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Regulatory and Management Actions



Protecting ocean and coastal resources, traditional ocean uses, and community character while simultaneously considering changing environmental conditions and proposals for new offshore activities presents a complex set of challenges. In addition, effective ocean management must be achieved through the numerous laws and regulatory and management structures that exist at the federal, state, and local levels. In order to successfully and efficiently fulfill their obligations, agencies increasingly need to work together across this complicated array of challenges and laws. Doing so allows them to effectively implement their mandates and ensure that their actions are informed by the overarching ecological and socioeconomic context and the various interactions between ocean resources and activities.

This level of contextual understanding and federal agency cooperation requires regional-scale data and information, access to the data and related products, guidance for using the products to inform decisions, and processes for government agencies to improve communication and collaboration regarding the management of each ocean resource and activity.

This chapter addresses all of the above. It describes how federal agencies on the Regional Planning Body (RPB) will incorporate data and information developed as part of the Northeast Ocean Plan (Plan) into performing and accomplishing the critical tasks involved in managing individual ocean resources and activities within the existing regulatory and management framework. It also describes how the RPB will advance aspects of regional coordination that are specific to each of the 10 ocean resources and activities.

The **Regulatory and Management Context** section of this chapter provides a high-level overview of the existing federal governance framework for protecting and managing ocean resources and human activities. This section includes an overview of federal environmental and regulatory laws and management-related programs; it is not an exhaustive list of all federal statutes that may apply in every instance, but it focuses on those that are most relevant to this Plan, as determined by the RPB in the *Framework for Ocean Planning in the Northeast United States*.



Throughout this chapter, recognizing that this Plan is under the authority of a presidential executive order, the actions are intended to be implemented by those federal agencies that are signatories to the Plan (“RPB agencies”). Because the Plan was a collaborative effort involving federal agencies, tribes, states, and the New England Fishery Management Council, specific roles for nonfederal agency members in these actions are also discussed where appropriate. The actions discussed in this chapter apply in accordance with the extent of jurisdiction of each particular federal authority and therefore apply, as appropriate and pursuant to existing law, in state and federal waters.

Following this brief overview are 10 **ocean resource or activity** sections representing the primary ocean resources and activities described in the Plan, and for which this Plan will guide and inform agency regulatory and management decisions. Each ocean resource or activity section includes the following subsections:

- An **overview** of the importance of each ocean resource or activity to ocean management
- Any **regulatory and management** considerations that are particularly relevant to the specific ocean resource or activity
- Peer-reviewed **maps and data** available on the Northeast Ocean Data Portal (Portal)
- Regulatory and management **actions** identified by the RPB

The actions for each ocean resource or activity section are grouped into the following three categories:

1. Actions that maintain, update, and develop additional data for the Portal
2. Actions that inform regulatory and management decisions under existing authorities
3. Actions that enhance interagency coordination

These categories are similar across the 10 ensuing sections of this chapter because they are common areas of interest for the agencies

and stakeholders that participate in regulatory and management processes (i.e., enhancing interagency coordination, informing regulatory and management decisions, and keeping the Portal updated are common across all 10 resources and activities). The intention of the combined actions is enhanced federal agency coordination and shared understanding of each of the 10 ocean resources or activities, as also described in the Intergovernmental Coordination section of Chapter 4.

The actions provided for each ocean resource or activity highlight important details that are specific to that resource or activity. They also identify connections across the 10 ocean resources and activities and encourage exploration of these important cross-sectoral and sectoral-resource interactions. For example, certain actions describe the potential for specific data products to be employed in assessing compatibility or conflict issues involving marine life and/or human uses. These actions describe the application of data to help identify specific stakeholders who could be affected by a particular project in a particular geography for further discussion about compatibility considerations that are specific to the unique characteristics of the proposed activity and existing activities in the location.

The Marine Life & Habitat section's maps of ecologically grouped species and stressor sensitivity-grouped species can be used to

help identify ecosystem components or locations with species that may be vulnerable to particular types of stressors. Accompanying these actions are descriptions of the manner in which data products, with full regard for their limitations, can be helpful in beginning to understand potential interactions with particular resources or activities. Maps from the Portal are included to provide examples to accompany and illustrate these descriptions.

Finally, while this chapter describes data on the Portal that were reviewed by stakeholders and subject matter experts to provide important regional context for decisions, there are still likely to be many other sources of information that are applicable to any environmental, regulatory, or management question, and in some instances the Portal may not provide the most relevant information. For example, in some portions of the region, there may be more site-specific or locally specific data available for any particular topic. In addition, some agencies may require additional data collection in support of specific regulatory and management decisions. Lastly, new scientific papers, datasets, and other information may have become available since the time of publication of any dataset or of this Plan. The Portal contains links to some additional sources of online information but is not exhaustive of all topics. For these reasons, early consultation with appropriate agencies is always recommended to determine

data and information needs. In addition, the best practices for intergovernmental coordination described in Chapter 4 will help to identify further information requirements for regulatory or management decisions.

REGULATORY AND MANAGEMENT CONTEXT

This section provides a brief summary of the existing federal laws applicable to agencies that regulate and manage marine resources and human activities. It focuses on those **federal environmental and regulatory laws** and **management activities** that are most pertinent to the implementation of the Plan, but it is not intended to be exhaustive of all federal (or state) laws, agencies, and programs that may be applicable. Because the primary purpose of the Plan is to inform the actions of federal agencies, pursuant to Executive Order 13547, this discussion focuses on federal laws and programs. Tribal, state, and New England Fishery Management Council (NEFMC) responsibilities and authorities that significantly intersect with federal agency authorities also are described. A brief description of each law mentioned in this section can be found in Appendix 1. For a listing and description of potentially applicable laws, please refer to the National Ocean Council's *Legal Authorities Relating to the Implementation of Coastal and Marine Spatial Planning*.¹

Geography is a key part of determining the full regulatory and management context for a proposed activity. Off New England, coincident with the extent of state ownership of submerged lands, state jurisdiction generally extends three nautical miles offshore. Federal law also applies in state coastal waters. Federal ownership extends seaward of the general three-mile limit of state ownership to the edge of the exclusive economic zone (EEZ) (approximately 200 nautical miles offshore). Consequently, within state coastal waters, both state and federal laws may apply; seaward of state waters, federal laws apply. However, several federal laws provide states an opportunity to influence decision-making in federal waters, including the federal Coastal Zone Management Act (CZMA), which allows states with approved state coastal programs to review federal actions for consistency with state policy. States can also inform federal decision-making as a part of federal agency implementation of other laws governing specific activities, such as renewable energy leasing through the Outer Continental Shelf Lands Act (OCSLA) in support of which the Bureau of Ocean Energy Management (BOEM) has developed intergovernmental task forces. Also, the rights and interests of federally recognized tribes, including their government-to-government relationships with the United States, are recognized and addressed throughout Chapters 3 and 4.



Generally, the regulatory and management actions expressed by the RPB in this chapter will enable more consistent regional characterizations of existing conditions and trends, support the identification and avoidance of potential conflicts and resource impacts, aid in the determination of potentially affected stakeholders, and help federal agencies identify additional information or scientific research that may be necessary or warranted to inform decisions. Used in conjunction with the best practices described in Chapter 4, these actions will enhance governmental coordination and foster more-effective decisions that will advance progress toward healthy oceans and compatibility among uses.



FEDERAL ENVIRONMENTAL AND REGULATORY LAWS

This Plan focuses on federal environmental review, regulatory, and management authorities that are particularly relevant to the 10 ocean resources and activities addressed in this chapter. For the purposes of the Plan, these authorities can be organized into three categories of laws that apply to proposed management or development activity: First, and as described in greater detail later, two laws, the National Environmental Policy Act (NEPA) and the CZMA, provide for a broad assessment of the environmental and socioeconomic impacts of federal actions that could affect the natural or human environment. Second, there are laws that govern specific activities, such as OCSLA, the Marine Protection, Research and Sanctuaries Act (MPRSA), the Deepwater Port Act (DWPA), the Rivers and Harbors Act (RHA), the Clean Water Act (CWA), and the Magnuson-Stevens Fishery Conservation and Management Act (MSA). Review under these laws typically results in the issuance of permits, licenses, leases, rights-of-way, or other kinds of federal approvals. Third, a number of laws provide for the review of issue-specific impacts associated with proposed management or development activities. These laws include the Migratory Bird Treaty Act (MBTA), Marine Mammal Protection Act (MMPA), Endangered Species Act (ESA), National Historic Preservation Act (NHPA), MSA, and Ports and Waterways Safety Act (PWSA).

In practice, the three categories of laws typically work in concert with each other; for example, NEPA review is used to identify and present much of the data and information required by all other applicable laws.

The **National Environmental Policy Act** requires federal agencies to review the environmental effects of their proposed actions. This requirement applies to agency-led or agency-funded projects and the issuance of federal permits, licenses, and leases pursuant to the laws (and for the activities) listed in Table 3.1. Thus, NEPA is a central, common component of the general federal regulatory and management structure for managing human activities in the ocean. NEPA action (in the form of a categorical exclusion, an environmental assessment/finding of no significant impact, or, for those projects with significant environmental impacts, an environmental impact statement) is conducted by the lead federal agency undertaking or authorizing an activity. The lead agency also consults and coordinates with other federal agencies, as well as state agencies and tribes as appropriate. NEPA review occurs as part of federal agency responsibilities in implementing offshore leasing programs, as part of licensing and permitting laws applicable to infrastructure development, and in other activities, including those listed in Table 3.1.

