresholds were created by classifying grab samples into organism groups based on similarities in the composition and abundance of the benthic species using hierarchical cluster analysis. To perform this analysis, each grab sample was classified to an organism group, then overlaid on standardized base maps of depth, sediment grain size and seabed forms, and attributed with the information taken from the classified data. Regression trees were built individually for each physical variable to identify critical thresholds that separated sets of organism groups from each other. Regression trees were also built using all variables collectively to identify which variables were driving the organism differences. Each analysis was performed separately by ecological subregion after data exploration revealed that the relationships between genera and physical factors differed markedly among subregions.

- **Original Source:** The Nature Conservancy
- **Download Source:** Northeast Ocean Data Portal
- Data Link / Metadata



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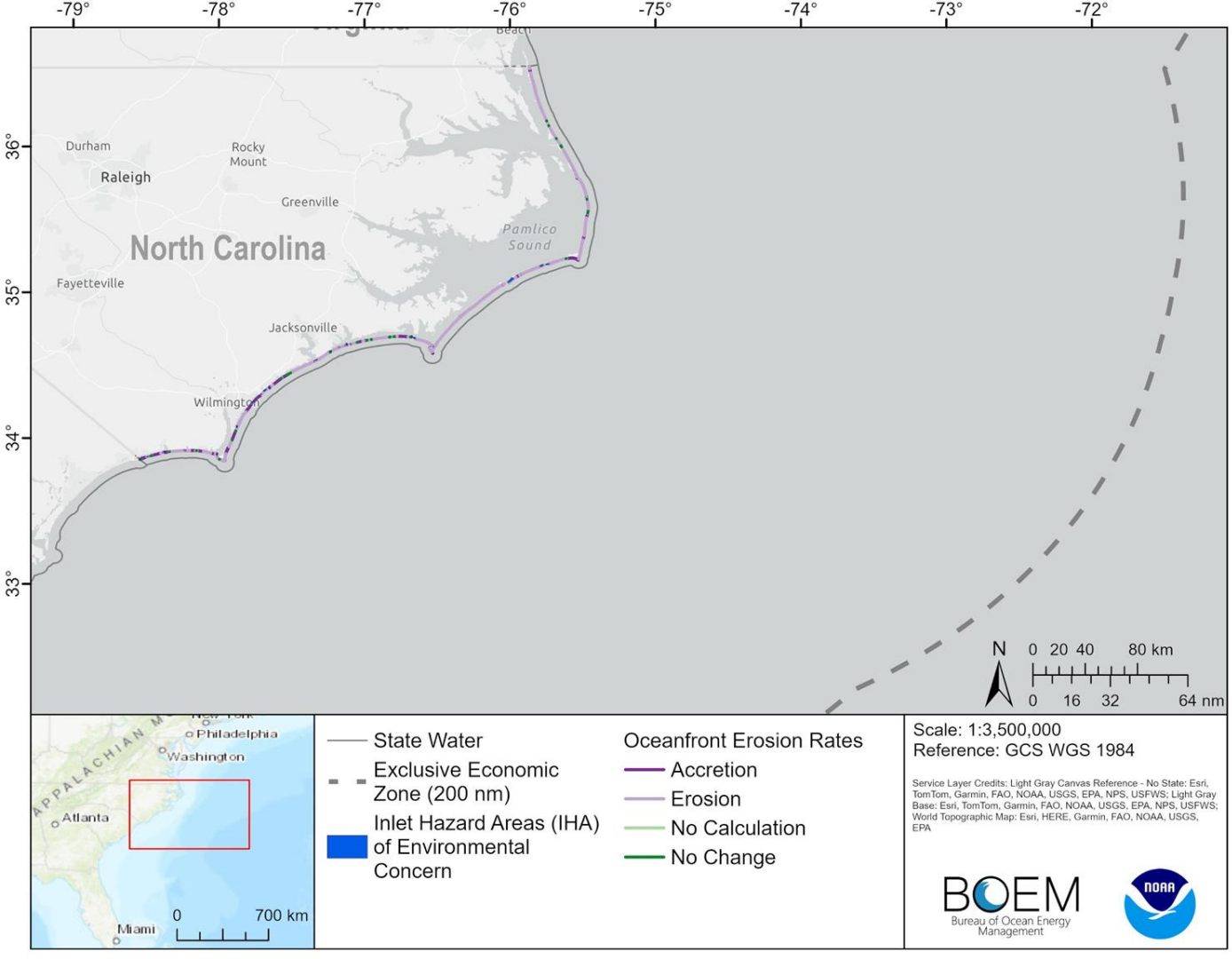
Coastal Erosion

DCM Inlet Hazard Area of Environmental Concern (IHAEC): North Carolina's Inlet Hazard Areas (IHA). Defined in 15A NCAC 07H.0304(2) as locations that “are especially vulnerable to erosion, flooding and other adverse effects of sand, wind, and water because of their proximity to dynamic ocean inlets.”

- **Original Source:** North Carolina Department of Environmental Quality
- Data Link

DCM NC Oceanfront Erosion Rates (2020): North Carolina's 2019 oceanfront average annual long-term erosion rates. Transects are spaced 50-meters apart, and erosion rates area measured in feet per year.

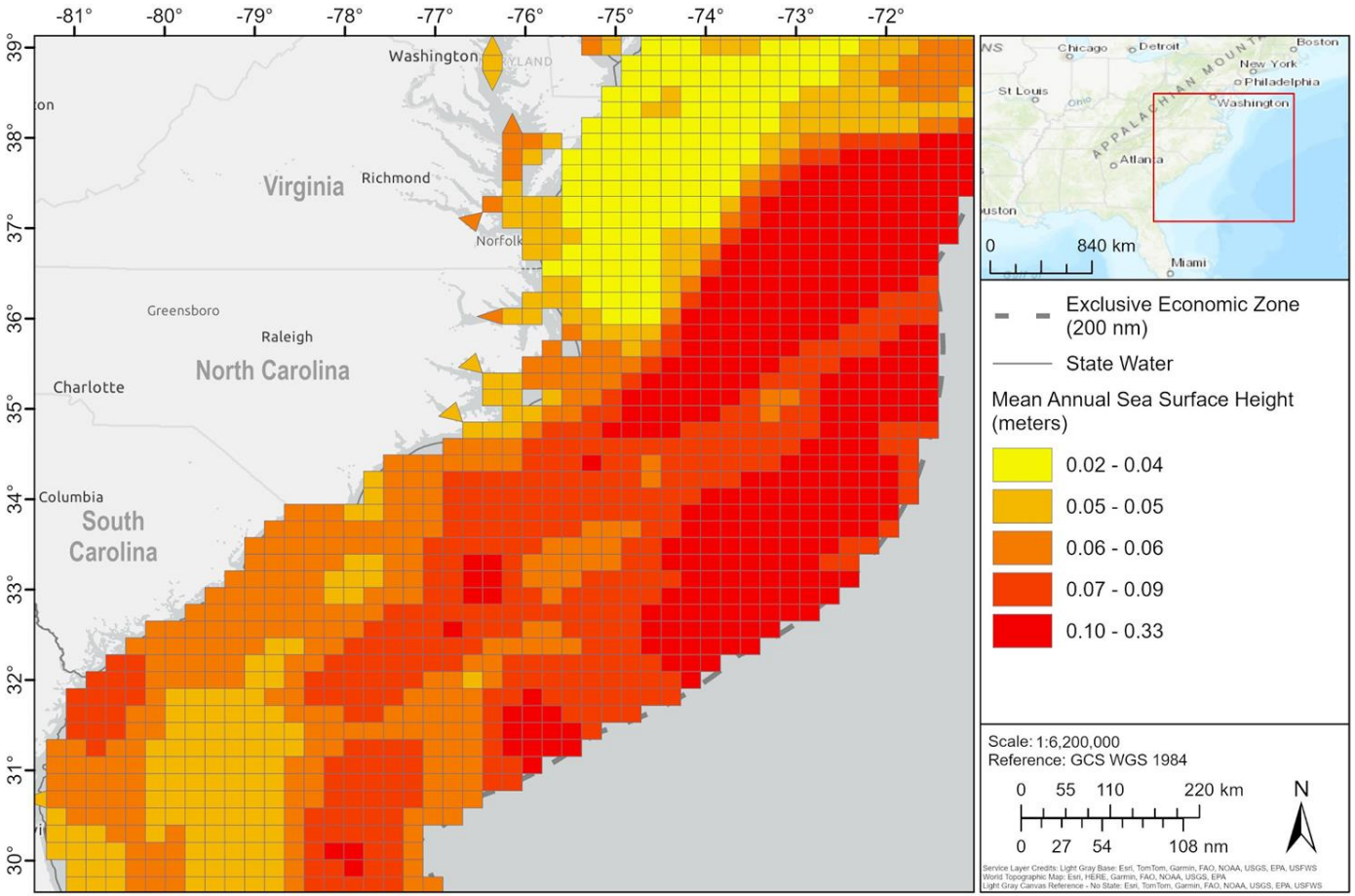
- **Original Source:** North Carolina Department of Environmental Quality
- Data Link



Sea Surface Height & Ocean Waves

Sea Surface Height: Monthly and annual summary of global sea surface height anomalies above mean sea surface, averaged from raw data. Raw data available from Oct. 2, 1992 to May 14, 2016, at 5 day intervals, with a spatial resolution of 0.17 degrees (Latitude) x 0.17 degrees (Longitude). Dataset contains the fully corrected heights, in meters.

- **Original Source:** Office for Coastal Management
- **Download Source:** Marine Cadastre
- Data Link / Metadata



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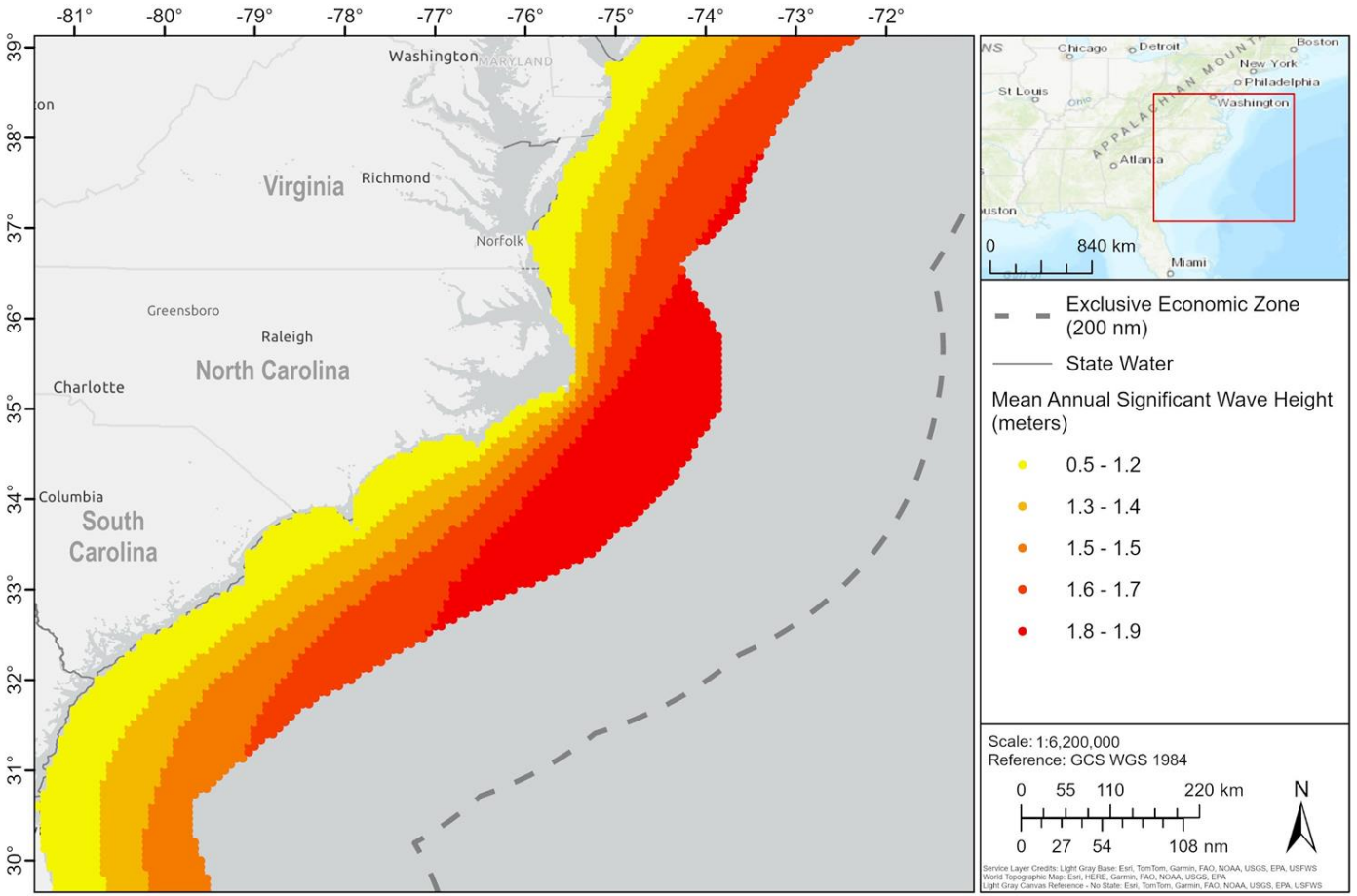
Sea Surface Height & Ocean Waves

Significant Wave Height: Significant wave height is a spectrally derived time-series, which is the average of the highest third of the waves in a random seaway and roughly corresponds to the mean wave height. Values are in meters. Data represent monthly summaries for the time period from January 1980 to December 2009 and include the parameters; significant wave height (ssh), wave energy period (wep), and wave hindcast direction (dfp).

- **Original Source:** Office for Coastal Management
- **Download Source:** Marine Cadastre
- Data Link / Metadata



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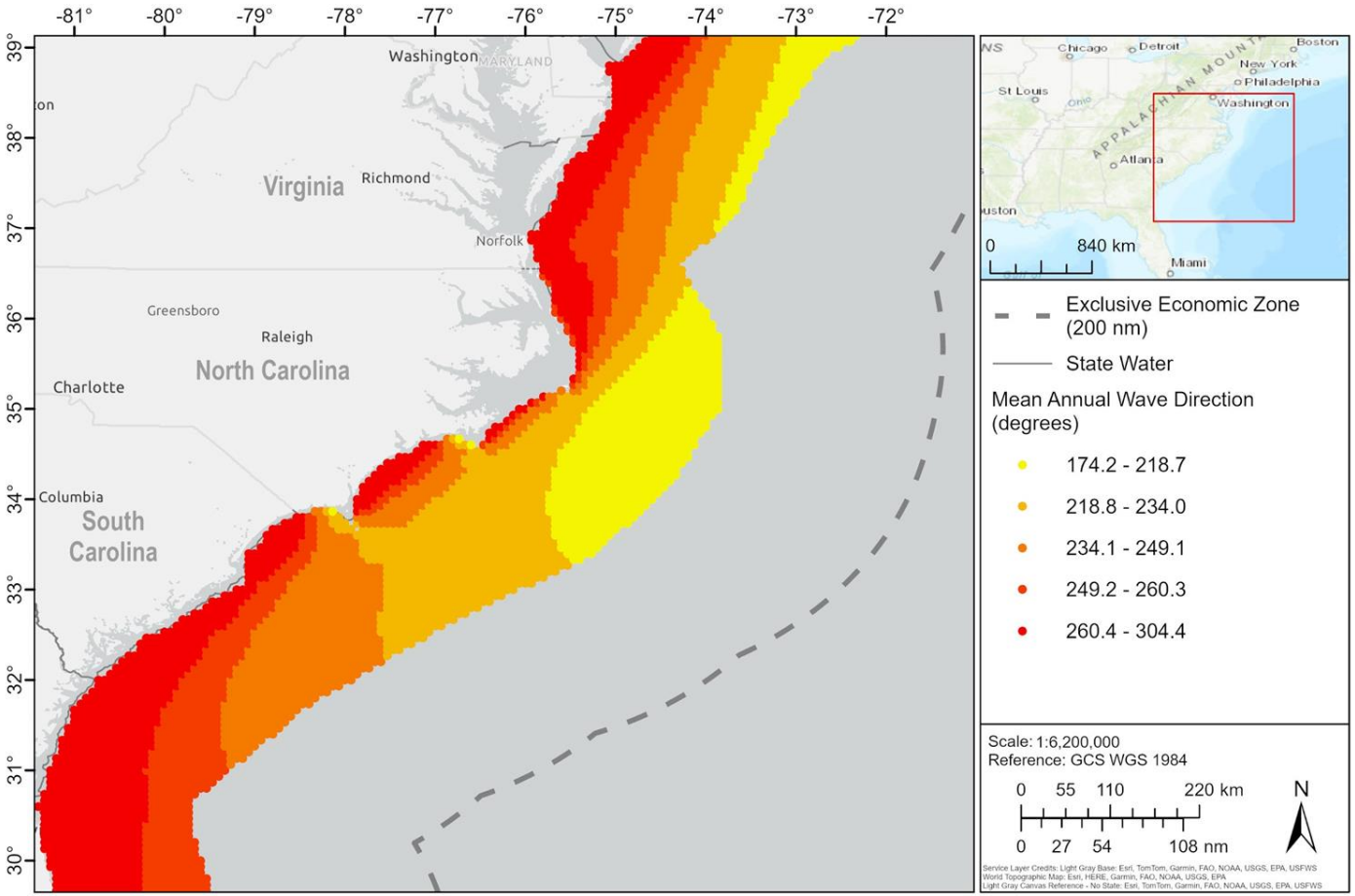
NOAA

Sea Surface Height & Ocean Waves

Significant Wave Direction: Wave hindcast direction represents the direction of peak in directionally-resolved wave energy flux. Wave hindcast direction values in this dataset are represented in degrees. The Wave Energy Resource Assessment project is a joint venture between NREL and Virginia Tech.

- **Original Source:** Office for Coastal Management
- **Download Source:** Marine Cadastre
- Data Link / Metadata



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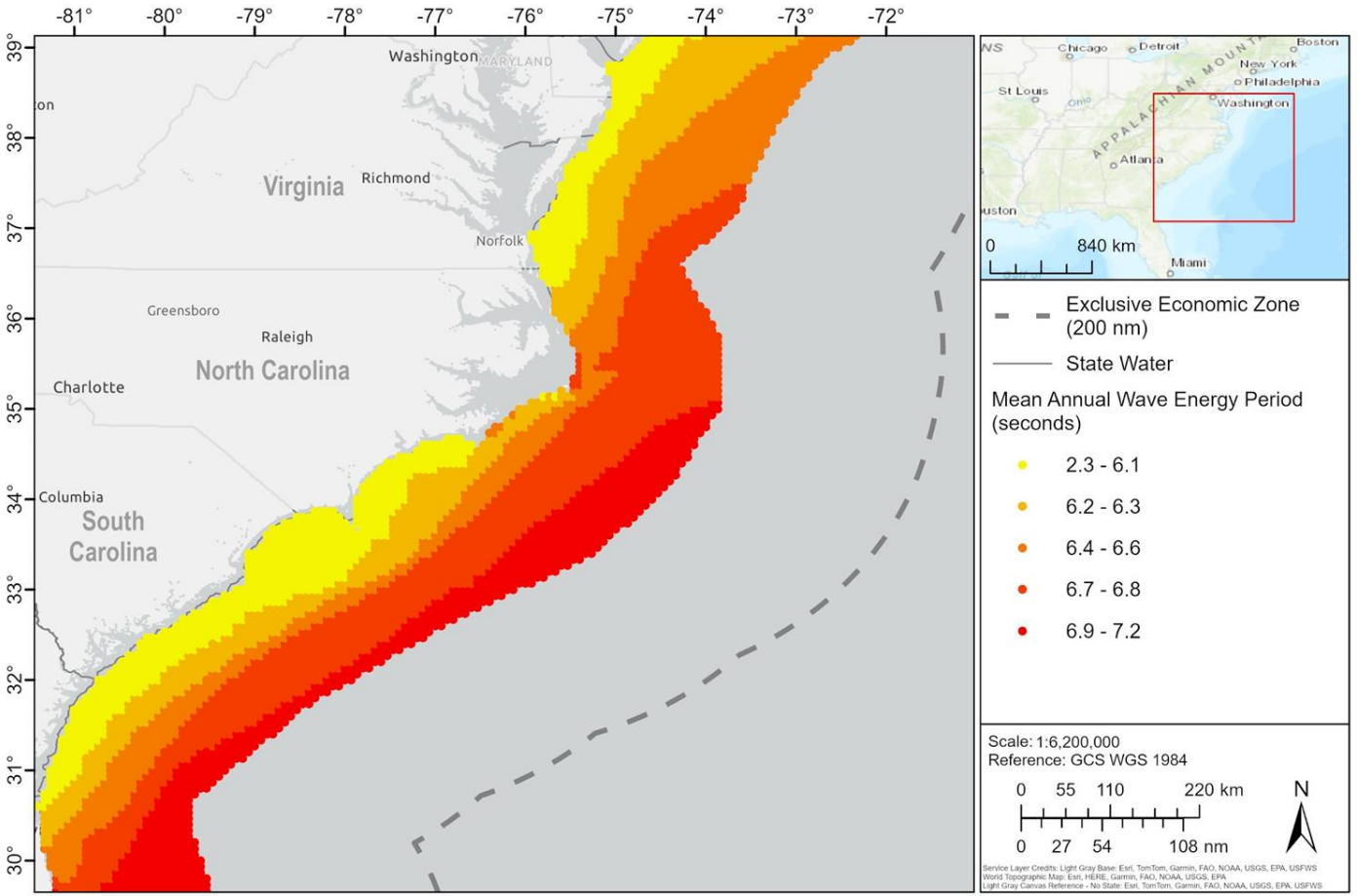
NOAA

Sea Surface Height & Ocean Waves

Wave Energy Period: Wave energy period is a sea state parameter, derived from the zeroth and first negative moments of the frequency spectrum. It is the period corresponding to the weighted average of the wave energy. Wave energy period values in this dataset are represented in seconds. The Wave Energy Resource Assessment project is a joint venture between NREL and Virginia Tech.

- **Original Source:** Office for Coastal Management
- **Download Source:** Marine Cadastre
- Data Link / Metadata



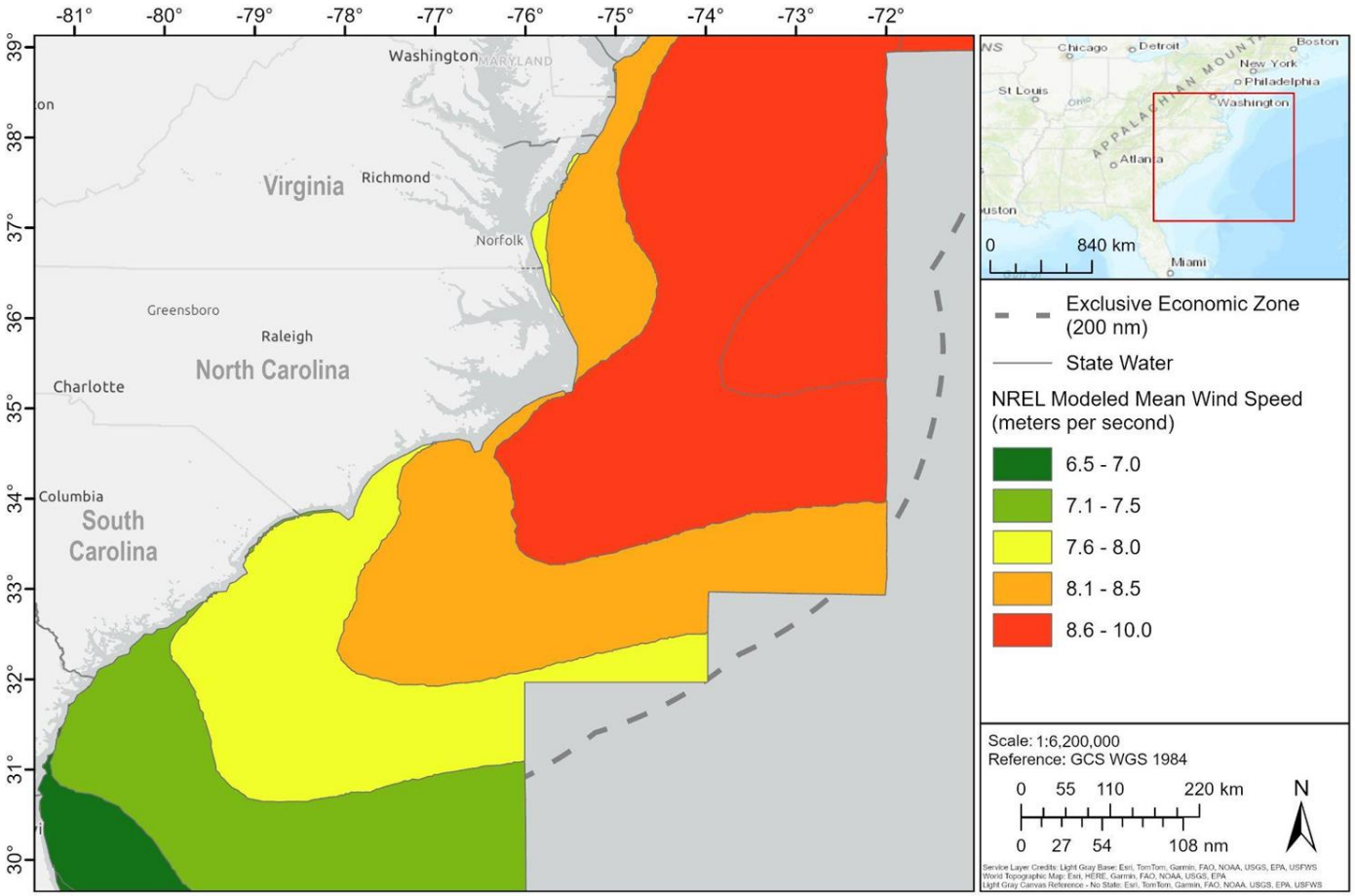
BOEM Bureau of Ocean Energy Management

NOAA

Information on Ocean Winds

NREL Hourly Wind - Atlantic: The geodatabase was created by computing statistical wind speed parameters for seven years of wind data from NREL's WIND Toolkit and placing them on a GIS grid that corresponds to the existing BOEM aliquot lease grid for the Atlantic coastal region. BOEM Geographers created the polygon files from the wind data point files in order to make data more easily viewable for MarineCadastre.gov users.

- **Original Source:** BOEM
- Data Link / Metadata



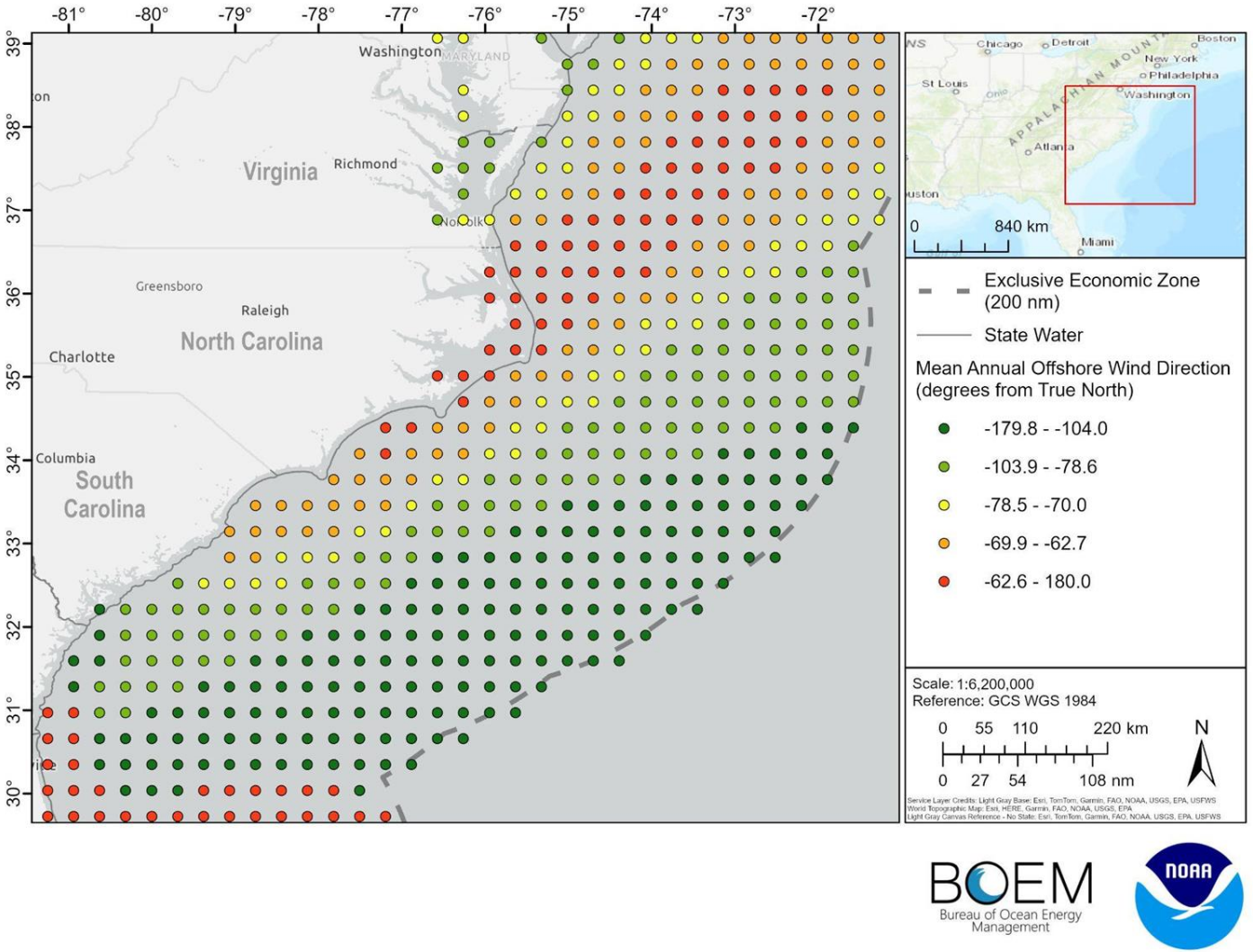
BOEM Bureau of Ocean Energy Management

NOAA

Information on Ocean Winds

Offshore Wind Speed and Direction: These data represent the average monthly wind speed and direction at the surface of the ocean. Source data includes values from January 1, 1979, to December 31, 2010, at hourly temporal resolution, with a spatial resolution of 0.313 degrees latitude x 0.312 degrees longitude. Values for wind speed are in meters per second and wind direction in degrees from True North.

- **Original Source:** Office for Coastal Management
- **Download Source:** Marine Cadastre
- Data Link / Metadata



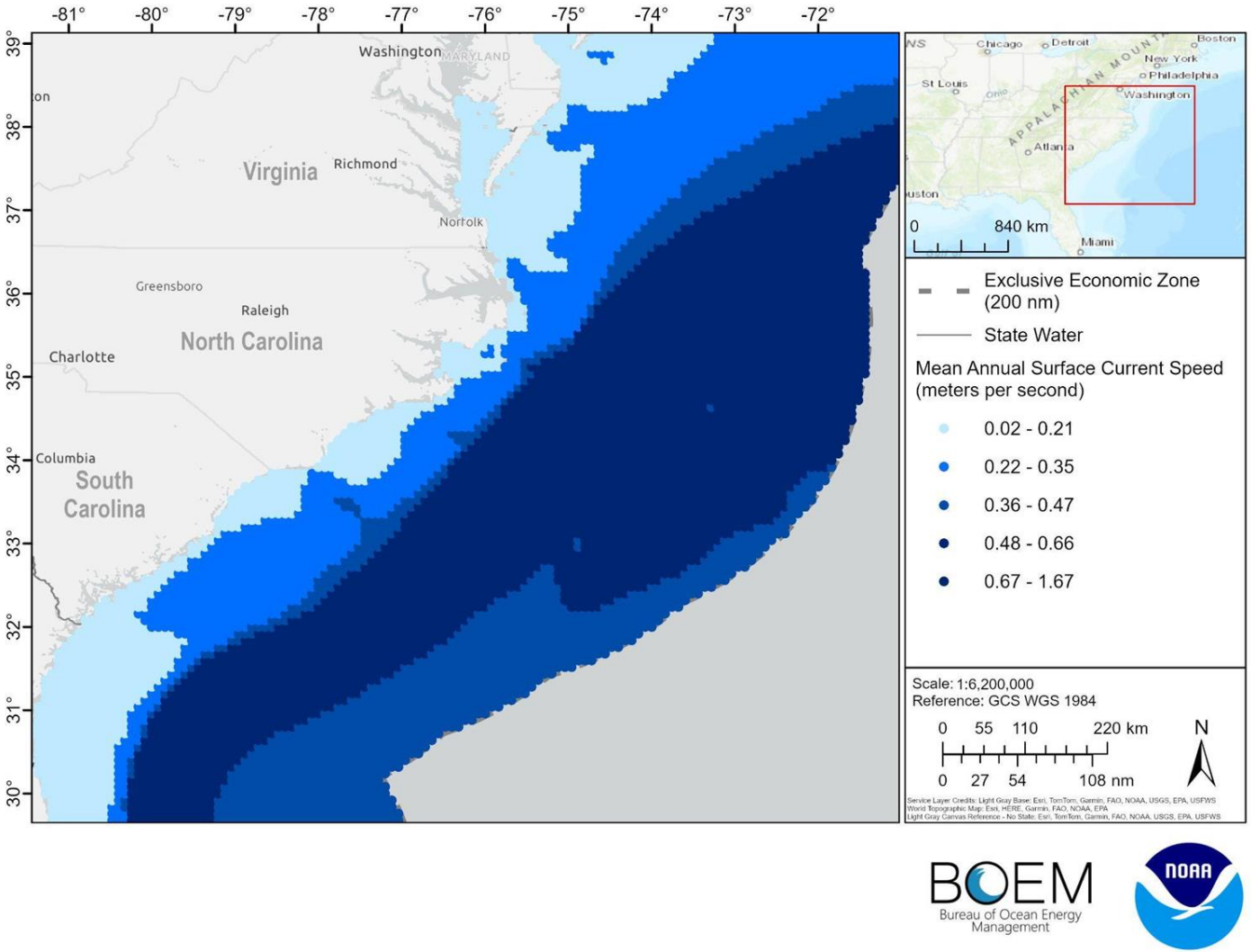
BOEM Bureau of Ocean Energy Management

NOAA

Information on Ocean Currents

Current Speed:
Monthly and annual U and V vectors were summarized for 14 unique depth levels from daily means using the HYCOM and NCODA Global 1/12-degree Reanalysis. Descriptive statistics of mean, variance, standard deviations, minimum, and maximum were calculated for each month from the twenty years of data using the daily means (1992-2012).