Table 3.1 // Federal laws and lead agencies related to particular ocean resources or activities

LAW	AGENCY	OCEAN RESOURCE OR ACTIVITY
Outer Continental Shelf Lands Act (OCSLA)	BOEM	In federal waters: <ul style="list-style-type: none"> • Offshore sand extraction • Oil and gas planning, leasing, and development • Offshore wind energy leasing and development • Alternative uses of existing facilities (wave and ocean current energy) in conjunction with the Federal Energy Regulatory Commission
Deepwater Port Act (DWPA)	MARAD and USCG	Liquefied natural gas (LNG) facilities in federal waters
Marine Protection, Research and Sanctuaries Act (MPRSA)	EPA and USACE	Disposal of dredged material (and other material) and disposal site designation or selection often associated with navigation projects
Clean Water Act (CWA)	USACE and EPA	Discharge of dredged or fill material, including impacts to various components of the aquatic ecosystem and, through the public interest review, ² an evaluation of probable impacts, including cumulative effects, across coastal and ocean resources and activities
Section 10 of the Rivers and Harbors Act (RHA)	USACE	Navigational impacts of new activities, such as energy in state waters, aquaculture, cables and pipelines, and others; also includes public interest review
Magnuson-Stevens Fishery Conservation and Management Act (MSA)	NOAA and NEFMC	Aquaculture of federally managed species in federal waters

NOTE: BOEM = Bureau of Ocean Energy Management; EPA = Environmental Protection Agency; MARAD = Maritime Administration; NEFMC = New England Fishery Management Council; NOAA = National Oceanic and Atmospheric Administration; USACE = US Army Corps of Engineers; and USCG = US Coast Guard.

Federal agencies typically conduct NEPA review prior to or in concert with the process required under these laws as the basis for determining whether to issue a license, permit, lease, or other authorization. The scope and extent of the NEPA review depends on the proposed activity and its potential impacts on the human and natural environment, which are typically determined as an initial step in the NEPA process. NEPA documents typically include a description of the affected environment, the proposed activity, and alternatives to the proposed activity. They also include an analysis of the potential for environmental impacts (and their significance) that would result from the proposed activity and alternatives, and ways in which these impacts potentially could be mitigated. In marine environments, this means that NEPA reviews consider potential impacts to existing human activities such as marine transportation, fishing, boating, and other activities; historic and cultural resources; and environmental resources, such as species and habitats.

Many federal laws require the analysis of impacts to specific activities, species, or habitats during review of a proposed activity (Table 3.2). Typically, these analyses are conducted as part of the statutory process most directly applicable to the proposed activity (e.g., OCSLA, DWPA, MPRSA, CWA, RHA, or MSA). Information to inform decision-making

under these (and other applicable) authorities is generally incorporated into the NEPA review associated with the lead federal action. Agencies responsible for administering these authorities act in a consulting and coordinating capacity to the lead federal agency to ensure that obligations under these laws are met.

Finally, for many federal activities, federal consistency review under the CZMA is required. As defined in the CZMA, federal consistency review means that federal actions within or outside a state coastal zone, which have reasonably foreseeable effects on any coastal use (land or water) or natural resource of the coastal zone, are required to be consistent to the maximum extent practicable with the enforceable policies of a state's federally approved coastal management program.³

Table 3.2 // Federal laws requiring the analysis of specific resources or activities, and responsible agencies

LAW	AGENCY	OCEAN RESOURCE OR ACTIVITY
Ports and Waterways Safety Act (PWSA)	USCG	Navigational safety and security
National Historic Preservation Act (NHPA)	ACHP, NPS, other federal agencies, and state and tribal historic preservation officers	Historic preservation, cultural significance
Magnuson-Stevens Fishery Conservation and Management Act (MSA)	NOAA and NEFMC	Marine fisheries management (including aquaculture), essential fish habitat, habitats of particular concern
Marine Mammal Protection Act (MMPA)	NOAA	Cetaceans and pinnipeds
Endangered Species Act (ESA)	NOAA and USFWS	Threatened or endangered species, critical habitat
Migratory Bird Treaty Act (MBTA)	USFWS	Migratory birds
National Marine Sanctuaries Act	NOAA	Habitat

NOTE: ACHP = Advisory Council for Historic Preservation; NEFMC = New England Fishery Management Council; NOAA = National Oceanic and Atmospheric Administration; NPS = National Park Service; USCG = US Coast Guard; and USFWS = US Fish and Wildlife Service.

MANAGEMENT ACTIVITIES

In addition to the responsibilities described above, federal agencies fulfill their statutory obligations through an extensive array of management activities and programs. These management activities address a number of issues ranging from providing science on emerging topics such as ocean acidification to coordinating to reduce the impact of marine debris, to many more. Similar to the overview of the most pertinent federal environmental and regulatory laws described above, the Plan does not describe every management activity undertaken by federal agencies. Instead, this chapter includes the most pertinent and applicable programs, such as, for example, marine life and habitat management and research programs or specific programs related to the management of marine transportation. The individual sections of this chapter provide additional examples and related agency actions.

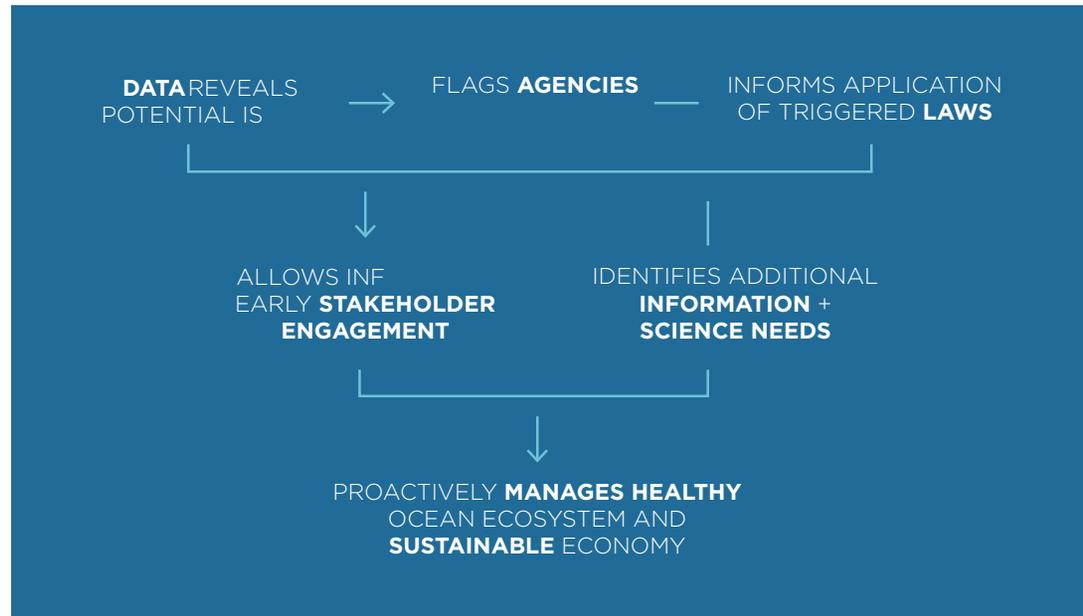
In general and depending on their nature, federal management activities and programs are also subject to NEPA and one or more of the environmental and regulatory laws described above. For example, NEPA review is conducted for many restoration projects and scientific research investigations that have the potential to affect the environment. As described previously, the level of detail of such review is dependent on the activity in question, its location, and the potential for impacts.

Finally, the Northeast United States features numerous federally designated and managed areas, such as the Stellwagen Bank National Marine Sanctuary (managed under the National Marine Sanctuaries Act and administered by the National Oceanic and Atmospheric Administration [NOAA]), several units administered by the National Park Service (Acadia National Park in Maine, Cape Cod National Seashore, Boston Harbor Islands National Recreational Area, and various historic sites throughout New England), and several National Wildlife Refuges administered by the US Fish and Wildlife Service. In addition, there are federally designated National Estuarine Research Reserves, which are managed by state, regional, or local entities that help accomplish the national goals of the federal National Estuarine Research Reserve System (NERRS) program. There are also six federally designated Environment Protection Agency (EPA) National Estuary Programs (NEP),

which are hosted by state, regional, or academic entities that help accomplish the national NEP program goals pursuant to Section 320 of the Clean Water Act. States may also designate and manage specific areas within state waters for certain purposes. States often have roles and responsibilities in managing or administering some of the previously identified federally designated areas; these areas are typically managed according to management, conservation, and research plans. Management activities are always subject to applicable federal law. For example, NEPA analysis often

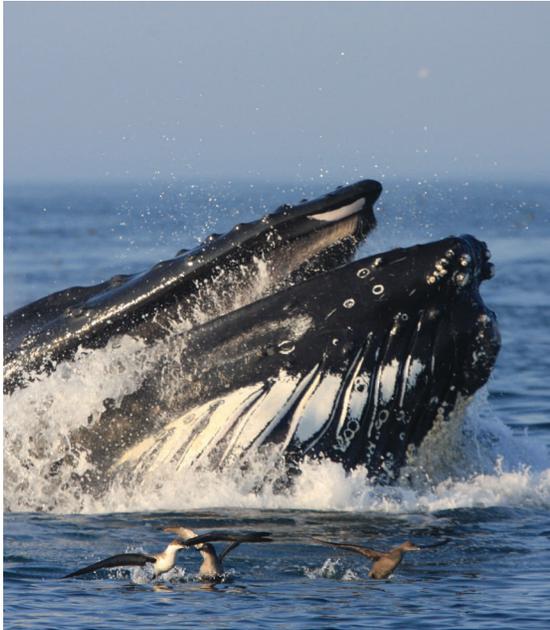
accompanies a management or conservation plan for a federally designated area. Lead agencies will also have to consider applicable resource protection laws, such as the ESA, when developing a management plan. Additionally, proposed activities within a managed area are reviewed to determine their compatibility with the pertinent management plan and underlying statutory authority. Finally, activities outside of a particular management area may also be reviewed to determine potential effects upon that area, its natural resources, or other issues.