- **Original Source:** Office for Coastal Management
- **Download Source:** Marine Cadastre
- Data Link / Metadata



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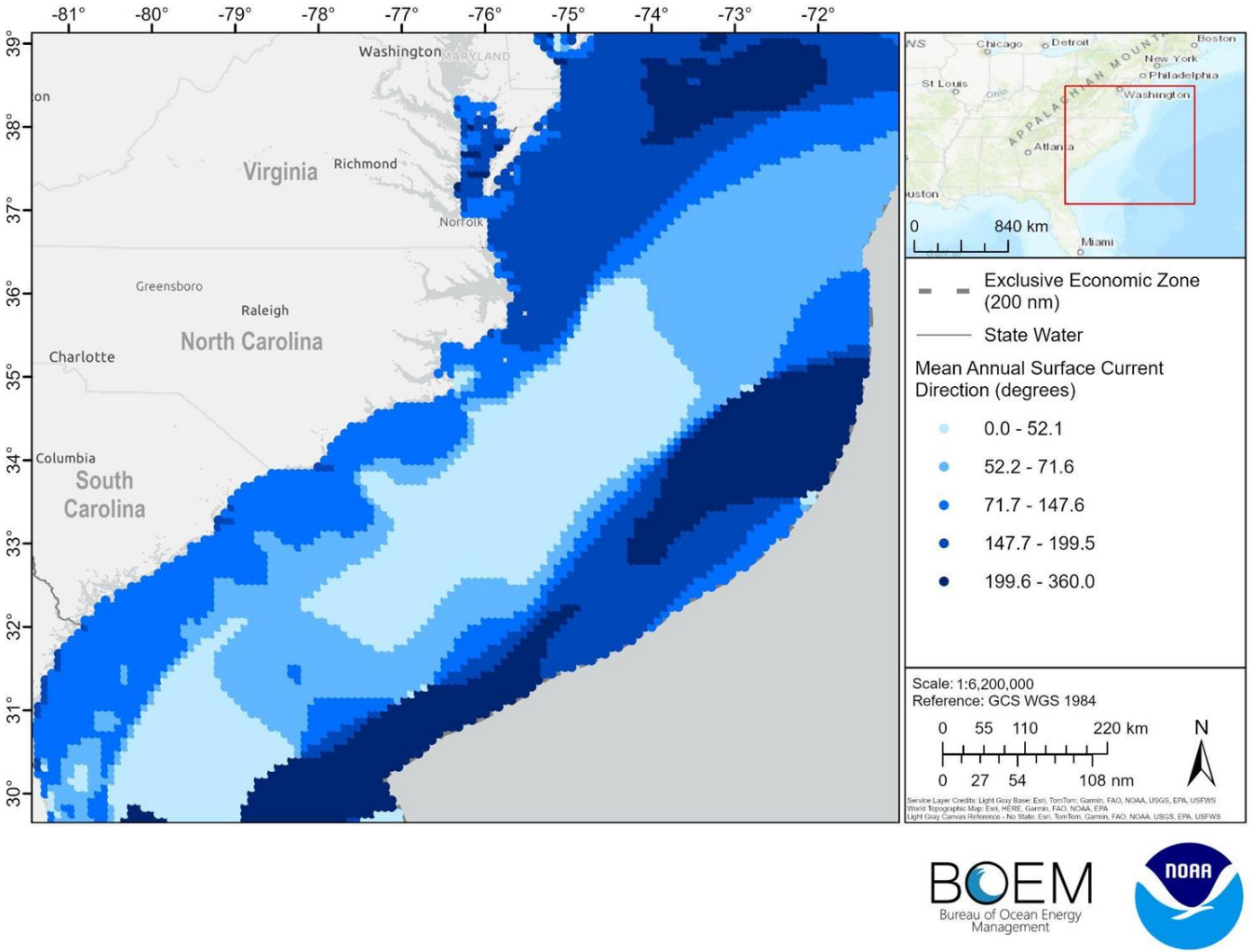
Information on Ocean Currents

Current Direction:
The mean direction in degrees (with 0 = North) was calculated from the summarized U and V vector means, and represents the direction that the current is moving toward. Descriptive statistics of mean, variance, standard deviations, minimum, and maximum were calculated for each month from the twenty years of data using the daily means (1992-2012).

- **Original Source:** Office for Coastal Management
- **Download Source:** Marine Cadastre
- Data Link / Metadata



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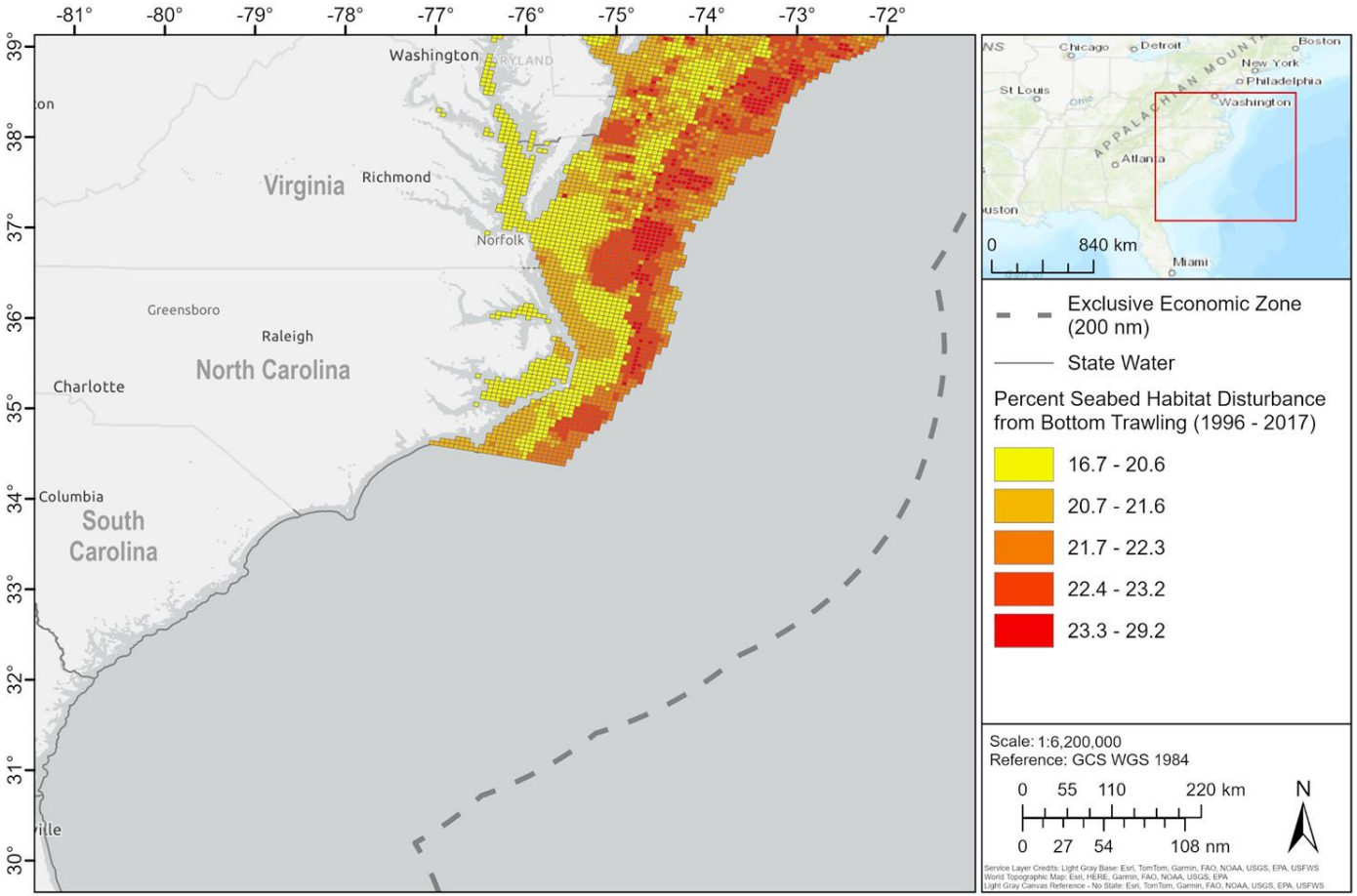
NOAA

Intrinsic Seabed Habitat Vulnerability

Description: The Intrinsic Seabed Habitat Vulnerability to Fishing layers show the vulnerability of the seabed to each of six bottom-tending fishing gear types (bottom trawl, scallop dredge, hydraulic clam dredge, longline, gillnet, and trap). A higher habitat disturbance percentage suggests that the seafloor in that location is more vulnerable to that fishing gear.

- **Original Source:** NOAA Fisheries
- **Download Source:** Northeast Ocean Data Portal
- Data Link / Metadata



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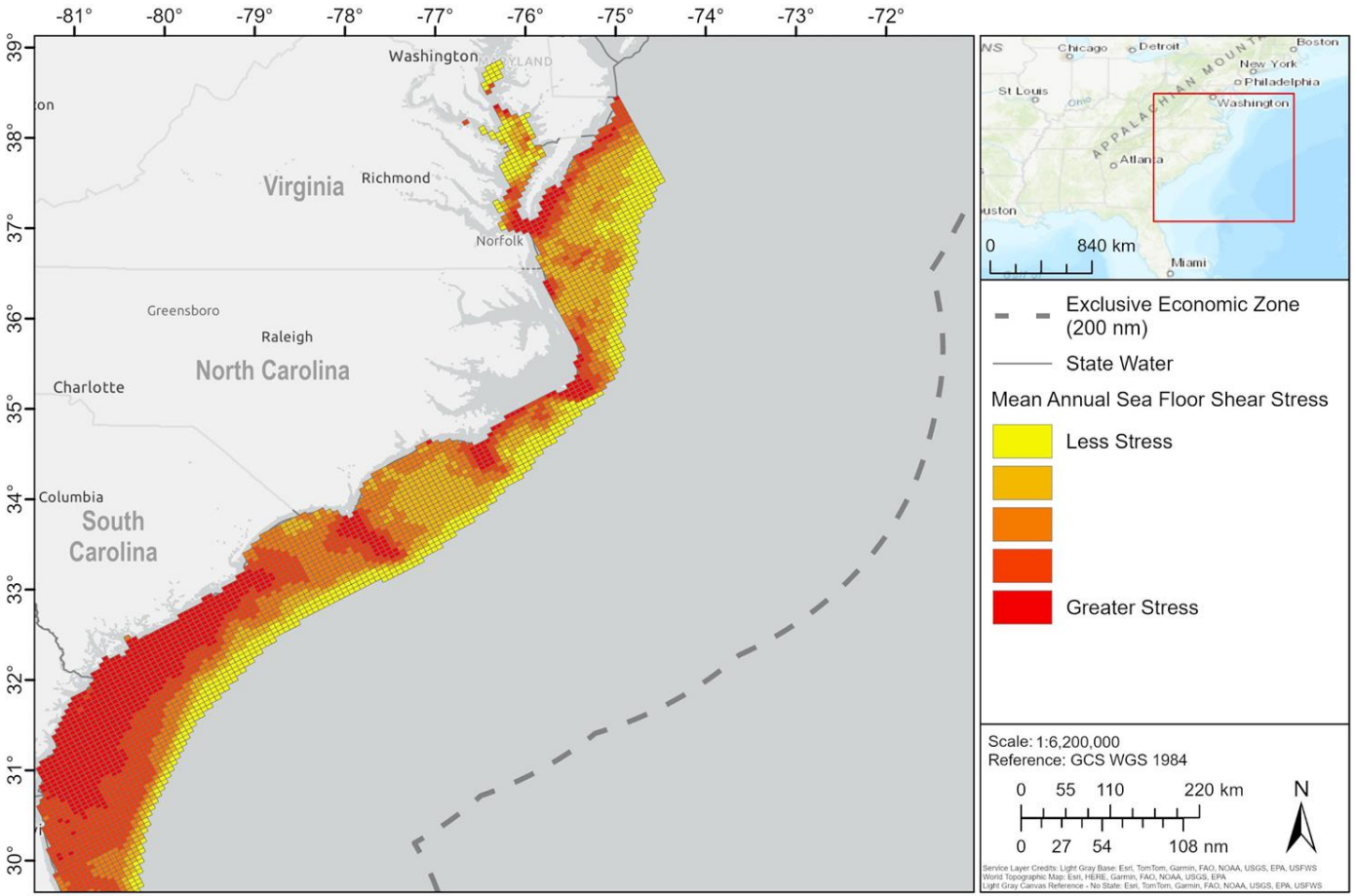
NOAA

Sea Floor Shear Stress

Wave-current Bottom Shear Stress: U.S. Geological Survey calculated median of wave-current bottom shear stress in the South Atlantic Bight from May 2010 to May 2011

- **Original Source:** U.S. Geological Survey
- Data Link / Metadata



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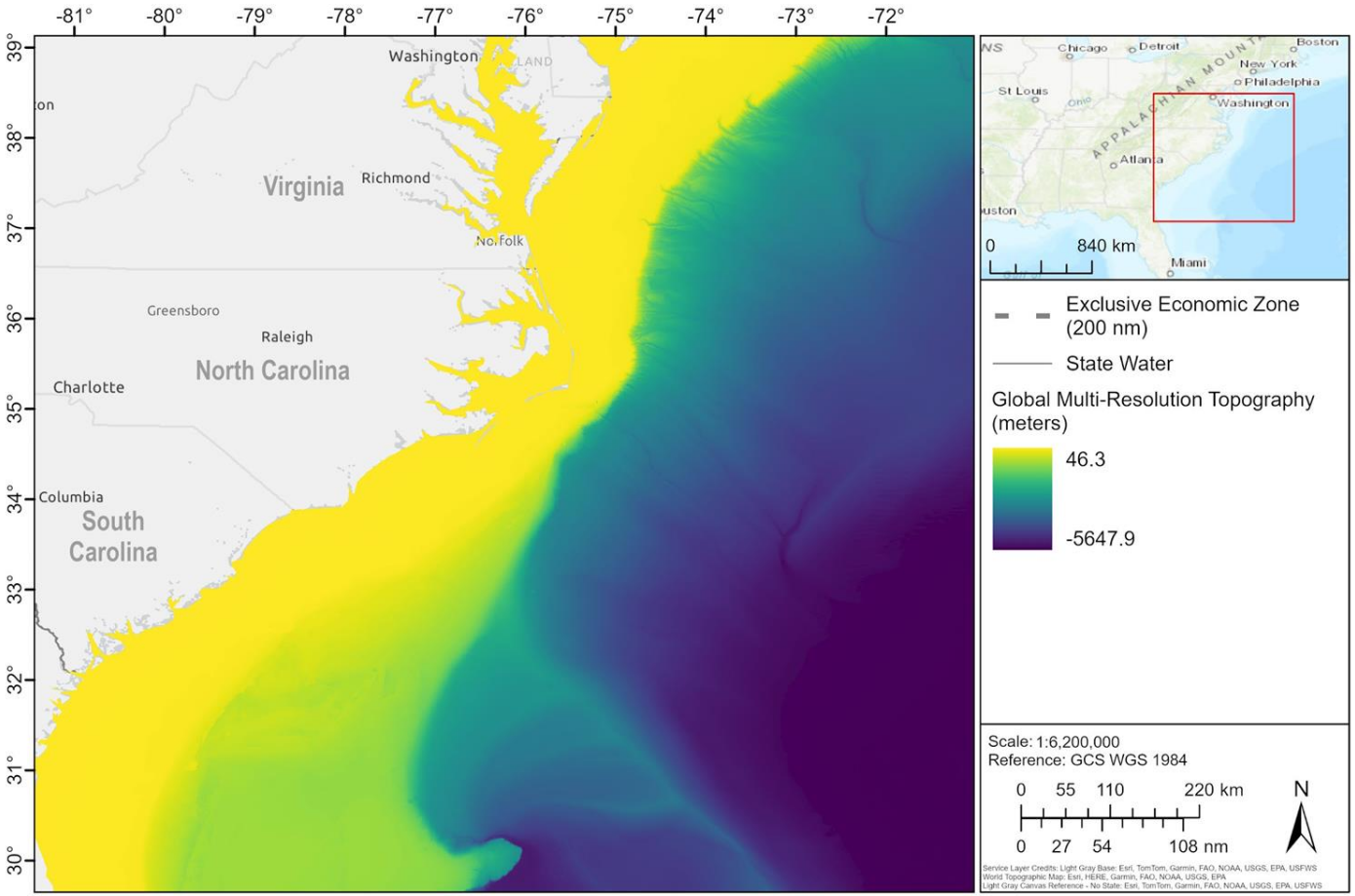
Bathymetry

Bathymetry: The Global Multi-Resolution Topography (GMRT) synthesis is a compilation of edited multibeam sonar data collected by scientists and institutions worldwide, that is reviewed, processed and gridded by the GMRT Team and merged into a single continuously updated compilation of global elevation data.

- **Original Source:** Hosted at Lamont-Doherty Earth Observatory of Columbia University
- Data Link / Metadata Link



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NOAA

2023 Coastal Relief Model

- **Source:** National Centers for Environmental Information
- **Description:** The NCEI CRM incorporates topographic and bathymetric data to create gridded elevation models that span onshore and offshore landscapes in the U.S coastal zone. The 2023 CRM are generated at a refined spatial resolution of 1 arc-second by merging high-resolution DEMs.
- Data Source Description Link / Metadata Link

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NOAA

Ocean Boundaries

Atlantic Administrative Boundaries:

- **Original Source:** U.S. Census Bureau
- Data Link

Native American Reservations and Land Trusts:

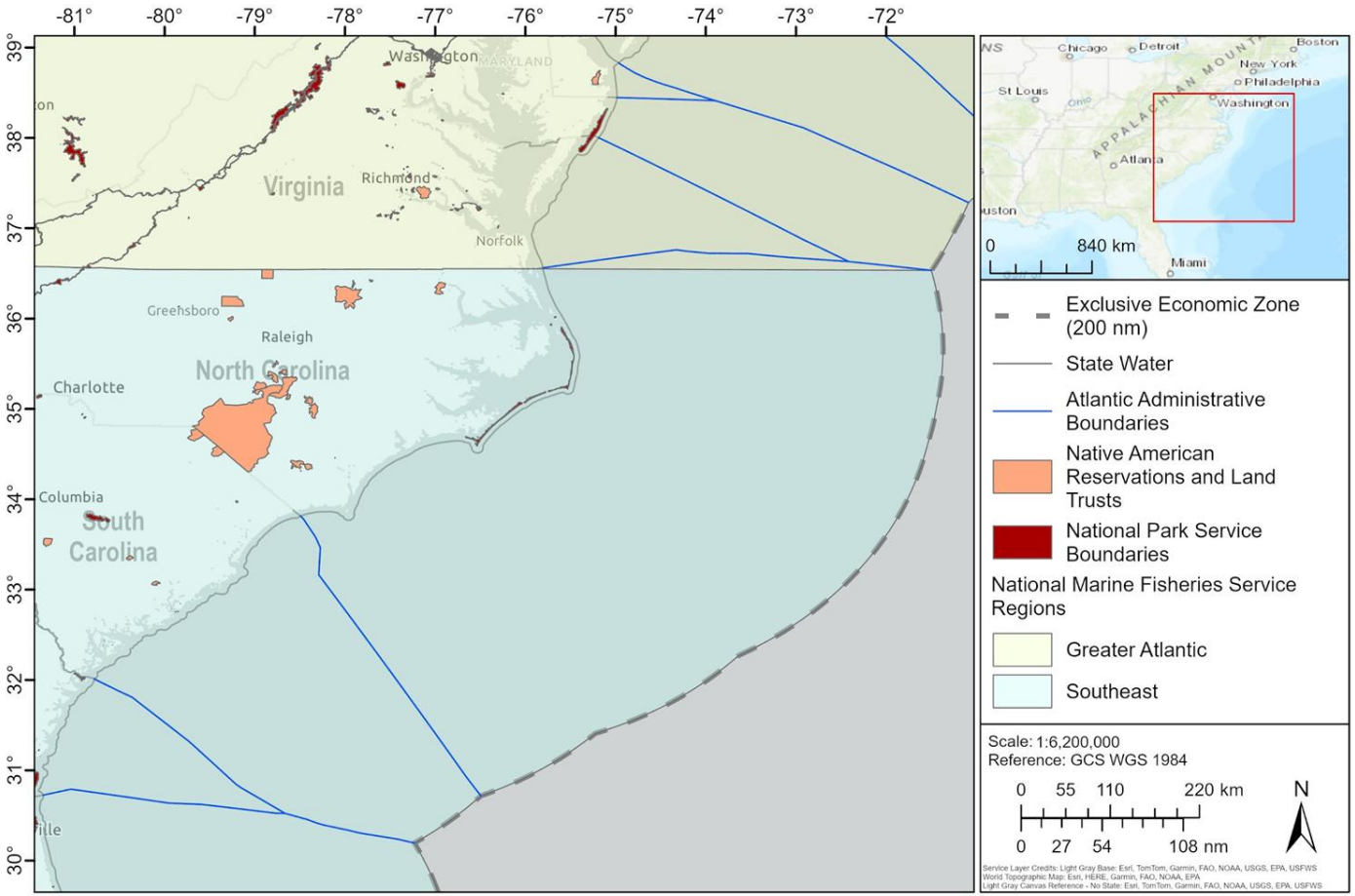
- **Original Source:** U.S. Census Bureau
- Data Link

National Park Service Boundaries: Administrative Boundaries of National Park System Units - National Geospatial Data Asset (NGDA) NPS National Parks Dataset

- **Original Source:** National Park Service
- Data Link

National Marine Fisheries Service Regions: Geographic representations for each of the National Marine Fisheries Service regions.

- **Original Source:** Office for Coastal Management
- **Download Source:** Marine Cadastre
- Data Link / Metadata



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Ocean Boundaries

Deepwater Marine Protected Areas: Eight deepwater Marine Protected Areas (MPAs) have been established in the South Atlantic region through implementation of Amendment 14 to the Snapper Grouper Fishery Management Plan. The MPAs are designed to protect a portion of the long-lived, "deep water" snapper grouper species such as snowy grouper, speckled hind, and blueline tilefish. The MPAs range in size from 2 X 4 to 10 X 15 nautical miles.

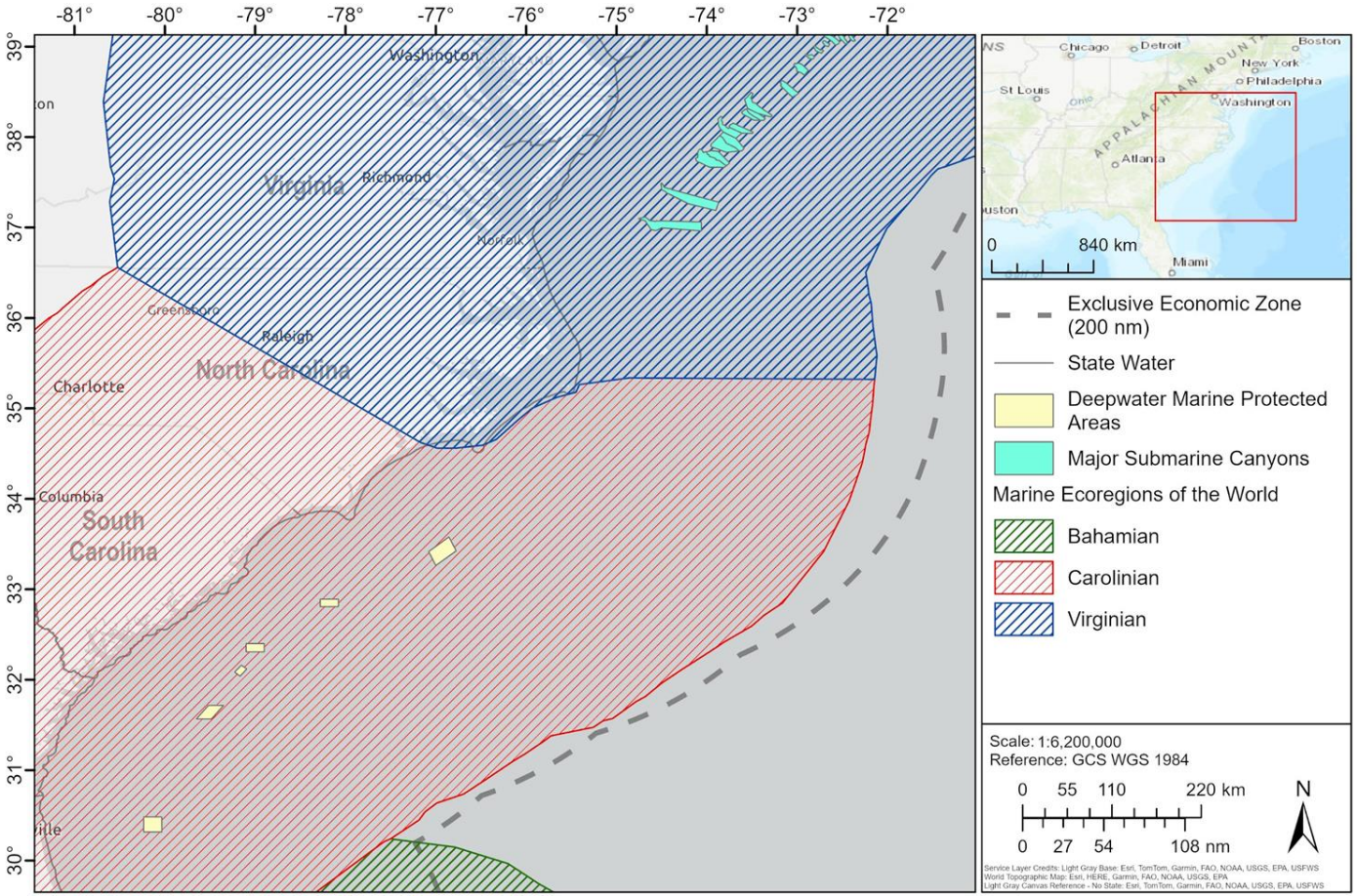
- **Original Source:** SAFMC
- Data Link

Major Submarine Canyons: These boundaries were created primarily for cartographic purposes and do not represent ecological boundaries. There are many submarine canyons in addition to those included here – this layer was created in an attempt to show the "major" canyons on maps.

- **Original Source:** The Nature Conservancy
- **Download Source:** Northeast Ocean Data Portal
- Data Link / Metadata

Marine Ecoregions Of the World (MEOW): A biogeographic classification of the world's coastal and continental shelf waters following a nested hierarchy of realms, provinces and ecoregions.

- **Original Source:** The Nature Conservancy
- Data Link / Metadata



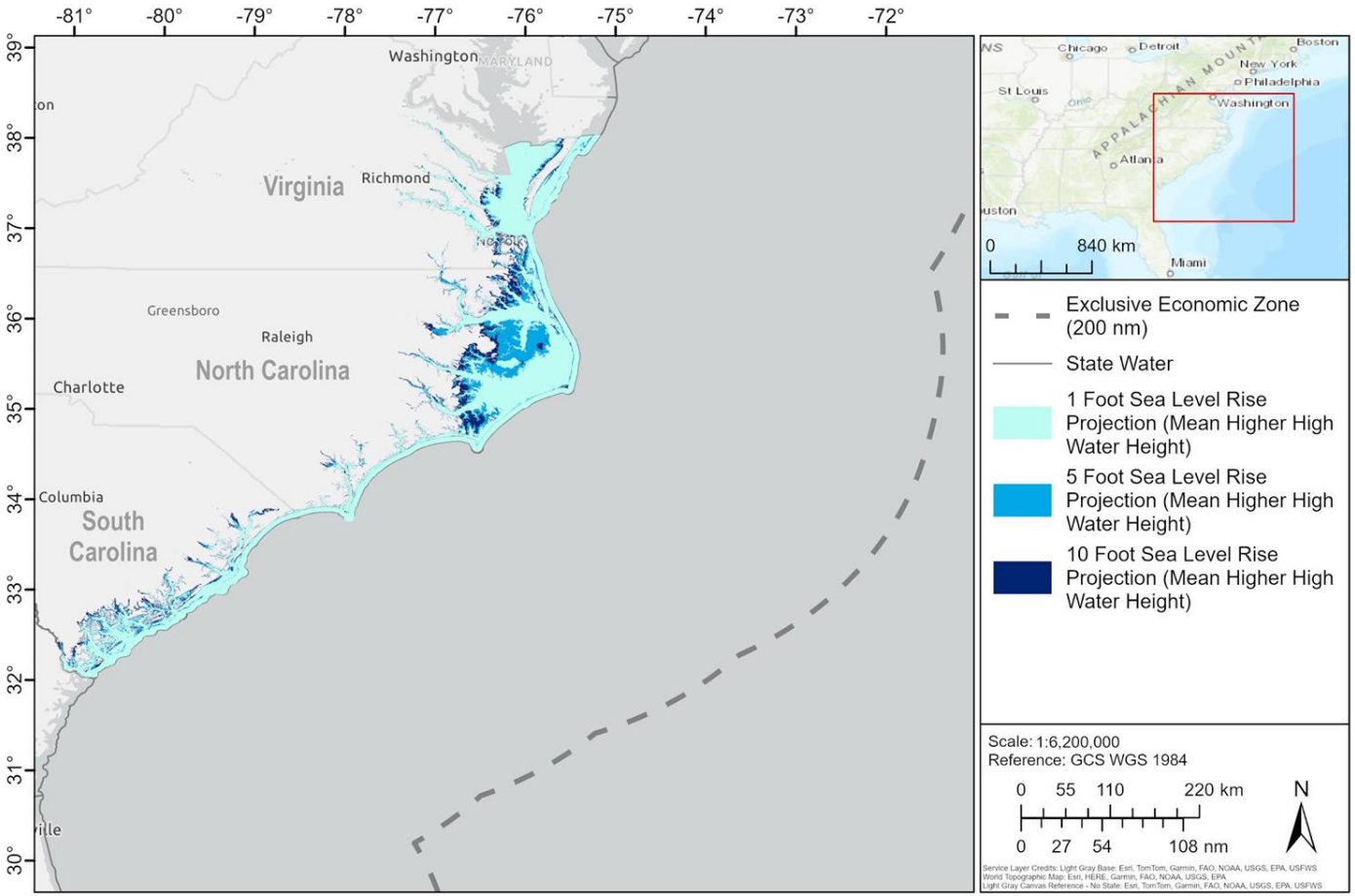
BOEM Bureau of Ocean Energy Management

NOAA

Sea Level Rise Projections

Sea Level Rise (1 foot, 5 foot, 10 foot): These data were created as part of the National Oceanic and Atmospheric Administration Office for Coastal Management's efforts to create an online mapping viewer called the Sea Level Rise and Coastal Flooding Impacts Viewer. It depicts potential sea level rise and its associated impacts on the nation's coastal areas. The purpose of the mapping viewer is to provide coastal managers and scientists with a preliminary look at sea level rise and coastal flooding impacts.