DATA // AGENCIES // LAWS





MARINE LIFE & HABITAT



The diversity and richness of the marine life and habitats of the Northeast are a testament to one of the most productive marine ecosystems on the planet. The region's location, bridging the Acadian province in the north and the Virginian province to the south, fosters high productivity. Ocean currents carrying cold, nutrient-rich waters circulating counterclockwise through the Gulf of Maine, the influence of the Gulf Stream and riverine inputs throughout the region, and the presence of highly productive estuaries such as Long Island Sound and offshore habitats such as Georges Bank all contribute to this complex, dynamic, and intricately detailed ecological tapestry. It's because of these habitats and species that New England's history is so interwoven with the ocean.

The Northeast is home to thousands of marine species, some of which are found nowhere else in the world. Hundreds of bird species find their feeding, breeding, or wintering grounds here after continental- or even hemispheric-scale migrations. Dozens of marine mammal species call the Northeast home for some or all of the year, including six species of whales listed under the federal Endangered Species Act. Hundreds of fish species are found from estuarine and salt marsh habitats to the deepest waters of the continental margin; many of these species are pursued by fishermen, and others are prey for other fish, marine mammals, and birds. All of these species are in some way supported by the countless phytoplankton, zooplankton, and benthic invertebrates that form the base of this ecosystem's food web.

We know much about these species, how they interact, and their habitats, but there is much more to learn. Recent years have demonstrated increasingly rapid changes in the distribution of many species and their habitats: warming waters drive some species northward and/or to deeper waters; increasing numbers of warm-water species change the composition of ecological communities in the region; alterations to the timing of the seasons shift migration patterns; increasing acidification affects shellfish; and other changes.

Therefore, a main focus during development of this Plan was to enhance marine life and habitat data. An unprecedented amount of peer-reviewed regional data are now available to characterize the distribution and abundance of marine life and habitats. From these basic building blocks, more complex measures of the ecosystem can be constructed: biodiversity,

species richness, assessments of ecosystem function, and more. As each building block is refined, the dependent measures get stronger and our understanding of the ecosystem improves.

For many coastal communities, the traditional dependence on the coastal and marine ecosystem and on the continued health of marine life and habitats continues to this day. The role that marine life and habitats play in our livelihoods is also reflected in the amount of management attention that species and habitats get: a large proportion of fish, bird, and mammal species—and their habitats—are monitored, managed, and protected through various federal and state programs and laws. Marine life and habitat data were developed for the Plan while considering the information needs of agencies as they implement these existing authorities.





REGULATION AND MANAGEMENT

Numerous laws and federal, state, and tribal programs directly relate to the regulation, management, and conservation of marine life and habitat in New England. Federal actions, including regulatory activities (such as licensing, permitting, and leasing) and management activities (such as restoration projects, general management plans, and wildlife conservation plans) are subject to a variety of federal laws and regulations. These laws include NEPA and the individual laws requiring specific investigations into the potential effects of federal action, whether adverse or beneficial, to the ecosystem and individual species and habitats. Therefore, this section applies, but is not limited to, each of the previously identified **federal environmental and regulatory laws** and related processes, including:

- NEPA
- Leasing, licensing, and permitting laws (such as OCSLA, CWA, DWPA, RHA, MSA, and MPRSA)
- Natural resource consultations applicable to federal leasing, licenses, and permits (such as ESA, MSA, MMPA, MBTA, and the National Marine Sanctuaries Act [NMSA])

This Marine Life & Habitat section also generally applies to the **management activities** previously described in the introduction to Chapter 3 and specifically applies, but is not limited to, other federal programs and activities identified below because they are particularly relevant to this Plan, including:

- Federally designated and managed areas (such as Stellwagen Bank National Marine Sanctuary, National Park Service [NPS] units, and National Wildlife Refuges [NWR]).
- Federally designated NOAA National Estuarine Research Reserve System units and EPA National Estuary Programs, both of which are managed by state, regional, academic, or local entities.
- The US Fish and Wildlife Service (USFWS) Coastal Program, which works with partners to implement fish and wildlife habitat restoration and to build conservation capacity at the landscape scale.
- The USFWS National Coastal Wetlands Conservation Grant Program, which provides funding to states to support the long-term conservation of coastal wetland ecosystems.
- Conservation and science partnerships involving USFWS, including the Atlantic Coast Joint Venture (ACJV), the Sea Duck Joint Venture (SDJV), the North Atlantic Landscape Conservation Cooperative (NALCC), the Atlantic

Marine Bird Conservation Cooperative (AMBCC), and the Atlantic Flyway Shorebird Initiative (AFSI), which generally support conservation and decision-making by identifying conservation goals, discerning potential threats, and developing related science. An example is the New England/Mid-Atlantic Bird Conservation Region (BCR 30) Implementation Plan,¹ which identified high-priority bird species and habitats in the coastal area.

- The NOAA Community-Based Restoration Program, authorized by MSA, to implement and support the restoration of fishery and coastal habitats.
- The Northeast Region Marine Mammal and Sea Turtle Stranding and Disentanglement Network.
- Oil spill contingency plans, restoration plans, and natural resource damage assessments under the Oil Pollution Act.

MAPS AND DATA

The *Framework for Ocean Planning in the Northeast United States* includes an action to produce regional spatial characterizations of marine life (marine mammals, sea turtles, birds, and fish) and habitat. The framework further states that the RPB will involve the public and science community in the development and review of these spatial characterizations and in complementary products demonstrating the

scientific certainty of the results. Additionally, the RPB expressed the desire for the Plan to include regional-scale data and information products that could inform decision-making and enhance agency coordination under existing laws, recognizing that there are other sources of data that will be applicable in certain circumstances. For example, site-specific information will be necessary to assess potential for construction and operations impacts for many development activities.

All of the marine life and habitat maps and data included in the Portal were informed by marine mammal, bird, and fish work groups (composed of over 80 regional scientists and managers),² the Ecosystem-Based Management Work Group,³ the Habitat Classification and Ocean Mapping Subcommittee⁴ of the Northeast Regional Ocean Council (NROC), similar proceedings in the Mid-Atlantic region, and public input. The result of this scientific and public review is an unprecedented amount of regional-scale marine life and habitat data for use in ocean planning, management, and conservation, along with accompanying documentation of the methods used, potential limitations of the data products, and links to additional information sources.





The majority of the **marine life data** (marine mammals, birds, and fish) were developed through a partnership with the Marine-life Data and Analysis Team (MDAT),⁵ which collaborated with the RPB and expert work groups to produce **individual species maps** characterizing the distribution and abundance or biomass of 150 marine mammal, bird, and fish species, including measures of uncertainty to supplement each map. For this work, the RPB, with input from the expert work groups, identified a study area that extends from Hudson Canyon in the south into the Bay of Fundy in the north, with the intent of capturing the broader ecological context. The RPB and MDAT attempted to map as much of this study area as possible with consistent and repeatable methods. Therefore, the geographic extent of the maps depends on the availability of data and the specific methods chosen to model or map each taxa. To fill some of the geographic gaps, the Portal includes many additional marine life data products from other sources. For example, gaps in near-shore areas, such as in Long Island Sound, are (or are being) filled using state trawl data (for fish) and data from the Environmental

Sensitivity Index (ESI), the USFWS Mid-winter Waterfowl Survey, and other coastal sources (for birds). In addition, Chapter 5 further describes science and research needs to continue to fill gaps in information, geographically as well as for species that are not well-understood.

In response to agency, work group, and public feedback, the RPB further aggregated these individual species base products into maps for a range of species groups within each marine life category to provide additional information to support different regulatory, management, and conservation activities. Generally, marine life species have been aggregated into the following groups:

- Maps of species grouped by their **regulatory or conservation priority status** depict the distribution and densities or biomass of marine life species that have been formally protected or designated as a species of concern or are managed through a specific federal program or partnership.
- Maps of **ecologically and biologically grouped species** portray the distribution and abundance or biomass of species with similar characteristics or life history requirements, enabling an ecosystem perspective during decision-making.

- Maps of **species grouped by their sensitivity to specific stressors** enable a better understanding of specific interactions and potential compatibility considerations between marine life and human activities and the potential effects of ecosystem changes.

The **habitat data** were compiled by the Portal Working Group from authoritative regional sources with input and review by data managers and subject matter experts. Since these maps characterize habitat structure and a range of ecological processes, the Habitat theme on the Portal is subdivided into *physical habitat* and *biological habitat* to simplify data access and to group similar products.

- Maps of **physical habitat**, such as oceanographic properties and sediment types, depict the structure and dynamics of the ocean environment that shape marine life and human activity patterns.
- Maps of **biological habitat** display the distribution of valuable marine organisms that form habitats, such as eelgrass, shellfish beds, and benthic fauna, and they display important biological processes, such as primary and secondary productivity.

The marine life and habitat maps on the Portal provide managers, scientists, conservationists, members of ocean industry, and others with a library of information to use as necessary to inform many types of decision-making. They provide a regional and, in some cases, Atlantic coast-wide perspective, supporting management and decision-making at different scales when combined with subregional and site-specific information. The entire library of marine life and habitat data includes many maps, and it is unlikely that the full contents of the library will be relevant to every decision. It is intended that portions of the library will be used to address specific questions or to inform specific decisions in conjunction with site-specific data, scientific literature, public input, and many other sources of information.

Regulatory or conservation priority species and habitat groups

Agency and public feedback during the development of this Plan identified the need for spatial products depicting groups of marine life species and habitats that are identified or designated as a management or conservation priority through one of the federal environmental and regulatory laws or by one of the previously described nonregulatory management activities. Therefore, the RPB developed aggregate maps characterizing the abundance, diversity, richness, and core abundance/biomass areas⁶ for groups of marine life species with this

type of special status (Table ML 3.1). The Portal also contains aggregate maps characterizing the extent of specific habitat areas identified in one of these laws or management programs (Table ML 3.2). These marine life and habitat products provide the opportunity to determine whether a potential action or conservation measure could affect concentrations of species or habitats that are regulated under existing law or managed through a particular program.