- **Original Source:** NOAA Office for Coastal Management
- Data Link / Technical Report Link



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NOAA

Industries

Locations of oil and gas resources, key industrial concerns (shipping lanes), fishery independent surveys, weather forecasting, tourism

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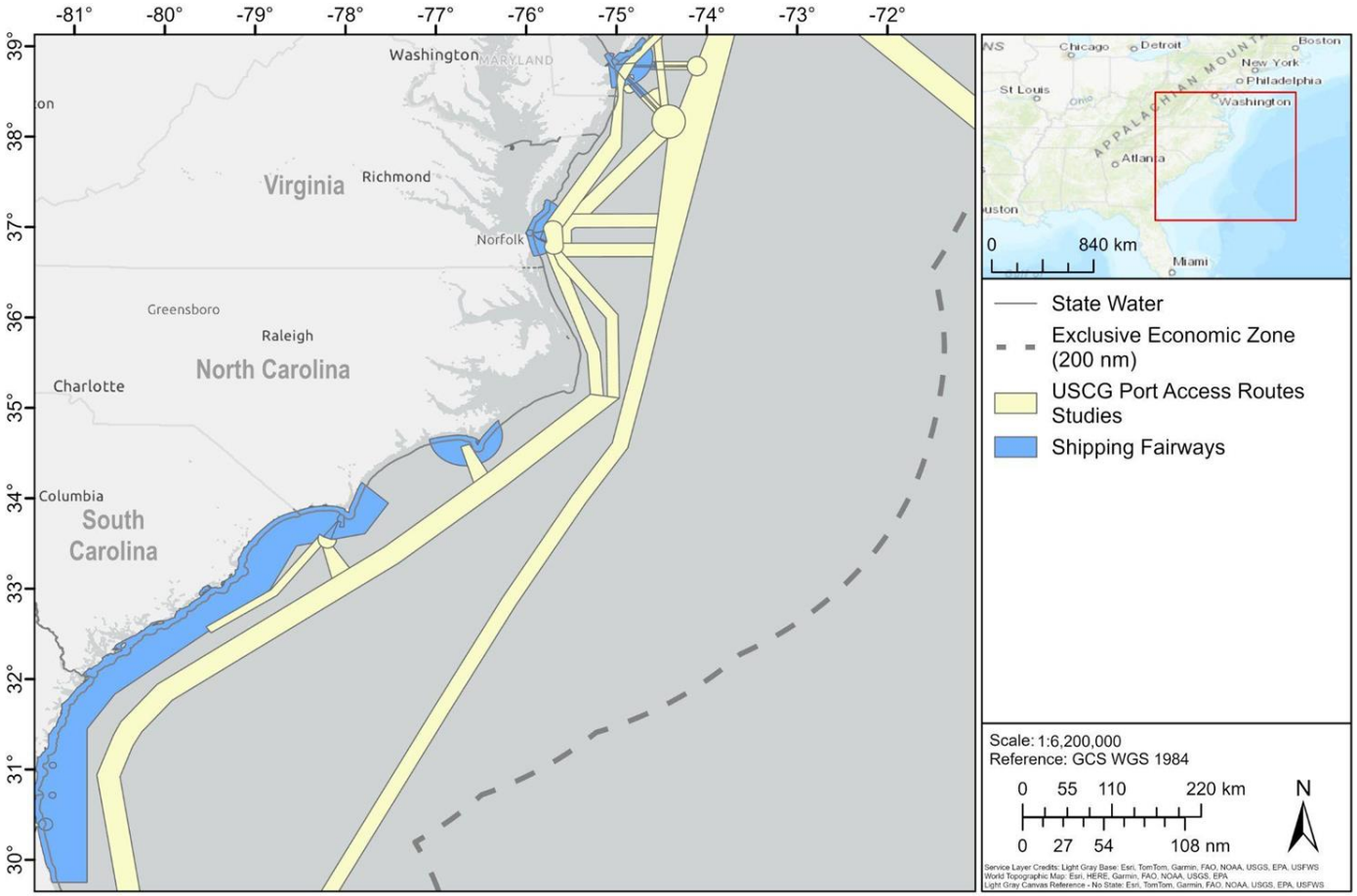
Shipping Fairways

Port Access Routes Studies: proposed routing changes, within the territorial seas, for any port. The Secretary of Homeland Security may designate or adjust necessary fairways and Traffic Separation Schemes (TSS) to provide safe access routes for vessel traffic proceeding to and from ports or places that fall under the jurisdiction of the United States.

- **Source:** USCG

Shipping Fairways: Various shipping zones delineate activities and regulations for marine vessel traffic. Traffic lanes define specific traffic flow, while traffic separation zones assist opposing streams of marine traffic. Precautionary areas represent areas where ships must navigate with caution, and shipping safety fairways designate where artificial structures are prohibited.

- **Source:** NOAA Office of Coast Survey
- Data Link / Metadata Link



BOEM Bureau of Ocean Energy Management

NOAA

Channels, Ferry Terminals, and Ports

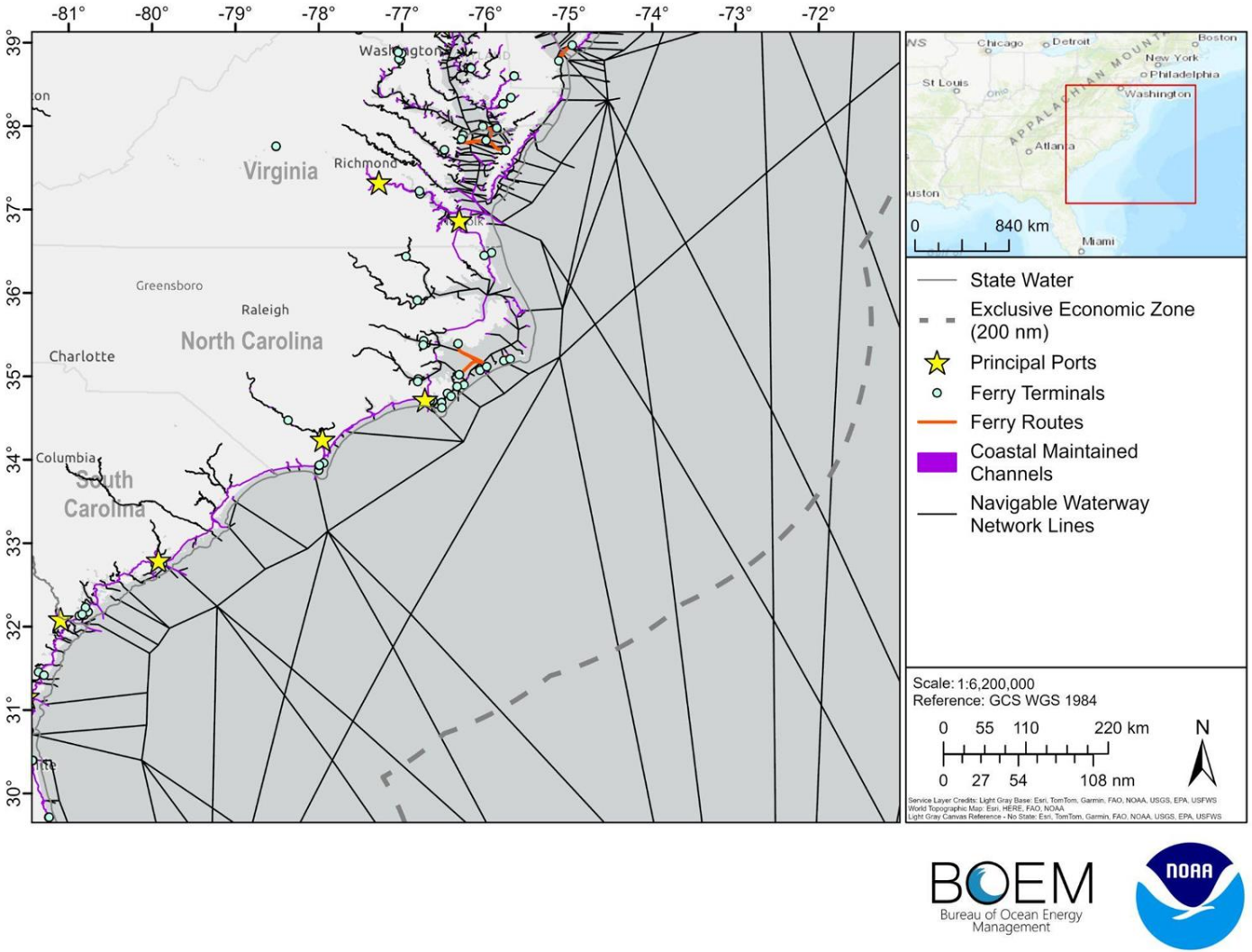
Principal Ports: The top 150 US ports based upon total annual tonnage
- **Source:** NOAA OCM
- Data Link / Metadata Link

Ferry Terminals: all ferry terminals that were surveyed in the 2018 National Census of Ferry Operators. The terminals represent areas where ferries from the NCFO arrive and depart from.
- **Source:** US Department of Transportation
- Data Link / Metadata Link

Ferry Routes: all ferry routes that were surveyed in the 2018 National Census of Ferry Operators.
- **Source:** US Department of Transportation
- Data Link / Metadata Link

Coastal Maintained Channels: coastal channels and waterways that are maintained and surveyed by the US Army Corps of Engineers. These channels are necessary transportation systems that serve economic and national security interests.
- **Source:** USACE, NOAA OCM
- Data Link / Metadata Link

Navigable Waterway Network Lines: Waterway Network, Waterway Network Nodes. A route line feature class with linear referencing system measures for NWN links/segments and original NWN attribute fields.
- **Source:** US Department of Transportation
- Data Link / Metadata Link



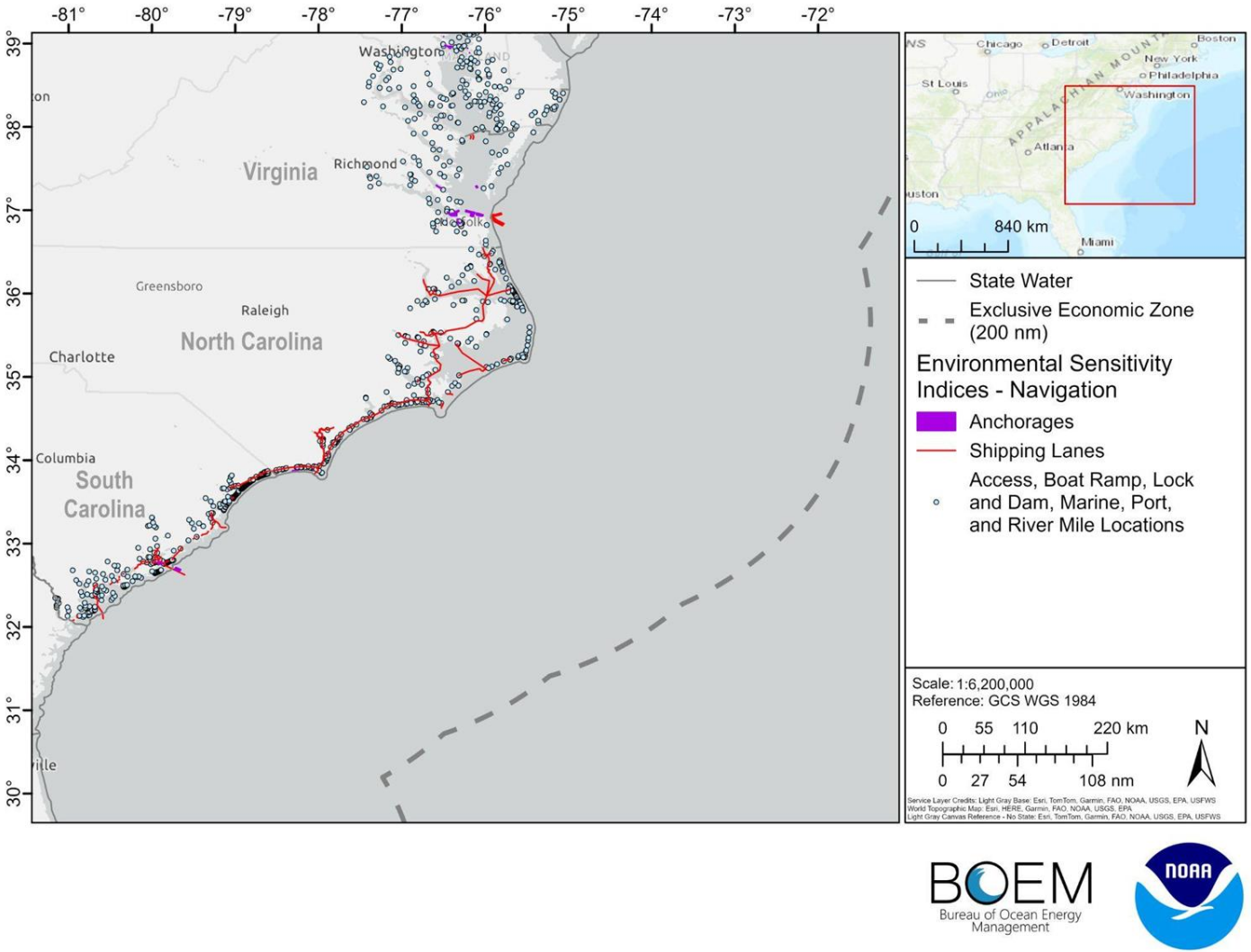
BOEM Bureau of Ocean Energy Management

NOAA

Environmental Sensitivity Indices - Navigation

Environmental Sensitivity Indices - Navigation: vector polygons depicting locations for anchorages, vector lines depicting locations for shipping lanes and ferry routes, and vector points depicting locations for beach access locations, boat ramps, ferry locations, marinas, and ports in North Carolina.

- **Source:** NOAA Office of Response and Restoration
- Data Link / Metadata Link



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NOAA

Anchorage, Pilot Boarding, and Disposal Sites

Anchorage Areas: well-defined navigable waters where a vessel may safely drop anchor. The size, shape, and conditions for use of these areas can vary widely.

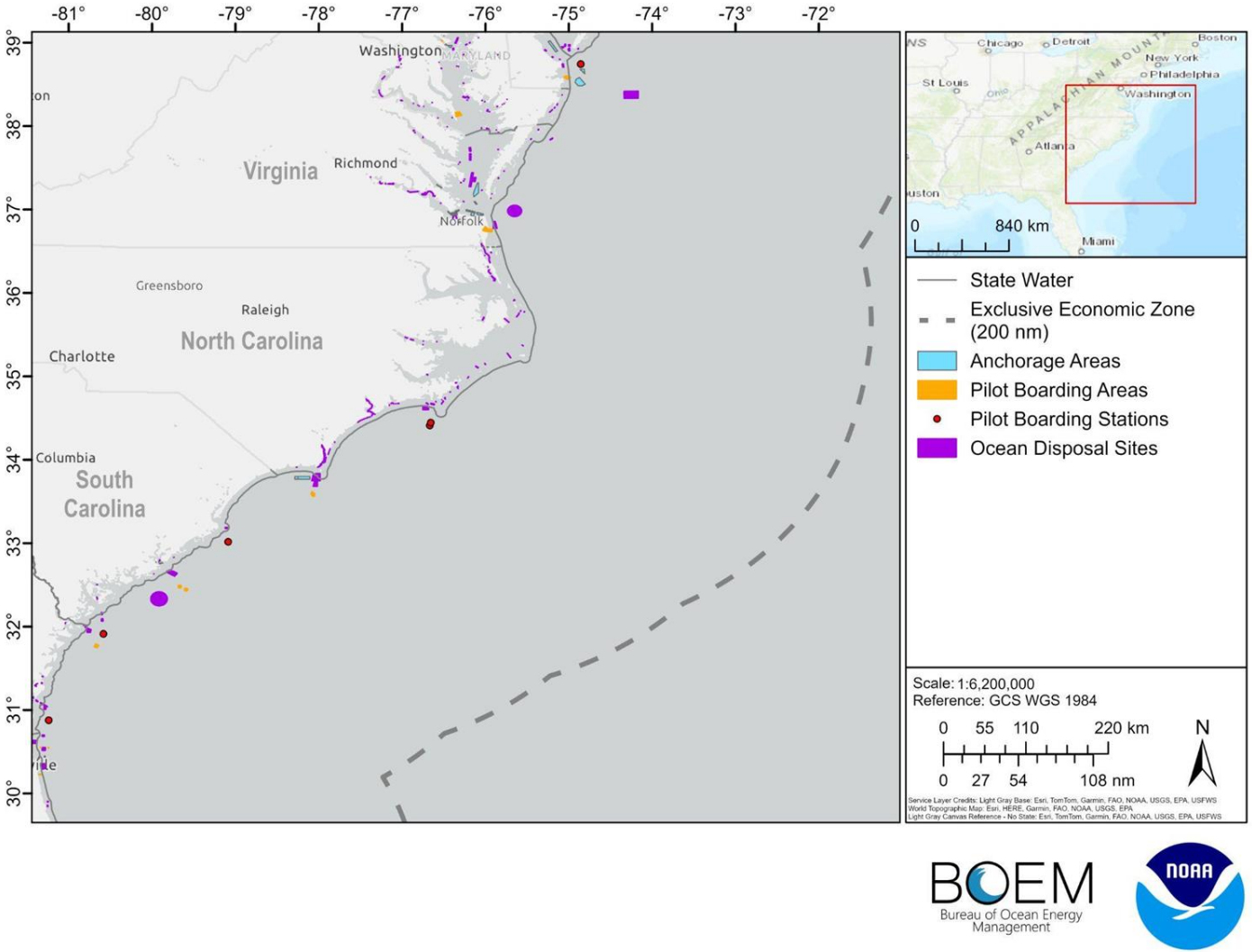
- **Source:** USCG
- Data Link / Metadata Link

Pilot Boarding Areas and Stations: A location offshore where a pilot may board a vessel in preparation to piloting it through local waters. Pilot boarding stations and areas are either a well-defined position, a circular area around a position, or another more complex shaped area with well-defined boundaries.

- **Source:** NOAA OCM
- **Areas:** Data Link / Metadata Link
- **Stations:** Data Link / Metadata Link

Ocean Disposal Sites: These data show the location of available and discontinued ocean disposal sites within U.S. waters. Contemporary ocean disposal sites generally accept clean dredged material (sediment) collected during navigation channel improvement projects.

- **Source:** NOAA OCM
- Data Link / Metadata Link



BOEM Bureau of Ocean Energy Management

NOAA

Pipelines and Submarine Cables

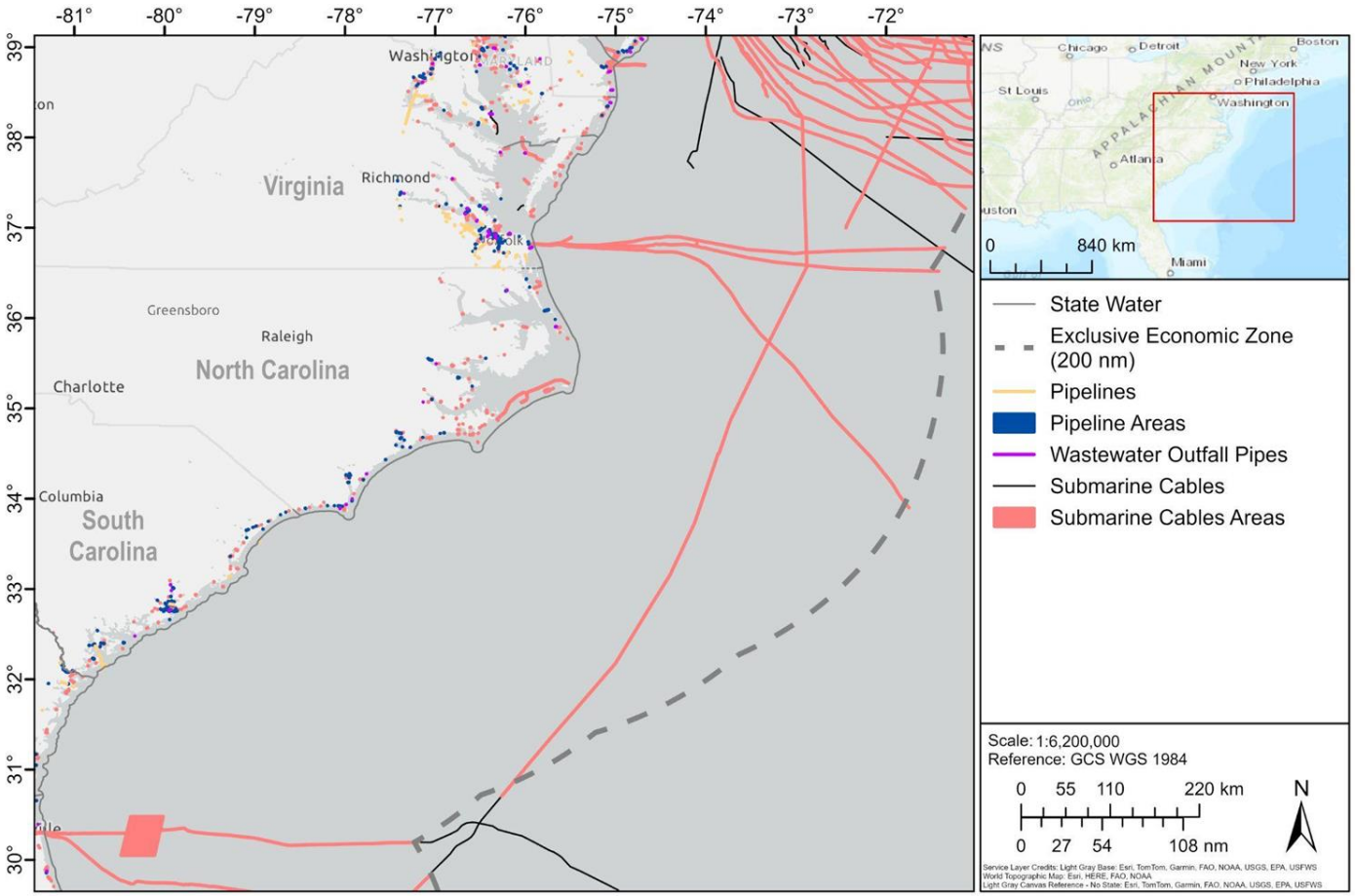
Pipelines: Oil and gas pipelines within the U.S. Outer Continental Shelf
- **Source:** NOAA OCM
- Data Link / Metadata Link

Pipeline Areas: general location of pipelines within US waters. The geographic footprint for each pipeline may vary and is dependent on the original source data.
- **Source:** NOAA OCM
- Data Link / Metadata Link

Wastewater Outfall Pipes: location, identification, and permit and discharge monitoring information from the EPA Facility Registry Service (FRS).
- **Source:** EPA
- Data Link / Metadata Link

Submarine Cables: submarine cables in and around US navigable waters, derived from NOAA and NASCA Submarine Cable records.
- **Source:** NOAA OCM
- Data Link / Metadata Link

Submarine Cable Areas: general location of commercial and research submarine cables within US waters. The majority of these cables are for telecommunications, and the remaining are for power transmission.
- **Source:** NOAA OCM
- Data Link / Metadata Link



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NOAA

Offshore Wind and Electricity

Offshore Wind Planned Ports: locations of port facilities that are currently in use or planned for offshore wind development in the Mid-Atlantic region
- **Source:** Mid-Atlantic Regional Council on the Ocean
- Data Link / Metadata Link

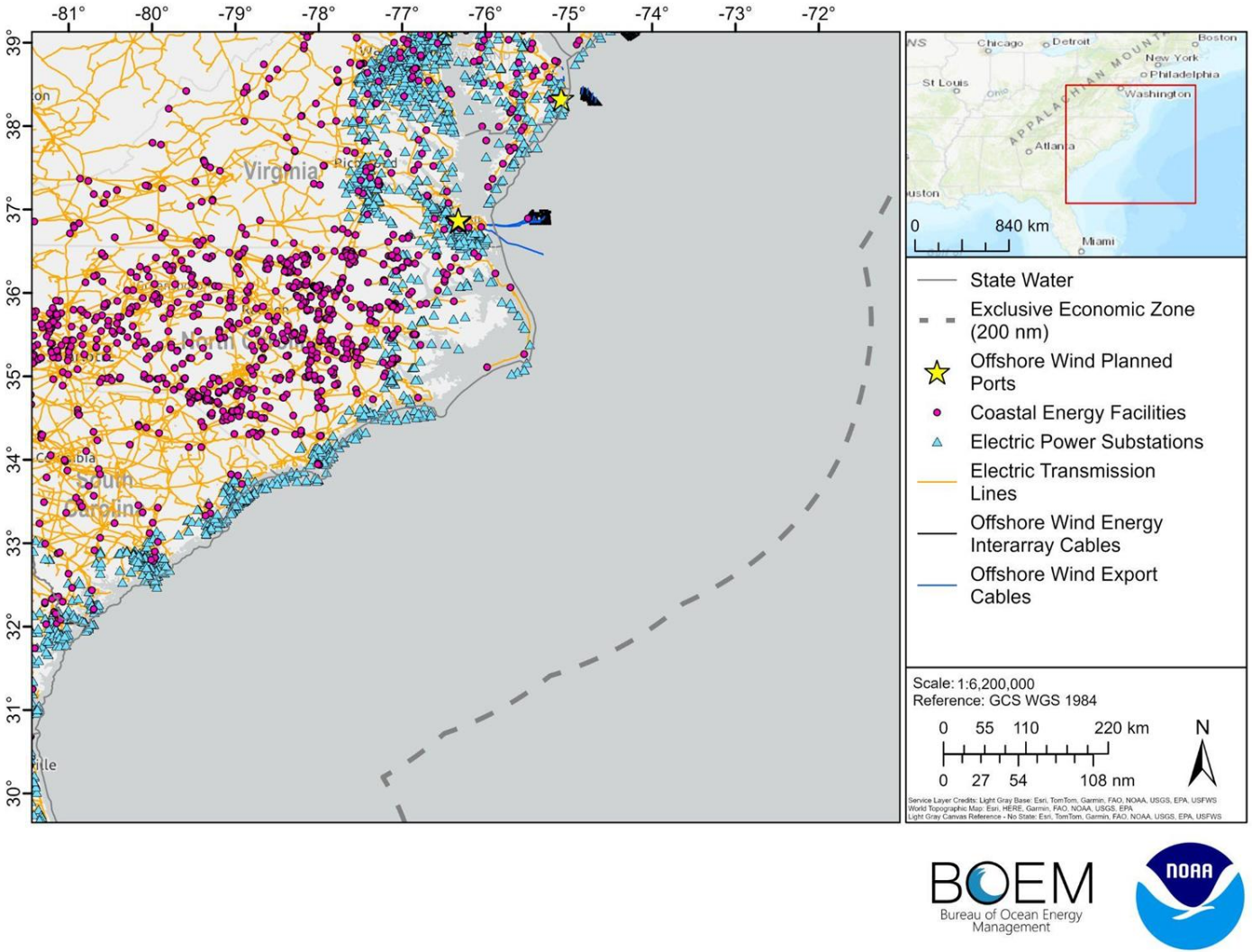
Coastal Energy Facilities: These data represent operable electric generating plants within the vicinity of the U.S. coastline by energy source
- **Source:** US Energy Infrastructure Administration
- Data Link / Metadata Link

Electric Power Substations: operable electric generating plants within the vicinity of the US coastline by energy source.
- **Source:** Oak Ridge National Laboratory
- Data Link / Metadata Link

Electric Transmission Lines: electric power transmission lines in the United States
- **Source:** Homeland Infrastructure Foundation-Level Data (HIFLD)
- Data Link / Metadata Link

Offshore Wind Energy Interarray Cables: proposed and installed inter-array cables for offshore wind projects. Cables, shown in this layer, represent the currently proposed cable linkages between proposed turbines and/or proposed offshore substation(s).
- **Source:** BOEM
- Data Link / Metadata Link

Offshore Wind Export Cables: The proposed, planned or final location and route where the power cable(s) from an offshore wind project will lie beneath or along the seafloor, on or beneath land features and/or inland water bodies.
- **Source:** BOEM
- Data Link / Metadata Link



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NOAA

Ocean Lease Areas and Resources

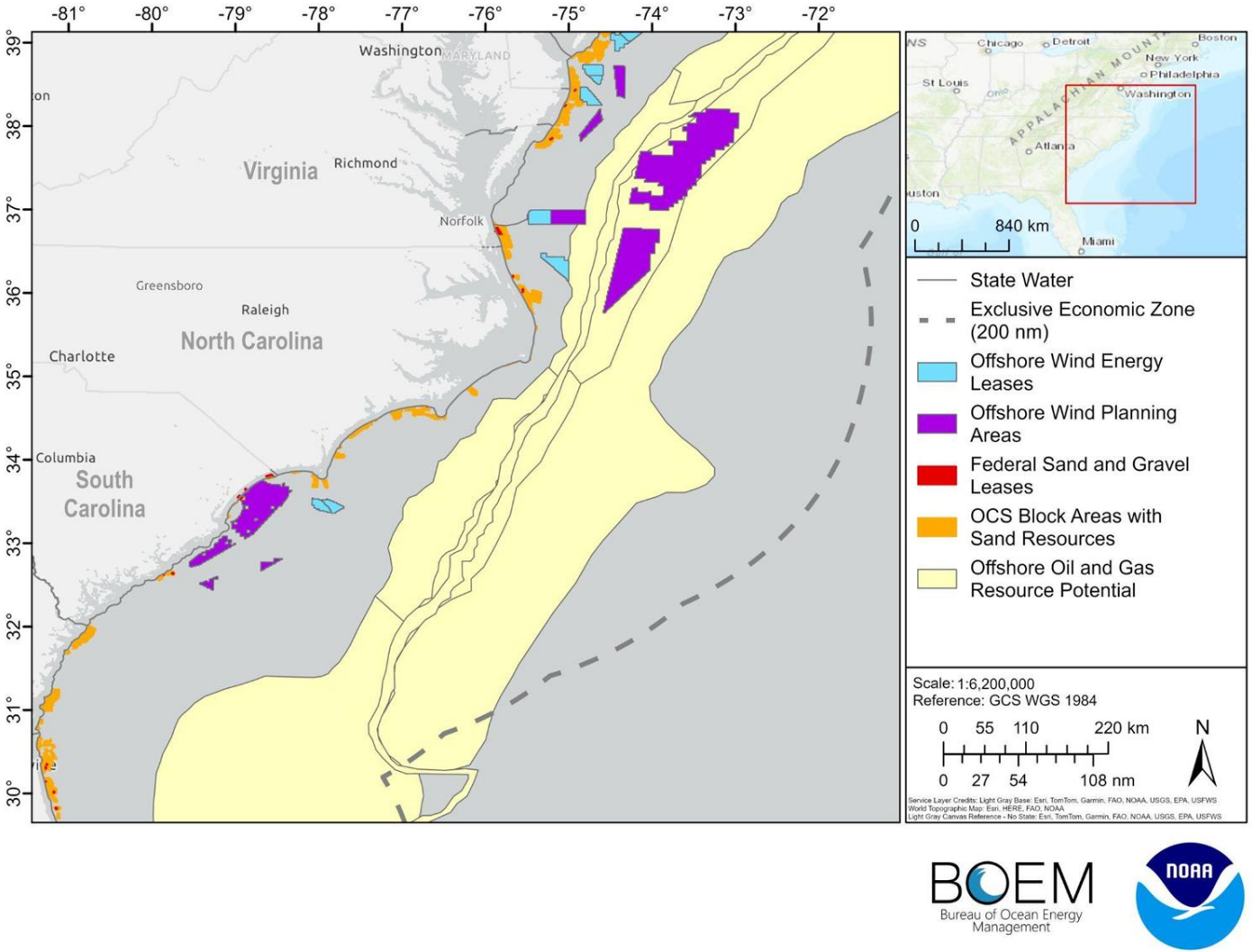
Offshore Wind Energy Leases: Offshore Wind Energy Leases within the US Outer Continental Shelf (OCS).
- **Source:** BOEM
- Data Link / Metadata Link

Offshore Wind Planning Areas: Wind Energy Planning and Development including the most recent updates to areas of interest within the OCS.
- **Source:** BOEM
- Data Link / Metadata Link

Federal Sand and Gravel Leases: areas where entities that have entered into or have requested a Negotiated Non-Competitive Lease or Memorandum of Agreement with BOEM can dredge sand, gravel, or shell resources from the OCS.
- **Source:** BOEM
- Data Link / Metadata Link

OCS Block Areas with Sand Resources: OCS block aliquots that lie at least partially within a 1 statute mile buffer of where sand resources have been identified through reconnaissance and/or design-level studies.
- **Source:** BOEM
- Data Link / Metadata Link

Offshore Oil and Gas Resource Potential: location of probable oil or gas geologic structures (plays) mapped within the outer continental shelf of the United States.
- **Source:** BOEM
- Data Link / Metadata Link



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NOAA

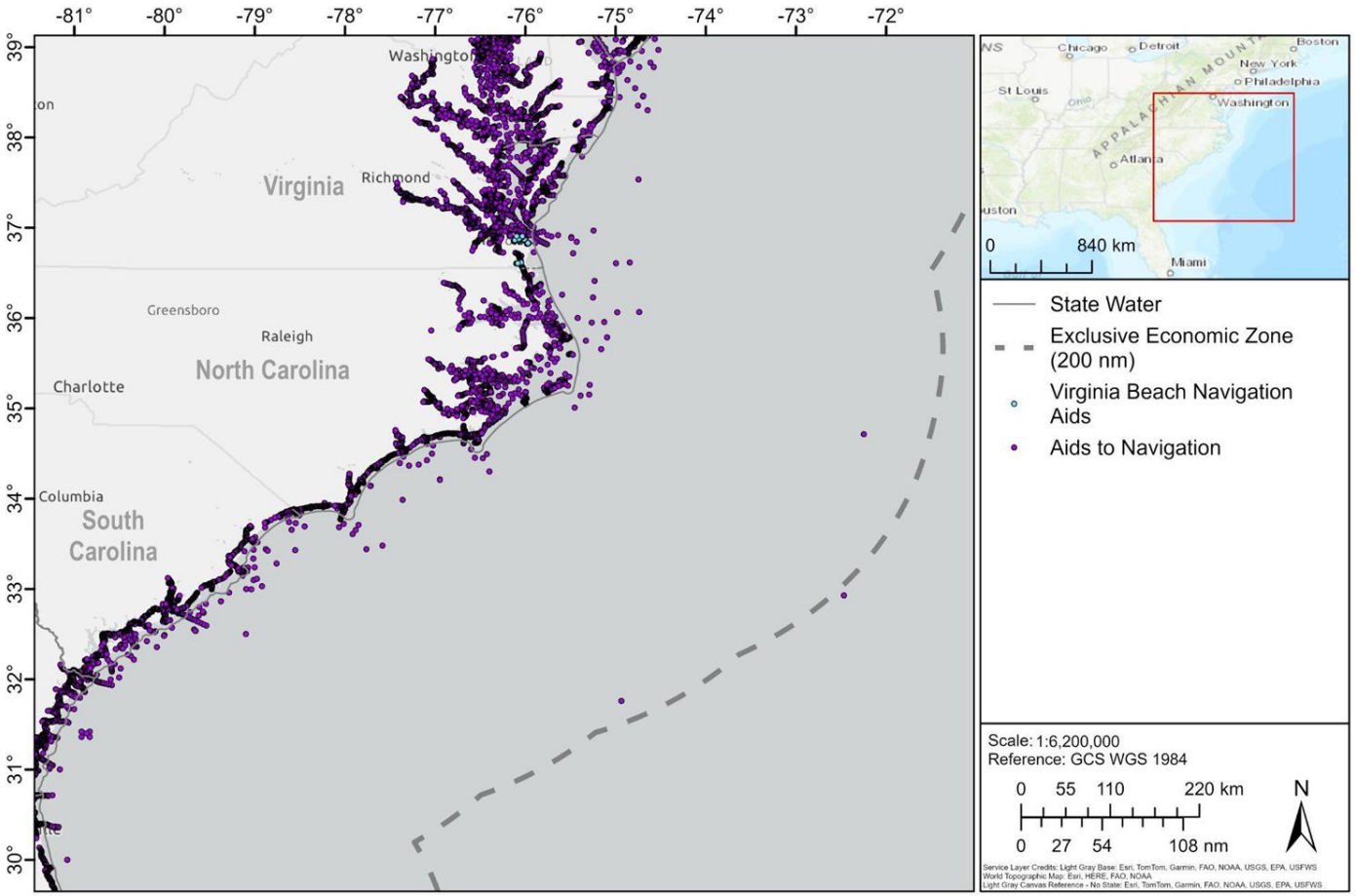
Aids to Navigation

Virginia Beach Navigation Aids: Channel Markers and Navigation Aids, including Channel Markers, Day Markers, No Wake Signs, No Wake Buoys and other Nautical Navigation Aids.