Note: The marine life species group products were reviewed by the EBM Work Group, the marine life work groups, and the public during the development of this Plan. The RPB decided to include products depicting abundance and richness in the Portal and, by reference, in this Plan. The RPB also decided that the diversity and core abundance/biomass area products need further consideration, especially given their potential importance for characterizing important ecological areas (IEAs). Therefore, those products will continue to be developed and evaluated within the context of the IEA Framework (see discussion beginning on page 51). A technical report documenting each of the species group products and methods is available at www.neoceanplanning.org.

Table ML 3.1 // Regulated and managed species groups available on the Portal

PORTAL THEME	REGULATED AND MANAGED SPECIES GROUPS*	AUTHORITY
Marine Mammals & Sea Turtles	All cetaceans Marine mammals species of concern and ESA-listed species	MMPA MMPA, ESA
Birds	All migratory birds Species of concern: State-listed Species of concern: ESA-listed Species of concern: BCR 30 priority Species of concern: AMBCC species of high conservation concern	MBTA ESA, MBTA ESA, MBTA ESA, MBTA ESA, MBTA
Fish	All fish Managed species: Northeast Multispecies Fishery Management Plan Managed species: Small Mesh Multispecies Fishery Management Plan Managed species: Monkfish Fishery Management Plan Managed species: Skates Fishery Management Plan	MSA MSA MSA MSA MSA
* Total abundance and richness		

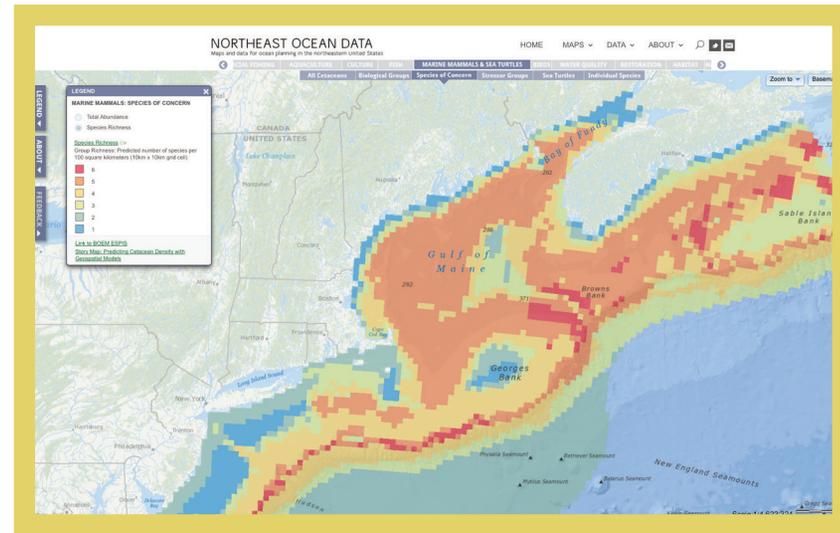


Table ML 3.2 // Regulated habitat areas available on the Portal*

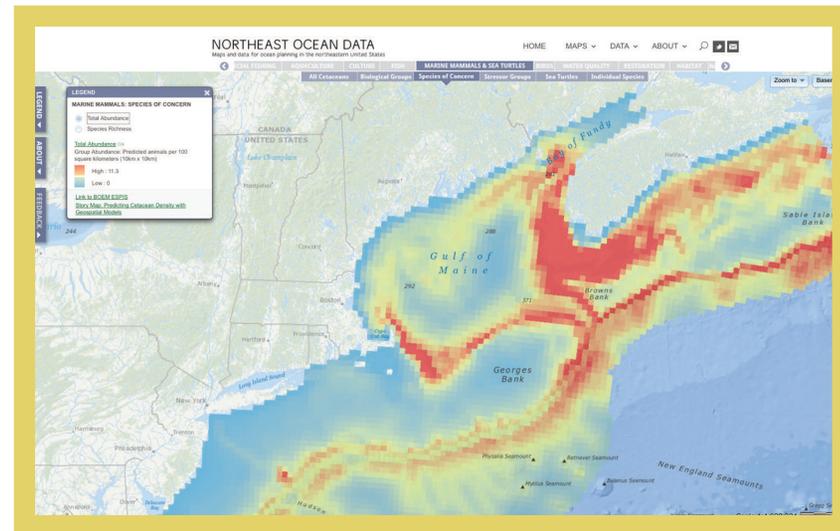
PORTAL THEME	REGULATED HABITAT AREAS (AREAL EXTENT)	AUTHORITY
Marine Mammals & Sea Turtles	Critical habitat for ESA-listed species (where available)	ESA
Fish	Habitat areas of particular concern	MSA
Fish	Essential fish habitat	MSA
Habitat (Biological)	Eelgrass	CWA
Habitat (Biological)	Wetlands	CWA
Habitat (Biological)	Vegetated shallows	CWA
Habitat (Biological)	Mud flats	CWA
Habitat (Biological)	Corals	CWA

* Note that the location of other, more broadly regulated habitat areas, such as the boundary for the Stellwagen Bank National Marine Sanctuary, are also available through the Portal.

Maps of regulatory-based species groups provide the opportunity to determine whether a potential action or management measure could affect concentrations of species or habitats that are regulated under existing law or managed through a particular program. For example, these maps show the predicted annual abundance and richness of marine mammal species that are listed as endangered under ESA and therefore suggest the relative likelihood of interactions with these protected species.



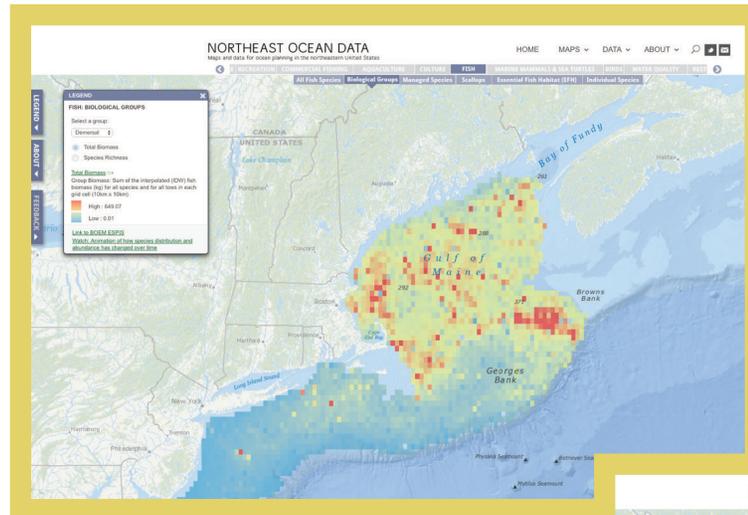
Richness



Abundance

Ecologically and biologically based species groups

Mapping of species in groups based on ecological and biological characteristics facilitates better understanding of species connectedness, ecosystem function, potential interactions and compatibility with human activities, cumulative impacts, and susceptibility to changing conditions. These products provide the underpinning for advancing an ecosystem-based approach to management by grouping species with similar life histories, trophic levels, spatial distributions, and habitat requirements (Table ML 3.3). Examining these products, along with other data, could help reveal the ecosystem processes that drive the observed patterns in marine life distribution and abundance. In addition, many environmental laws, particularly NEPA and permitting for Section 404 under the Clean Water Act, require consideration of the ecosystem context and the interconnectedness of species and habitats.



Biomass of demersal fish

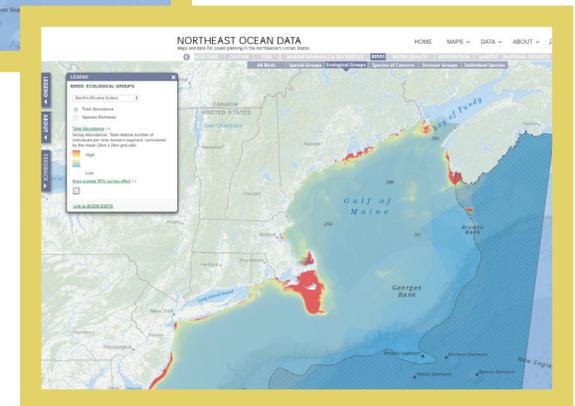
Table ML 3.3 // Ecological and biological species groups available on the Portal

PORTAL THEME	ECOLOGICAL & BIOLOGICAL SPECIES GROUPS*
Marine Mammals & Sea Turtles	Baleen whales Small delphinoids Large delphinoids Sperm and beaked whales
Birds	Coastal waterfowl Divers and pursuit plungers Benthic/bivalve eaters Surface feeders Surface plungers Fish eaters Squid eaters Crustacean eaters Use the Northeast for breeding Use the Northeast for feeding Migrant Northeast resident
Fish	Diadromous Forage fish Demersal fish

* Total abundance and richness

Maps of ecological and biological species groups can support an ecosystem-based approach to ocean management by showing species with similar life histories, trophic level, spatial distributions, and habitat requirements.

For example, these maps show the predicted abundance of benthic feeding bird species and the biomass of demersal fish species, which could be used to identify areas where disturbances or enhancements to benthic habitat will have the greatest effect on these components of the ecosystem.



Predicted abundance of benthic feeding birds



Table ML 3.4 // Stressor sensitivity-based groups available on the Portal

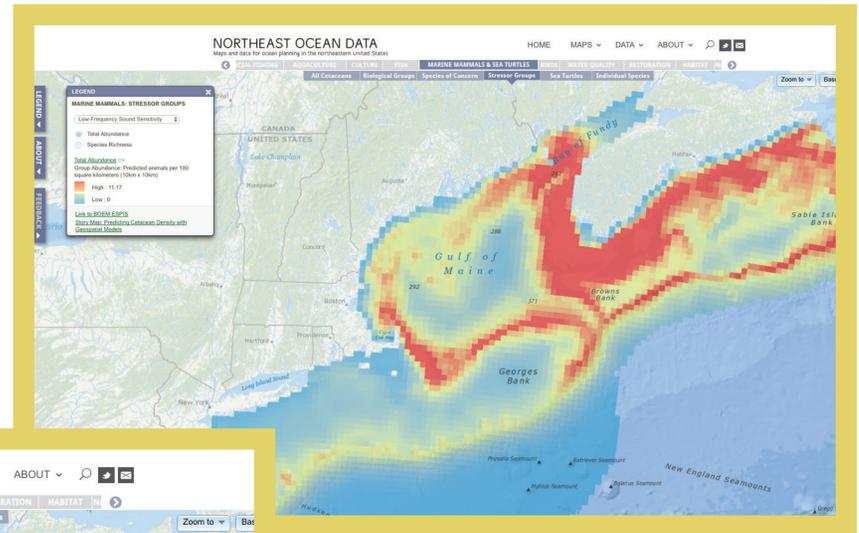
PORTAL THEME	STRESSOR SENSITIVITY-BASED SPECIES GROUPS*
Marine Mammals & Sea Turtles	Cetaceans sensitive to low-frequency sound Cetaceans sensitive to mid-frequency sound Cetaceans sensitive to high-frequency sound
Birds	Birds with higher sensitivity to collision with offshore wind Birds with higher sensitivity to displacement due to offshore wind
* Total abundance and richness	

Stressor sensitivity-based species groups

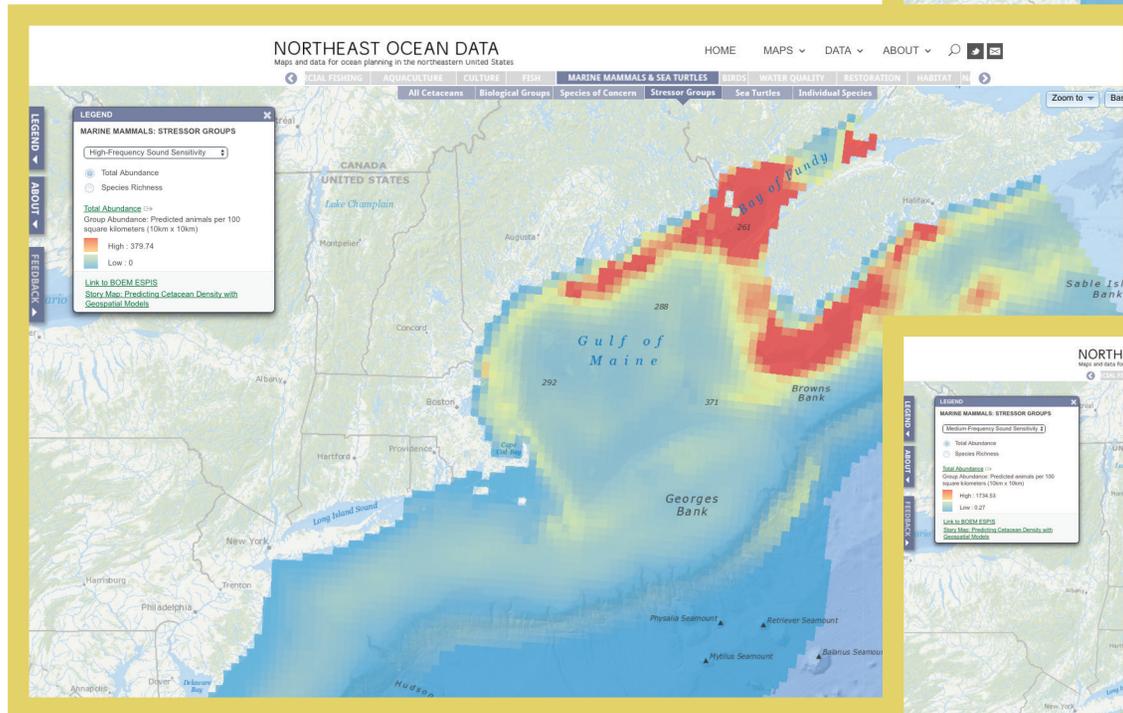
Stressor sensitivity-based maps provide the opportunity to understand where species could be directly affected by a particular human use or stressor when a specific interaction is suspected or known. These products can inform impact analyses and assessments of the potential compatibility considerations and conflicts associated with particular regulatory or management decisions. These groups were developed using existing science that attempted to quantify the relationships between species and stressors. As a result, the development of stressor sensitivity-based species groups is limited to those listed in Table ML 3.4. However, as the science progresses, this category of data provides one of the better opportunities to advance comprehensive ecosystem-based management. As described in Chapter 5, Science and Research Priorities, several sensitivity- and vulnerability-based species groups could be developed in the future to inform decision-making.

Maps of species grouped by their sensitivity to specific stressors provide the opportunity to understand whether and where groups of species could be directly affected by a particular human use or stressor when a specific interaction is suspected or known.

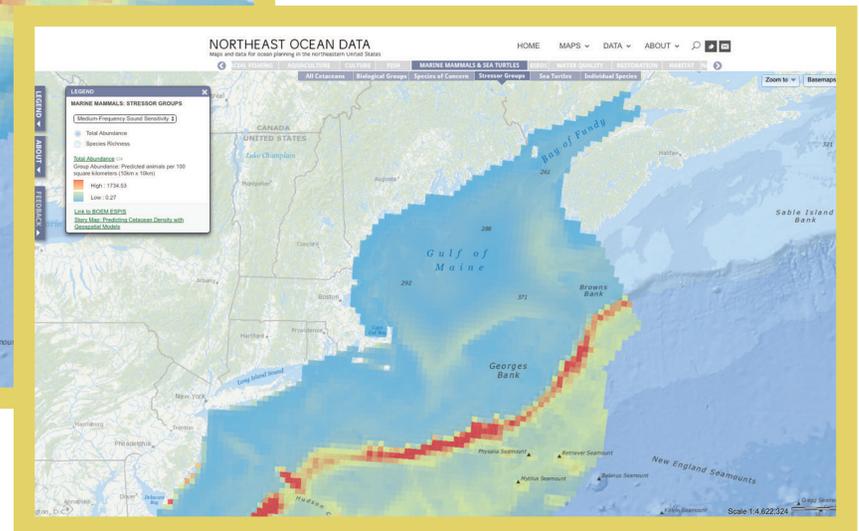
For example, these maps show the predicted abundance of cetaceans sensitive to low-, mid-, and high-frequency sound, and therefore can be useful when determining whether different activities producing different frequencies of sound, such as geological and geophysical surveying, pile driving, or shipping, could affect these species.



Cetaceans sensitive to low-frequency sound



Cetaceans sensitive to high-frequency sound



Cetaceans sensitive to mid-frequency sound



Individual species maps

The Portal provides maps for 29 marine mammal species or species guilds, 40 bird species, and 82 fish species from the MDAT project. Associated with these maps are products depicting measures of scientific certainty (or uncertainty). In contrast to the previously described maps of species groups, individual species maps include a temporal component (i.e., decadal, annual, seasonal, and/or monthly distributions depending on the taxa and species), and, for fish, these maps include maps from different data sources. Table ML 3.5 provides an overview of the different map products for marine mammals, birds, and fish. Individual species map products were primarily developed by MDAT using modeling and mapping methods that are published and extensively peer reviewed, including reviews conducted by marine life work groups in 2014 and 2015.⁷

29//2//40//82

The Portal provides maps for 29 marine mammal, two sea turtle, 40 bird, and 82 fish species

These maps also provide the basis for and the inputs to the species group aggregations previously discussed.

In addition to products from the MDAT project, the Portal includes other sources of data and information for individual marine life species:

- The Fish theme includes maps of sea scallop biomass and average abundance from the NOAA Northeast Fisheries Science Center (NEFSC) scallop dredge survey and the University of Massachusetts School of Marine Science and Technology (SMAST) video survey, respectively. Additional sources, including the Virginia Institute of Marine Science dredge survey, the Maine Department of Marine Resources (DMR) sea scallop surveys, and others are being scoped for potential inclusion in the Portal.

- The Fish theme includes links to animations, developed by the NEFSC, that show annual changes in species distribution using the federal trawl survey. These animations include the NMFS spring bottom trawl survey, which is currently not included in the products on the Portal.
- The Marine Mammals and Sea Turtles theme includes maps of leatherback and loggerhead sea turtle sightings per unit effort from the Northwest Atlantic Marine Ecoregional Assessment (NAM ERA) conducted by The Nature Conservancy.
- The Portal includes bird nesting sites and bird habitat areas from the Environmental Sensitivity Index.