- **Source:** USCG
- Data Link / Metadata Link

Aids to Navigation: identifies aids to navigation, or ATONs, such as lights, signals, buoys, and day beacons, that are intended to assist a navigator to determine position or safe course, or to warn of dangers or obstructions to navigation.

- **Source:** USCG, NOAA OCM
- Data Link / Metadata Link



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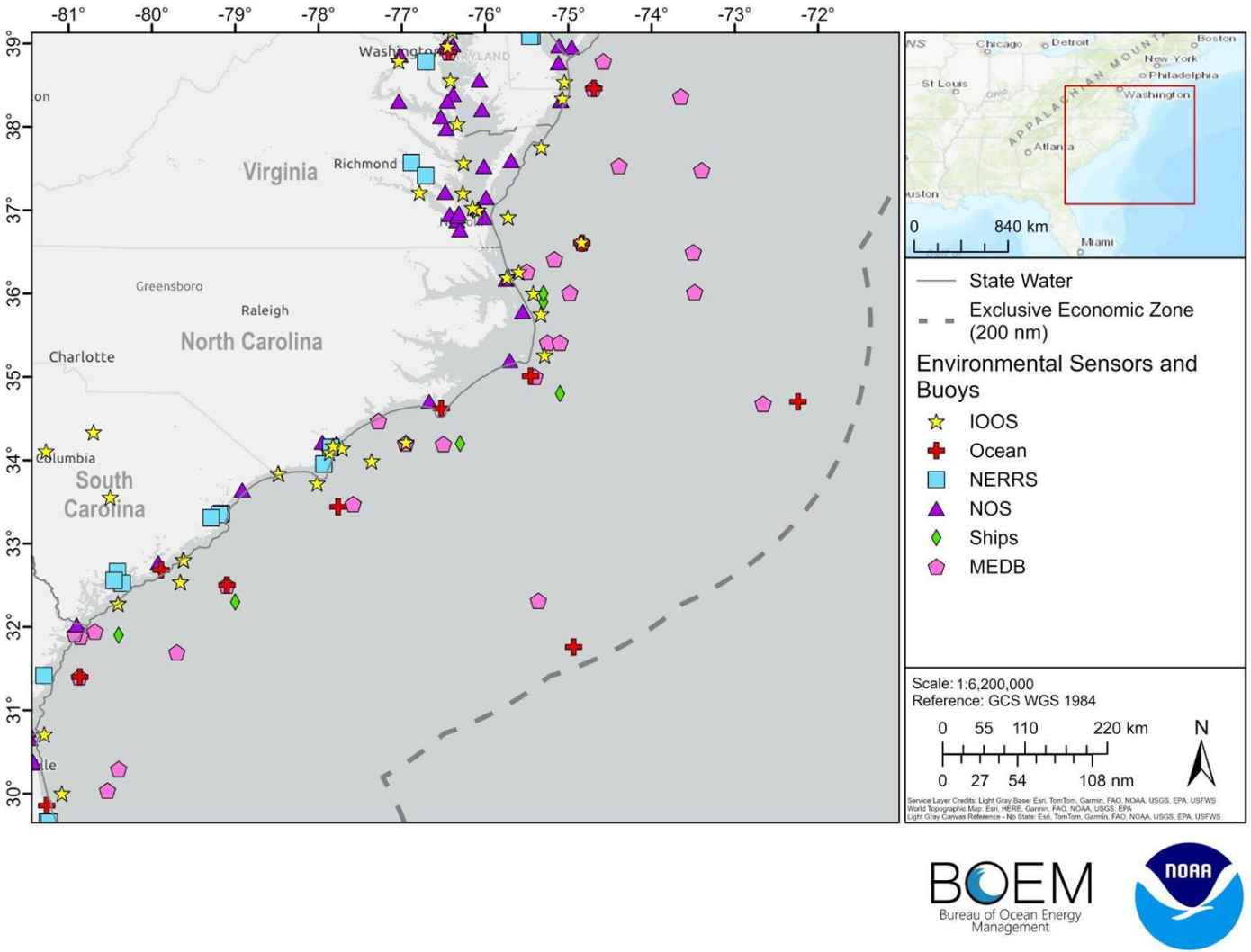
NOAA

Environmental Sensors and Buoys

Environmental Sensors and Buoys: National Data Buoy Center environmental sensors and buoys broken down by program/owner

- **Source:** NDBC
- Data Link / Metadata Link



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NOAA

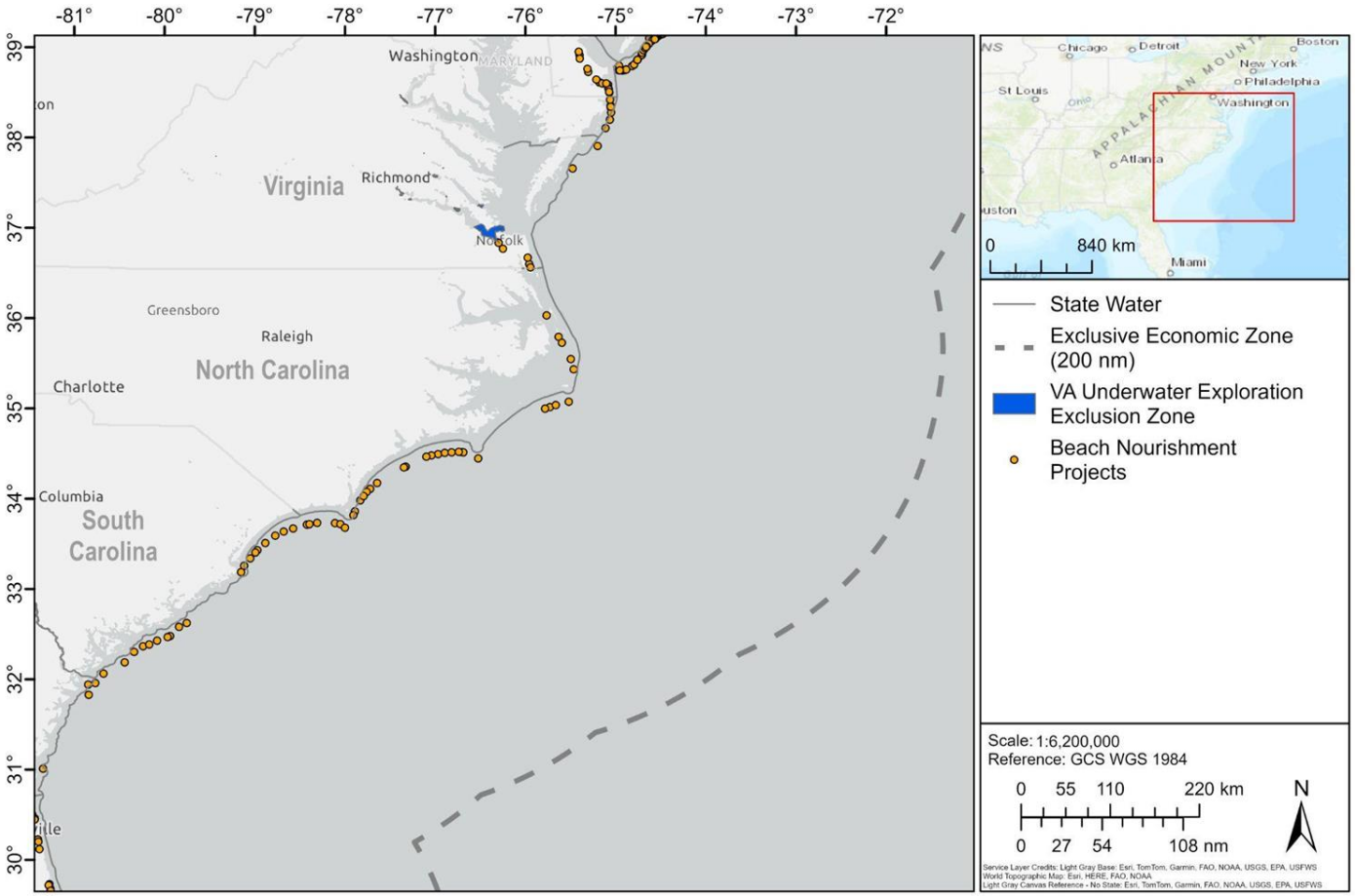
Beach Nourishment and VA Exclusion Zones

Beach Nourishment: Beach Nourishment projects occur throughout coastal states in the United States. These projects can be privately, federally or state funded.

- **Source:** Western Carolina University, NOAA NOAA OCM, American Shore and Beach Preservation Association, USACE, NOAA NCCOS
- Data Link / Metadata Link

VA Exclusion Zones: Underwater Exploration Exclusion Zones

- **Source:** Virginia Marine Resources Commission
- Data Link / Metadata Link



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NOAA

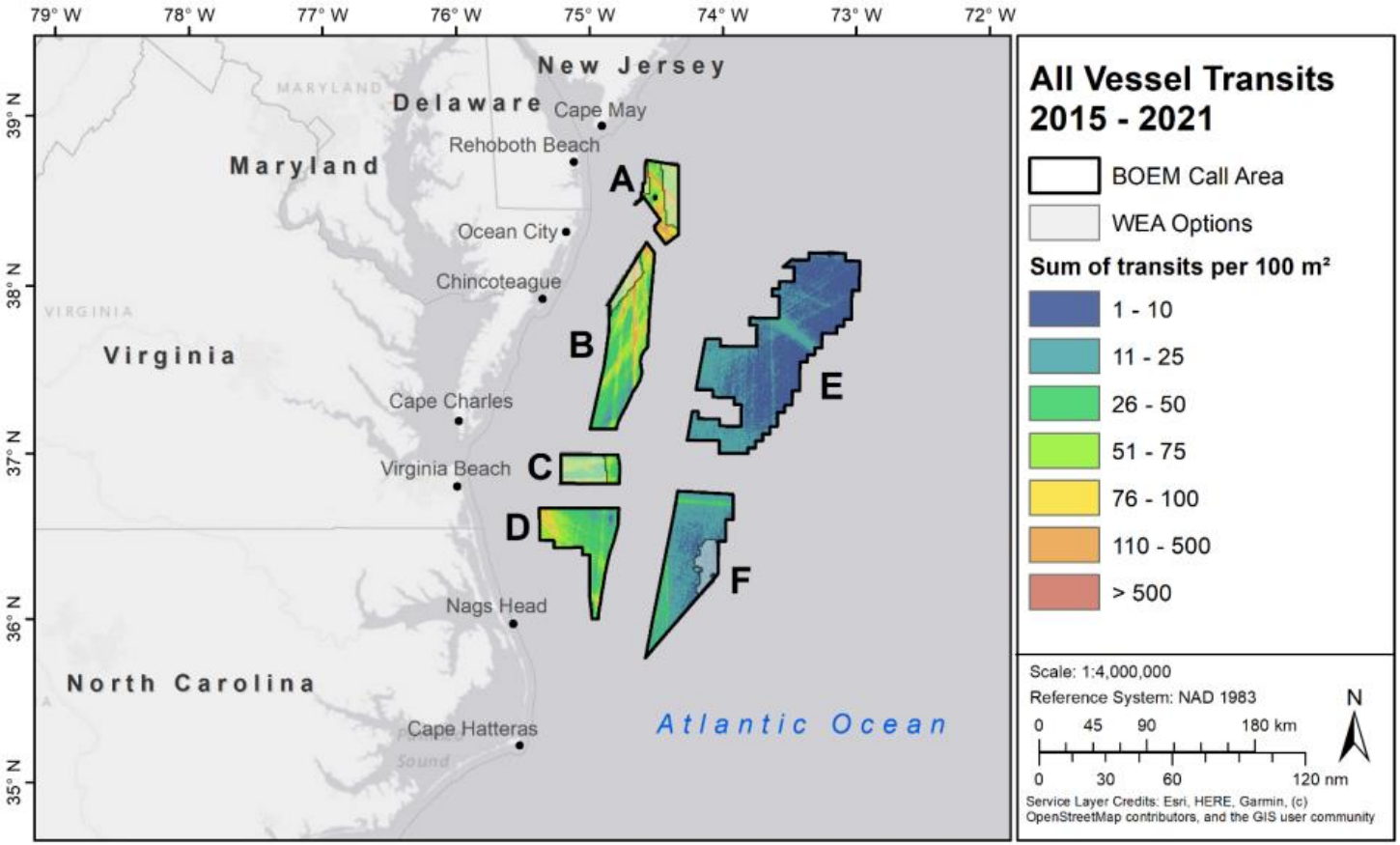
AIS Vessel Traffic

Summary: the location and characteristics of commercial and recreational boats as a sequence of positions transmitted by an Automatic Identification System (AIS). The distribution, type, and frequency of vessel tracks are a useful aid to understanding the risk of conflicting uses within a certain geographic area.
Types = Cargo, Fishing, Other, Passenger, Pleasure and Sailing, Tanker, Tug and Tow

Type: Line

Original Source: US Coast Guard

Data Link / Metadata Link



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NOAA

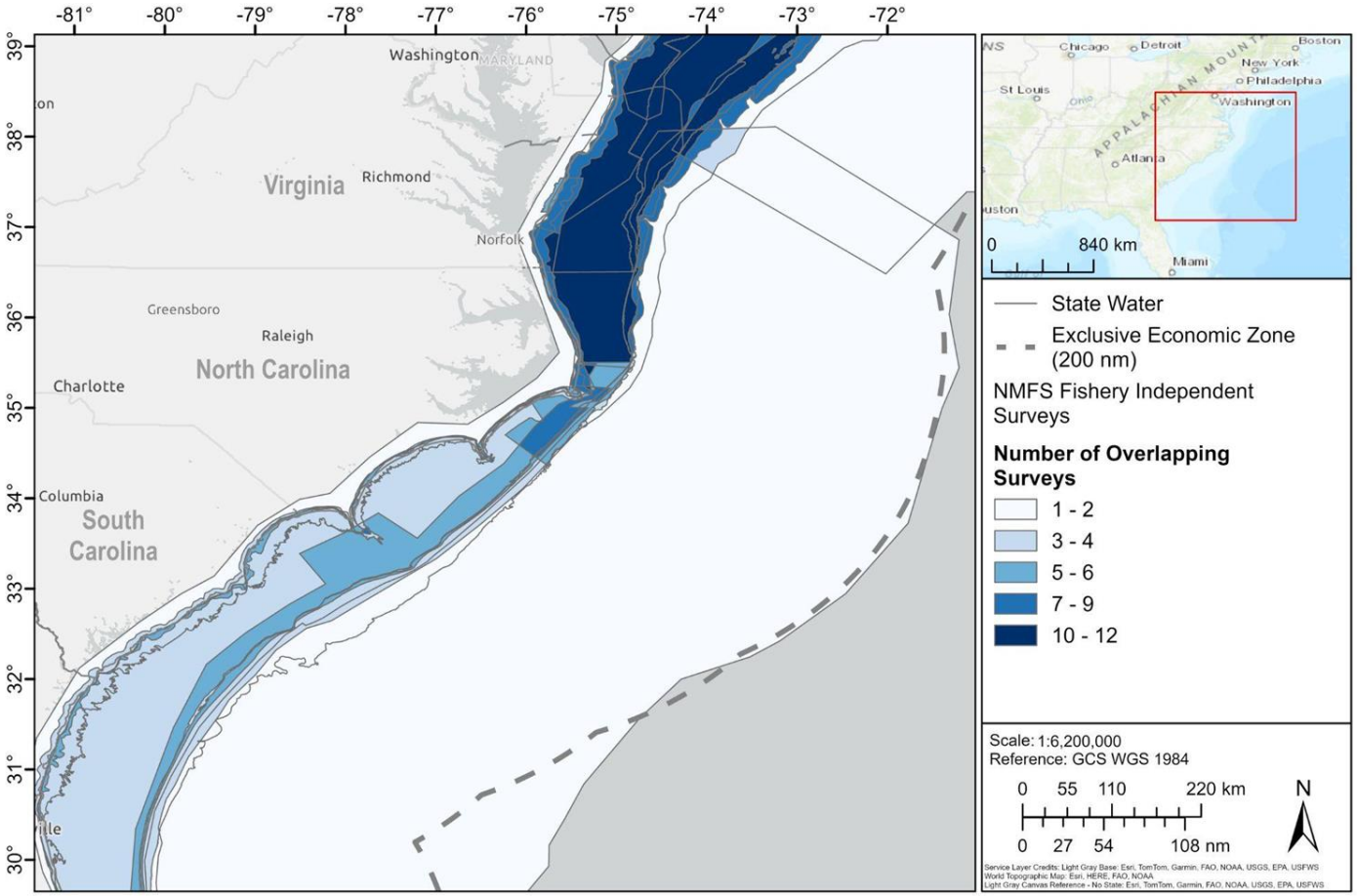
NMFS Fisheries Independent Surveys

Summary: National Marine Fisheries Service (NMFS) fishery-independent surveys in the region.