Table ML 3.5 // Individual species map products available on the Portal

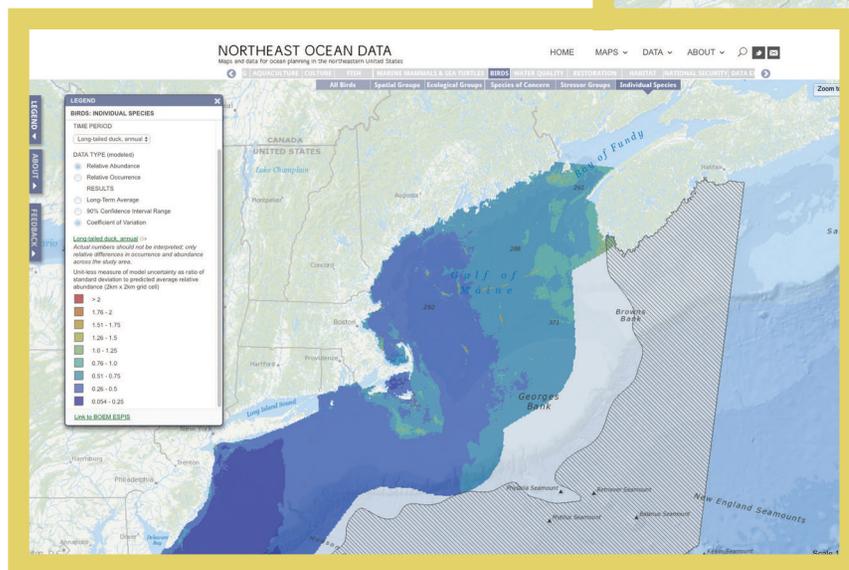
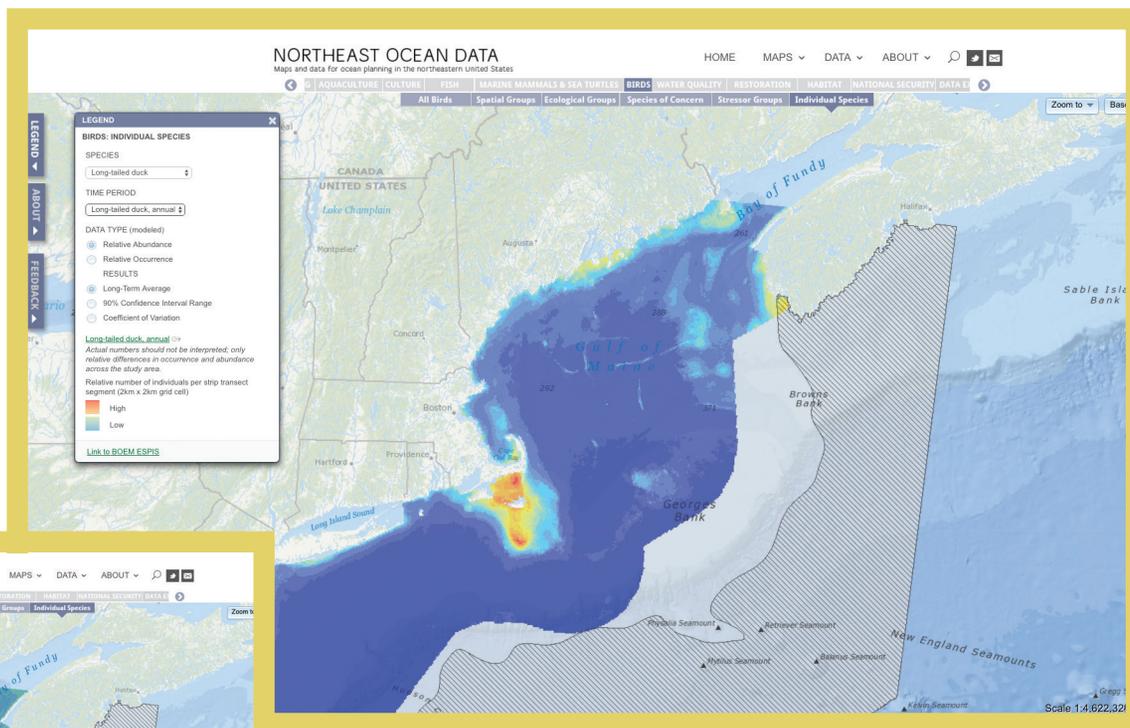
PORTAL THEME	INDIVIDUAL SPECIES MAP PRODUCTS	CERTAINTY PRODUCTS	SOURCE(S)
Marine Mammals & Sea Turtles	Predicted monthly and/or annual density of marine mammal species and species guilds	95% confidence interval 5% confidence interval Standard error Coefficient of variation	Duke University Marine Geospatial Ecology Lab model ⁸
Birds	Predicted seasonal and/or annual relative abundance and relative occurrence	90% confidence interval range Coefficient of variation	NOAA NCCOS model ⁹
Fish	Natural log biomass for the 1970–2014 and 2005–2014 time periods (if available)	Variance of natural log biomass	Mapped by NEFSC from NEFSC, MDMF, NEAMAP, and Maine and New Hampshire trawls ¹⁰

NOTE: MDMF = Massachusetts Division of Marine Fisheries; NCCOS = National Centers for Coastal Ocean Science; NEAMAP = Northeast Area Monitoring and Assessment Program; NEFSC = Northeast Fisheries Science Center; NOAA = National Oceanic and Atmospheric Administration.

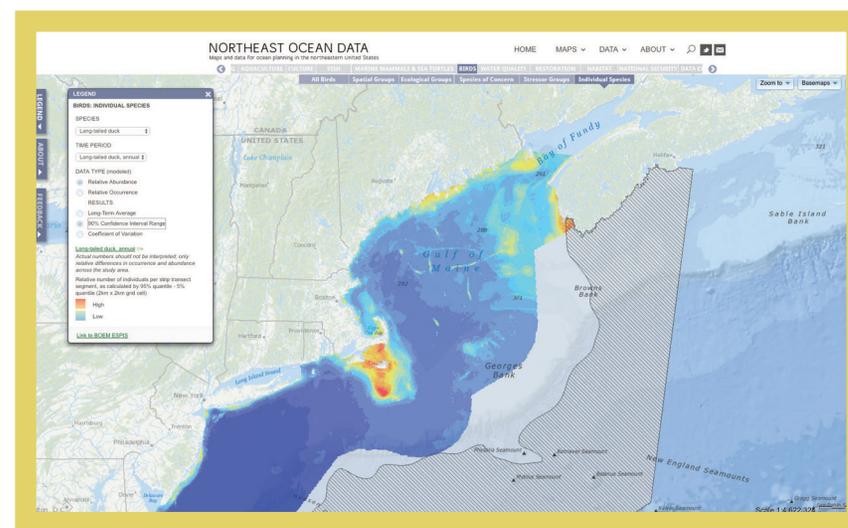
Long-tailed duck: Predicted annual relative abundance

Individual species maps allow for the user to explore the distribution and abundance of particular species and to consider the scientific certainty of the results.

For example, these maps show the predicted annual average relative abundance of long-tailed duck and provide confidence and variation measures as supplementary information.



Long-tailed duck: Coefficient of variation

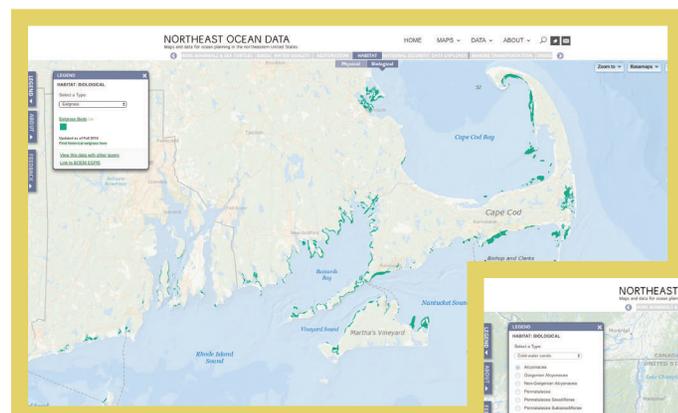


Long-tailed duck: 90 percent confidence interval range

Physical and biological habitat

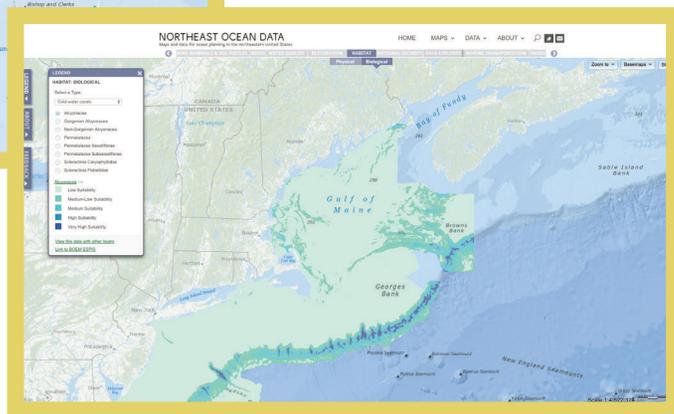
The Portal includes maps of data describing certain physical and biological habitats (Table ML 3.6). Several physical and biological habitat layers are represented by annual or seasonal averages using long-term datasets. This approach provides users with a broad picture. Recognizing that the temporal variability in some of these parameters may be important or influential for some data applications, it is intended that these data are used in conjunction with

additional sources of information. For example, the benthic fauna layers in the Biological Habitat subtheme includes links to animations, developed by the University of Massachusetts SMAST, that show annual changes in fauna distribution. The need to develop physical and biological habitat map products at fine temporal scales is described in Chapter 5, Science and Research Priorities.



Eelgrass

Physical and biological habitat maps such as these maps of eelgrass and cold-water corals demonstrate ecological connections that can be considered when taking an ecosystem-based approach to management. They can also support the identification of specific habitat areas protected under existing law.

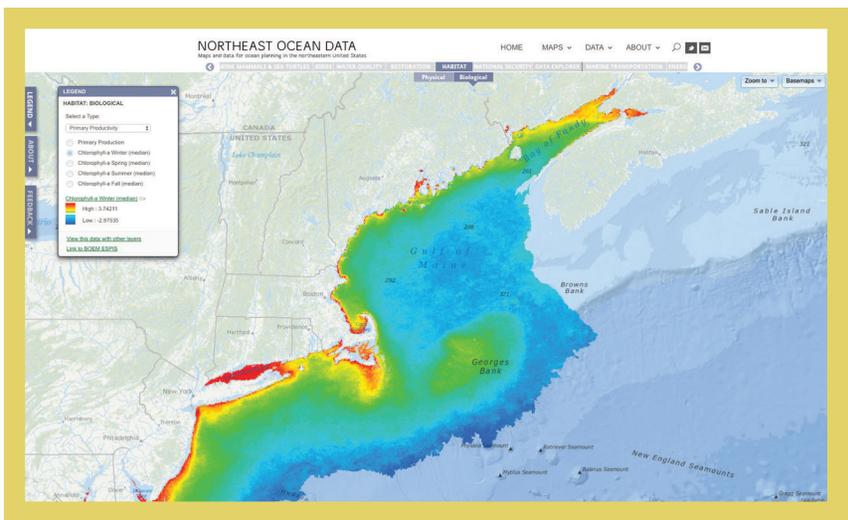


Corals

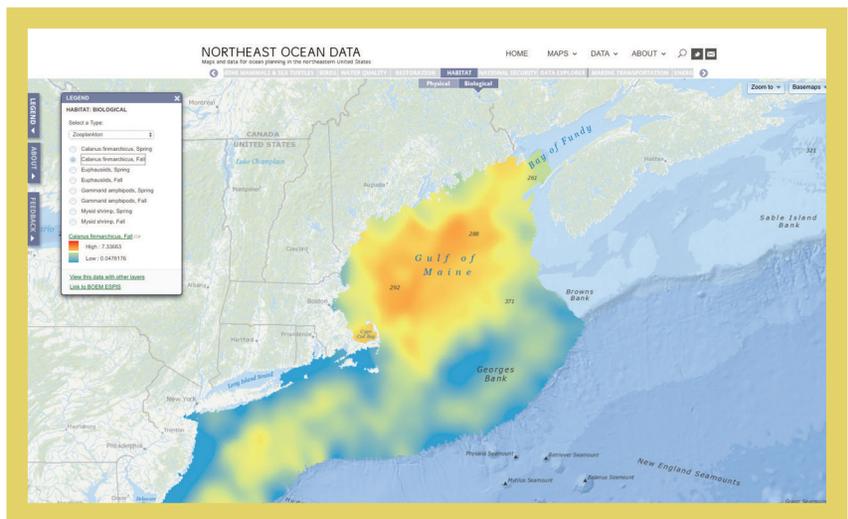
Table ML 3.6 // Physical and biological habitat map products available on the Portal

PORTAL THEME	MAP PRODUCTS
Habitat (Physical)	<ul style="list-style-type: none"> Sediment grain size Sediment grain size data quality Seabed forms Sediment stability Surface currents (annual average 1978–2013) Bottom currents (annual average 1978–2013) Surface temperature (annual average 1978–2013) Bottom temperature (annual average 1978–2013) Stratification (annual average 1978–2013)
Habitat (Biological)	<ul style="list-style-type: none"> Annual mean primary production (1998–2007) Median winter, spring, summer, fall chlorophyll-a concentration (2003–2015) Average spring and fall zooplankton abundance (Calanus, Euphausiids, Gammarid amphipods, Mysid shrimp) (2005–2014) Eelgrass Wetlands Shellfish habitat (oyster, mussel, scallop, clam) Predicted habitat suitability for cold-water corals Average abundance of benthic fauna (hermit crab, moon snail, sea star) in SMAST video surveys (2003–2012) Average percentage of sample locations with benthic fauna (bryozoans, sand dollars, sponges) in SMAST video surveys (2003–2012)

Physical and biological habitat maps depict ecological processes such as primary productivity (chlorophyll-a concentrations) and secondary productivity (zooplankton abundance).



Primary productivity



Zooplankton

Important ecological areas

In addition to the regional spatial characterizations of marine life and habitat described in this section, the *Framework for Ocean Planning in the Northeast United States* includes an action and a specific task to assess regional efforts to identify areas of ecological importance and to convene the RPB, scientists, and stakeholders to consider options for how to proceed with characterizing and using important ecological areas (IEAs) in ocean planning. The RPB framed its approach to identifying IEAs in several important ways.

First, the RPB sought input from scientists and the public (including forming the Ecosystem-Based Management [EBM] Work Group) to inform key aspects of the methodology, including defining “importance” and determining how to use existing and emerging data products. These discussions were informed by an understanding of the available data that would underpin a characterization of IEAs, including products that were recently developed by MDAT. Important topics identified in these discussions included the potential for better understanding ecological processes, functions, and interrelationships by advancing the concept of IEAs; the importance of understanding the degree of scientific certainty for data products used in these analyses and of ensuring all methods are peer-reviewed or



use published methods; and the need for consideration of temporal trends and potential future shifts in habitats and species distribution.

Second, the RPB was mindful of the executive order's requirement to work within the existing statutory and regulatory framework, particularly when considering how identification of areas of ecological importance could be applied in agency decision-making (agencies must use all Plan-related maps and information within the existing regulatory context). As described later in this section, the RPB recognizes that significant progress was made in establishing a conceptual framework for using existing data to identify IEAs and that there is considerable additional work to be done before an approach can be implemented.

Lastly, the RPB acknowledges that it must obtain and consider public input on the potential use of products characterizing IEAs and that there are other related government processes (such as the NEFMC habitat amendment, the identification of essential fish habitat under MSA, and the designation of critical habitat under ESA, to name a few) that must be recognized when developing and implementing potential uses of IEA products. The RPB initiated the characterization of IEAs with the premise that data developed to improve our understanding of the interrelationships between ecosystem components and processes could potentially

be used, like any other dataset referenced in this Plan, as one overlay to guide and inform decision-making. More work needs to be done, in a public forum, to consider this and other potential uses for IEA products.

An overview of the RPB's proceedings related to IEAs follows.

In June 2014, the RPB issued a "Draft Summary of Marine Life Data Sources and Approaches to Define Ecologically Important Areas and Measure Ocean Health"¹¹ and convened a public workshop to consider next steps related to defining IEAs. Informed by that workshop, the RPB decided to first focus on developing peer-reviewed regional marine life and habitat data products, to conduct additional research, and to seek input on approaches for using marine life and habitat data in a broader, multifactor framework.

In April 2015, the RPB convened an ecosystem-based management workshop to further consider potential approaches for developing IEAs and other subjects related to ecosystem-based management. At its June 2015 meeting, the RPB formed the EBM Work Group. The RPB's charge to the EBM Work Group was to inform the RPB on a range of activities for the 2016 Northeast Ocean Plan, including reviewing approaches to defining and characterizing IEAs. During fall 2015, the EBM Work Group provided feedback on many of the draft marine life and

habitat data products described in this chapter. It also recommended that the RPB define IEAs as various ecosystem components and ecosystem functions, using existing definitions from the National Ocean Policy as a reference point.

In November 2015, the RPB released an initial framework for characterizing IEAs (the IEA Framework) for public comment. The IEA Framework defined IEAs in terms of several components representing ecosystem structure and function. The RPB also identified existing marine life and habitat data that could be used to characterize and map each IEA component and identified long-term science and data that would support a more complete characterization of each component over time. EBM Work Group and public review generally expressed agreement with the definition and identification of the IEA components. Other feedback focused on the identification of specific ecological datasets that could be used to characterize each IEA component.

In response to these comments, the RPB revised the IEA Framework, and on **January 6, 2016**, the EBM Work Group met to review the revised IEA Framework, resulting in the following recommendations to the RPB:

- Ensure all marine life and habitat data referenced in this Plan are reviewed by regional scientists before being used in the IEA Framework.



- Illustrate one or two IEA components for which existing marine life and habitat data are sufficient to advance the development and application of the IEA Framework.

The IEA Framework was released with the draft Plan on **May 25, 2016**. Subsequently, on **July 27, 2016**, the RPB convened a full-day EBM Work Group meeting to obtain input on progress illustrating the first two components of the IEA Framework using existing data. During the meeting, RPB members, EBM Work Group members, and the public reiterated the need for peer review, for use of published methods, and for a method to determine the scientific certainty of results, where possible. Participants also recommended that the RPB clarify the potential uses of IEA products in order to better inform their development. Lastly, the meeting resulted in detailed feedback on many specific scientific and technical issues, including the continued

development and management application of species diversity and core area abundance products within the context of characterizing IEAs.

The IEA Framework is incorporated into this Plan as a working draft (see Appendix 3). It will be modified, as appropriate, as the RPB continues to consider the characterization of IEAs and the potential use of IEA products. It defines IEAs for Northeast ocean planning as “habitat areas and species, guilds, or communities critical to ecosystem function, resilience and recovery.” These areas are further defined and identified by the following five components:

- 1. Areas of high productivity**—These areas have high primary and secondary productivity, include known proxies for high primary and secondary productivity, and have high metrics of food availability.
- 2. Areas of high biodiversity**—These areas are characterized by metrics of high biodiversity and habitat areas that are likely to support high biodiversity.
- 3. Areas of high species abundance including areas of spawning, breeding, feeding, and migratory routes**—These areas support ecological functions important for marine life survival; these areas may include persistent or transient core abundance areas for which the underlying life history mechanism is currently unknown or suspected.

- 4. Areas of vulnerable marine resources**—These areas support ecological functions important for marine life survival and are particularly vulnerable to natural and human disturbances.
- 5. Areas of rare marine resources**—These areas include core abundance areas of state and federal ESA-listed species, species of concern and candidate species, other demonstrably rare species, and spatially rare habitats.

The draft IEA Framework also includes information describing the potential use of existing marine life and habitat data to map each IEA component, and, recognizing the limits of existing data, it makes note of the long-term science and data needs to advance the characterization of IEAs. These and other related science and research needs are also described in Chapter 5. Finally, Action ML-4 (see page 56) describes the next steps the RPB will take to advance the IEA Framework.