- **Source:** NOAA Fisheries

Surveys Included:

- AMAPPS Aerial Survey
- AMAPPS NE Ship Survey
- AMAPPS SE Ship Survey
- Apex Predators Survey
- Bottom Trawl Survey Fall
- Bottom Trawl Survey Spring
- EcoMon Survey (x4)
- Ocean Quahog Survey
- Scallop-Shellfish Survey
- SEAMAP Coastal Trawl Survey Fall
- SEAMAP Coastal Trawl Survey Spring
- SEAMAP Coastal Trawl Survey Summer
- SERFS Survey
- SEFSC SA Shark Red Snapper BLL
- SADL Survey
- Surf Clam Survey



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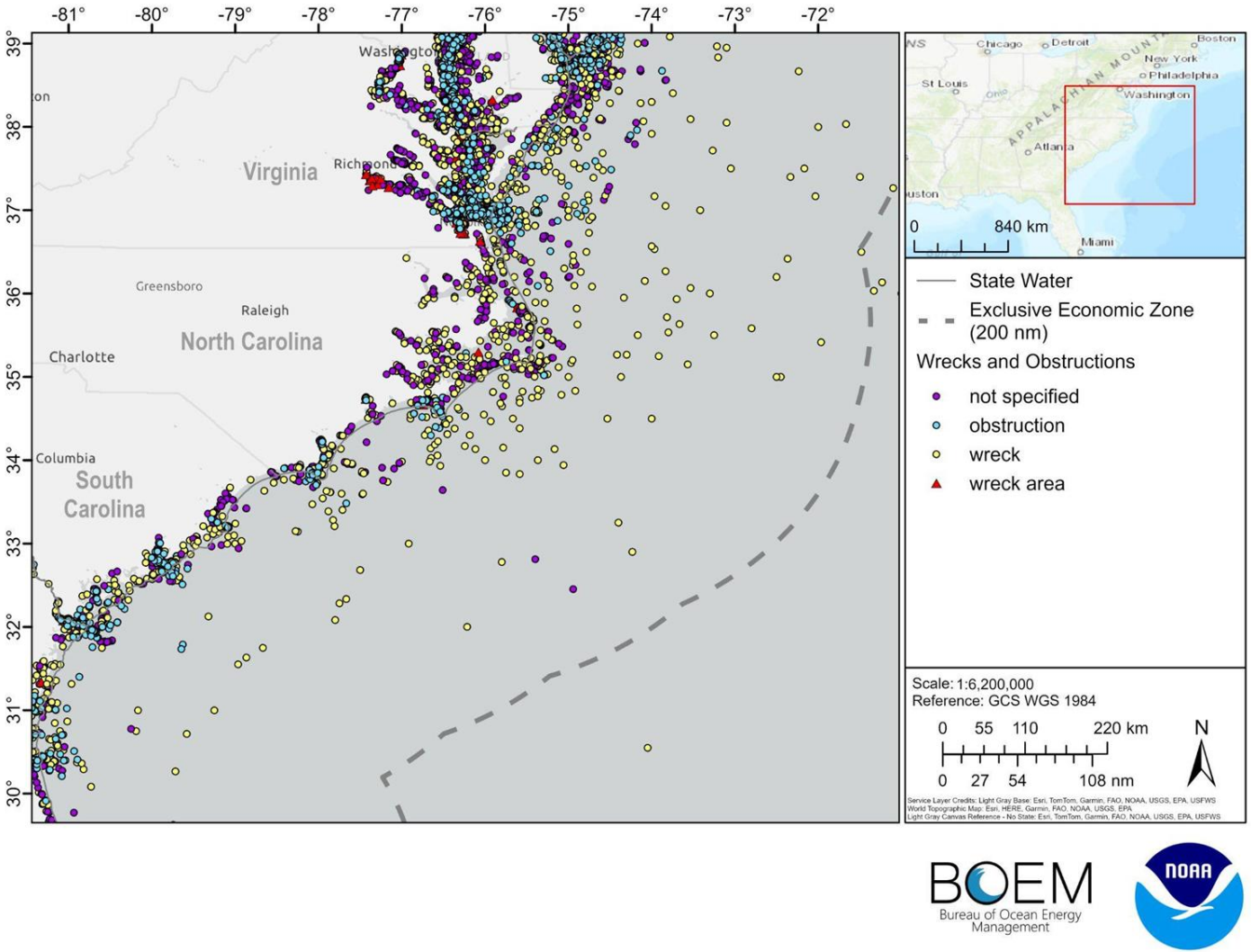
NOAA

Wrecks and Obstructions

Wrecks and Obstructions: The Automated Wreck and Obstruction Information System (AWOIS) is an automated file that contains information on wrecks and obstructions, and other significant charted features in coastal waters of the United States subject to NOS Hydrographic Surveys.

- **Source:** NOAA Office of Coast Survey
- Data Link / Metadata Link



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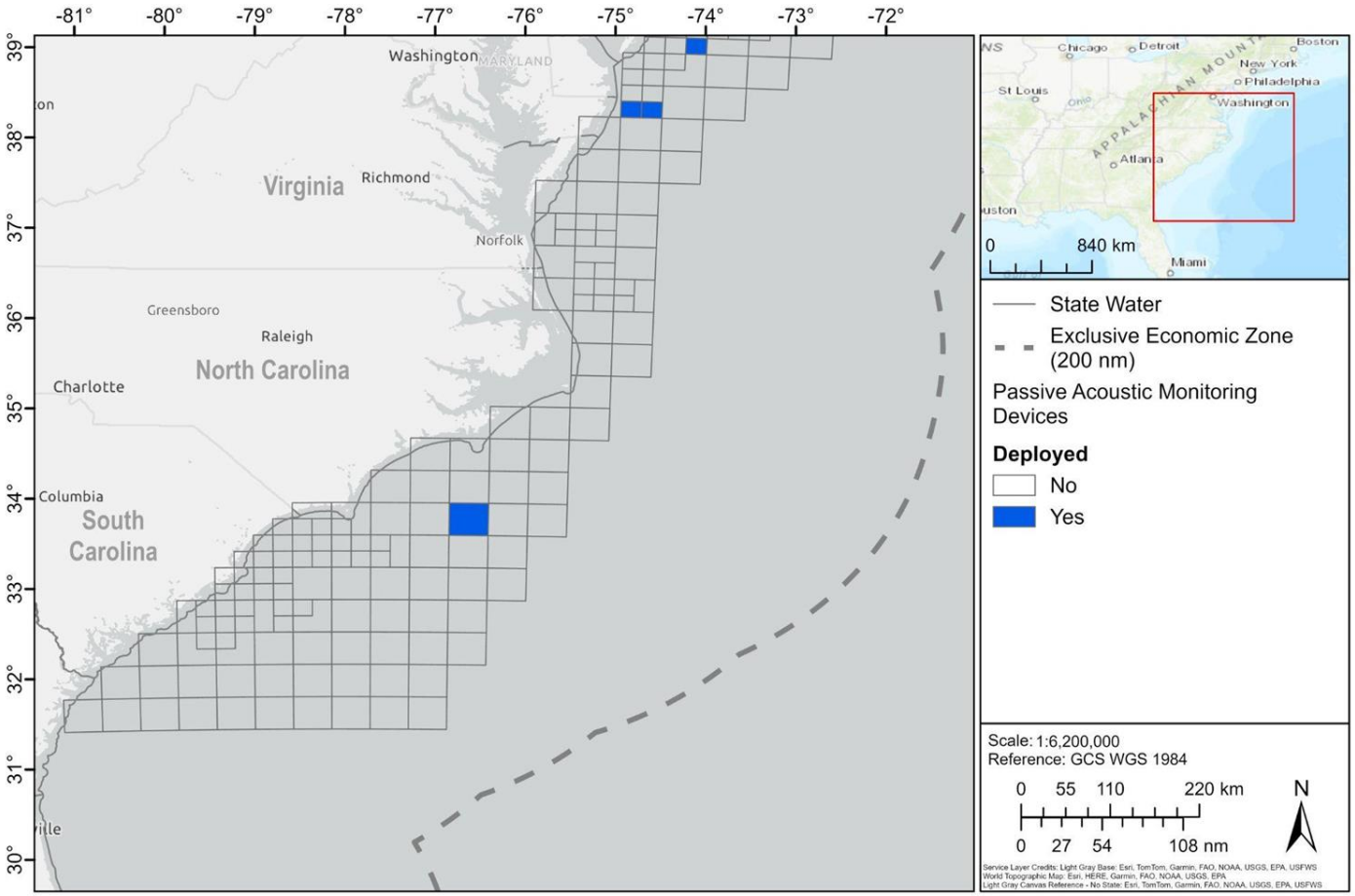
NOAA

Passive Acoustic Monitoring Network

Passive Acoustic Monitoring Devices: components of a proposed Passive Acoustic Monitoring (PAM) design for regional long-term monitoring in North and Mid-Atlantic offshore lease areas and wind energy areas.

- **Source:** NOAA Fisheries, Regional Wildlife Science Entity (RWSE)
- Data Link / Metadata Link



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NOAA

Offshore Wind

Data relevant to the siting of offshore wind energy areas, lease areas, and transmission cables

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Offshore Wind Related Data

- Wind Resource Data
- Seabed Geology and Subsurface Conditions
- Seabed Bathymetry and Topography
- Technical and Engineering Considerations
- Subsurface Infrastructure and Hazards
- Navigation and Shipping Routes
- Fishing Activity, Grounds, and Management Areas
- Marine Wildlife and Habitat Data

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Next Steps

1. Develop and distribute the workshop report (NCCOS website, technical memo)
1. Follow up on identified data leads - NCCOS team will be in touch
1. Continue to develop our (NCCOS) marine spatial planning data inventory/geodatabase
1. Work with state and federal governments on planning priorities
1. Incorporate identified best-available data in BOEM's on Offshore Wind planning priorities
    a. Offshore wind transmission modeling for the Carolinas
    b. Central Atlantic Round 2 Wind Energy Area development

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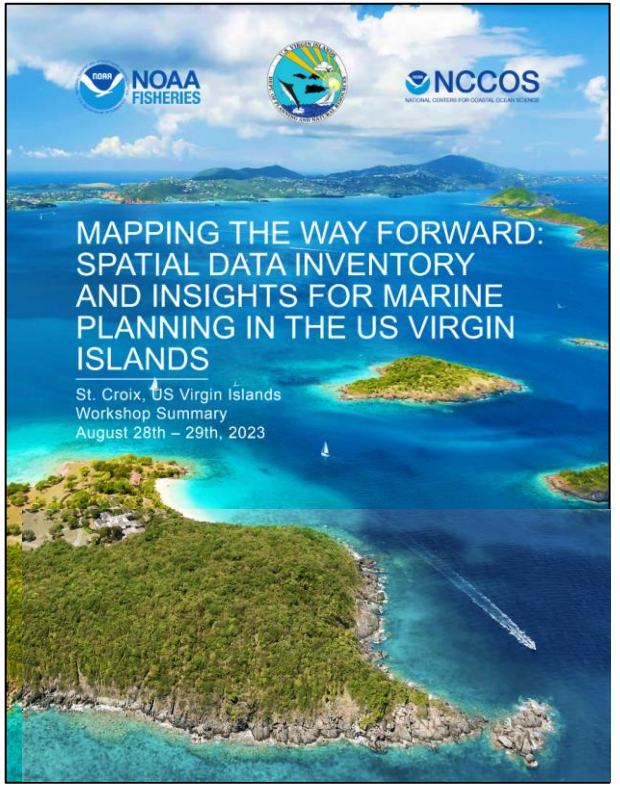
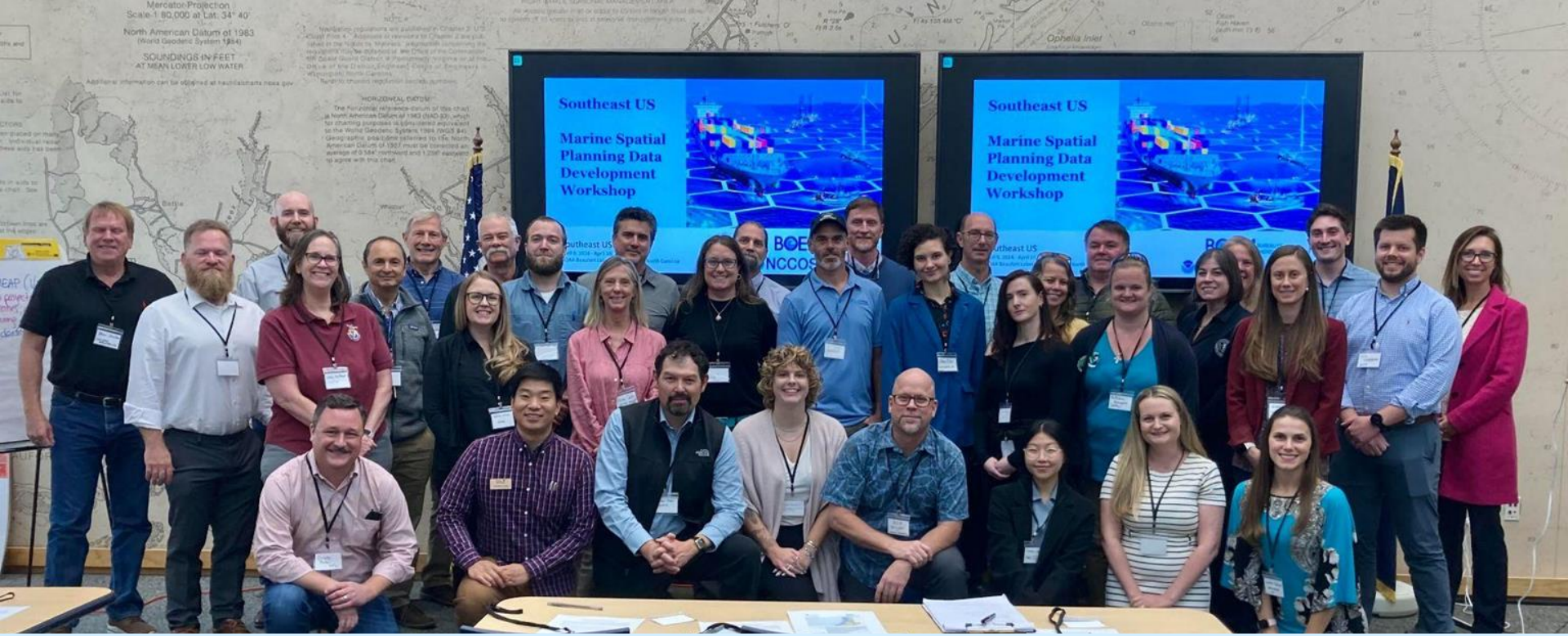
We connect communities with coastal intelligence.

Our hope is that marine spatial planning "…*brings us closer to respectful, sustainable uses of our natural resources…*"

-Dr. Nicole Angeli, Director USVI DFW
USVI Marine Planning Workshop, 2023





Thank YOU for trusting us with your ocean intelligence