OVERVIEW

ACTIONS

- ML-1 Update marine life data through 2017
- ML-2 Update habitat data through 2017
- ML-3 Identify opportunities to update marine life and habitat data every five years
- ML-4 Continue the development of the Important Ecological Area Framework and further determine potential uses of IEA data products
- ML-5 Use marine life and habitat data as key inputs to monitor ecosystem health
- ML-6 Use marine life and habitat data to inform applicable review processes under federal environmental and regulatory laws
- ML-7 Use marine life and habitat data to inform responsibilities within managed areas
- ML-8 Use marine life and habitat data to inform other management activities



ACTIONS: MAINTAIN AND UPDATE DATA

ML-1. Update marine life data: Through 2017, the RPB will make the following updates to the marine life data through continued collaboration with the Portal Working Group and MDAT:

- Incorporate recent survey data from the Atlantic Marine Assessment Program for Protected Species (AMAPPS), the Massachusetts Clean Energy Center survey, and other sources into the marine mammal models and provide updated maps.
- Develop updated sea turtle maps using recent survey data.
- Incorporate fish trawl data for Long Island Sound from the Connecticut Department of Energy and Environmental Protection and for Rhode Island waters from the Rhode Island Department of Environmental Management's Narragansett Bay and Rhode Island Sound fixed-site surveys.
- Develop additional ecological groupings for whales and fish, including foraging guild groupings for whales and dietary guild groupings for fish.
- Further develop maps of scallop abundance and biomass, potentially including the Virginia Institute of Marine Science dredge survey and the Maine DMR sea scallop surveys.

- Determine the feasibility of incorporating other marine life products that would fill priority data gaps within the 2017 time frame. One factor in determining feasibility will be the ability to leverage agencies' (or partners') work, since associated costs could be significant. Marine life data sources to be reviewed include:

- > USFWS Mid-winter Waterfowl Survey
- > Other information sources in coastal and estuarine areas, such as the Environmental Sensitivity Index (ESI) and the Saltmarsh Habitat and Avian Research Program (SHARP)
- > Telemetry and acoustic data for fish, birds, and marine mammals
- > Available data sources of bat distribution and abundance

ML-2. Update habitat data: Through 2017, the Portal Working Group will develop the following habitat datasets with RPB input and review:

- Map products characterizing persistent phytoplankton bloom events
- Updated submerged aquatic vegetation maps
- Updated benthic habitat maps
- Habitat vulnerability data developed under NEFMC's Omnibus Habitat Amendment 2

ML-3. Identify opportunities to update marine life and habitat data every five years: RPB agencies, particularly NOAA, BOEM, and USFWS, will identify opportunities to update the existing marine mammal, sea turtle, bird, fish, and habitat data on the Portal over the long term. This includes reviewing existing agency efforts for potential additions into the Portal, including the various programs and information sources identified in Appendix 2 and data resulting from any of the science and research priorities described in Chapter 5. All of these data should be updated within a five-year cycle using methodologies and outputs similar to the initial products, while allowing for incremental updates, improved methods, and practical budget considerations.



ML-4. Continue the development of the Important Ecological Area Framework and further determine potential uses of IEA data products:

2016–2017

- Convene an IEA work group, which includes individuals with a range of expertise, to further explore and obtain public input on potential uses of IEA products for RPB consideration. Also, consider membership and terms of reference for the Ecosystem-Based Management Work Group (EBM Work Group).
- Continue the RPB’s review of the IEA Framework to determine its appropriateness for informing potential uses identified by the IEA work group. Continue to revise and illustrate each IEA component using existing data and published and peer-reviewed methods. Provide opportunities for EBM Work Group members and the public to review and inform the development of each IEA component, including two to three EBM Work Group meetings and opportunities between meetings.
- Continue developing and reviewing marine life diversity and core abundance area data products as important inputs into the IEA Framework. Consider data development, thresholds, and interpretation for these and other data within the context of the potential

uses of IEA data products. Incorporate these and other new and updated marine life and habitat products from Actions ML-1 and ML-2 into each IEA component, as appropriate.

2018

- Determine next steps, including consideration of whether the Plan and Portal should be updated given progress in characterizing IEAs and in determining the potential use of IEA products.

ML-5. Use marine life and habitat data as key inputs to monitor ecosystem health:

The RPB will use the marine life and habitat data presented in this Plan as key inputs along with other available information when developing indicators of ecosystem health and monitoring changing conditions (see Chapter 4). The comprehensive nature of the products in the Plan (i.e., the maps of hundreds of species of fish, marine mammals, birds, and turtles, their groupings, and the repeatable methods used in developing the products) should contribute to efforts to track changes over time for most of the species of management interest. In addition, certain marine life products were developed specifically to facilitate the examination of change over time (e.g., fish biomass 1970–2014 and 2005–2014).

ACTIONS: INFORM REGULATORY AND MANAGEMENT DECISIONS

ML-6. To the extent practicable, RPB agencies will use marine life and habitat data to inform applicable review processes under federal environmental and regulatory laws: The Portal provides new tools and a library of over 3,000 stakeholder- and expert-reviewed marine life and habitat maps to inform and enhance agency regulatory, conservation, and management decisions.

Species groups maps are useful as an early indicator of whether and which marine life populations could be affected by a proposed action and therefore might require additional information to determine potential compatibilities or impacts associated with the action. They can also be used to help determine areas where marine life conservation, management, and restoration activities might have the most benefit. Species richness products, in particular, could be used to evaluate the potential number of different species in an area in an average year. Once a species is identified as potentially present, total abundance maps provide additional information about the relative amount of marine life use of a particular area. By identifying species groups potentially affected by a proposed action, along with the relevant agencies and particular regulatory processes that pertain to the action, it may be possible to anticipate information needs for similar future actions.

Individual species maps provide additional information on those species that are likely to have an interaction with a particular activity or management measure, including their presence over time and the certainty associated with the findings.

Habitat maps indicate the underlying physical and biological characteristics of the area, including the ecosystem dynamics, which support marine life populations and influence marine life patterns. Habitat maps also provide a snapshot of areas that are specifically protected under existing management authorities.

Regional marine life and habitat data provide initial indications of species and habitats that can be expected in a geographic area. The data will enable more-consistent regional characterizations of natural resource conditions and will support the preliminary identification of potential resource impacts. The data will potentially be useful for initial project site characterization, for scoping of alternatives for NEPA and other reviews, and for work with project proponents to avoid or minimize impacts associated with different phases of offshore projects (for example, as discussed further in the Energy & Infrastructure section). As described previously, collection of additional information is likely to be necessary to understand the potential for site-specific construction and operations impacts, as well as to develop pre- and postconstruction monitoring requirements.

Early coordination with federal and state resource agencies can help determine what additional site-specific information may be useful (as described more in Chapter 4).

In addition to the general use of data described above, RPB agencies have identified the following activities specific to each set of applicable federal laws:

- **NEPA:** RPB agencies will use the Portal to the extent practicable to help identify alternatives, describe the affected environment, and assess cumulative effects under NEPA.
- **Federal leasing, licensing, and permitting (OCSLA, CWA, DWPA, RHA, and MPRSA):** RPB agencies responsible for leasing, licensing, and permitting processes will use the Portal to the extent practicable as an information source to identify potential resource impacts, to help communicate potential issues with a proposed project, and to provide information for use in determining appropriate avoidance and mitigation measures.
- **MSA:** The National Marine Fisheries Service (NMFS) will encourage RPB agencies and project applicants to consider marine habitat information contained in the Plan during the essential fish habitat (EFH) consultation process. To the extent practicable, RPB agencies will use the Portal to identify the presence of already designated habitat areas of particular concern (HAPC) and EFH in a proposed project

area and assist with determining whether an agency action may adversely affect EFH. If necessary, the Portal can be used to assist in the development of an EFH assessment describing the action, the EFH present within the proposed project area, and the effects the project would likely have on EFH. The EFH assessment should consider the physical and biological data layers identified in the Portal.

- **ESA:** To the extent practicable, NMFS and USFWS will use individual species products as one information source when determining if a species should be listed (or delisted) as threatened or endangered. NMFS and USFWS will also, to the extent practicable, use individual species products as one information source to assist in the monitoring and recovery of ESA-listed species. Lastly, NMFS and USFWS will, to the extent practicable, use the Portal when upgrading or developing new guidance regarding consultations under ESA Section 7.
- **MMPA:** To the extent practicable, NMFS will use Plan data to inform Take Reduction Teams, help in the evaluation of take reduction plans, and conduct cumulative impacts assessments.

- **MBTA:** To the extent practicable, USFWS will use the Portal and the Plan, along with other information, to help facilitate successful enforcement of MBTA and increase coordination among federal agencies in support of Executive Order 13186 by integrating bird conservation principles, measures, and practices into agency activities that avoid or minimize, to the extent practicable, adverse impacts on migratory bird resources.

ML-7. Use marine life and habitat data to inform responsibilities within managed areas:

To the extent practicable, RPB agencies will use the Portal, along with many other sources of information, to enhance resource protection, management planning, and decision-making in state and federally designated managed areas. Applications could include:

- Applications of data to inform development and revisions to management or conservation plans.
- Characterization of existing conditions, interactions, potential compatibility considerations, and conflicts between marine resources and human activities.
- Interagency consultations regarding potential effects of federal activities on managed area resources.
- Informing development or implementation of research and monitoring programs.

ML-8. Use marine life and habitat data to inform other management activities:

This Plan references a diverse subset of other management programs, including restoration, conservation science partnerships, oil spill response, research, conservation, and other activities. A common aspect of these programs is that they rely on up-to-date scientific information to support decisions. RPB agencies responsible for the management programs listed in this Plan will use the Portal to inform their specific activities. Some examples include:

- NMFS will encourage the use of the Portal by the NOAA Community-Based Restoration Program, including in the preparation of proposals for federal funding opportunities.
- In the event of a pollutant spill, the Oil Pollution Act (OPA) trustee council and other appropriate agencies will, to the extent practicable, provide information on protected and endangered species and EFH to the US Coast Guard (USCG) to be considered in response activities. The OPA trustee council and others will be able to use the Portal to inform the Natural Resources Damage Assessment and coordinate restoration actions.
- USFWS will use the Portal to the extent practicable to help inform science and conservation partnership priorities.





CULTURAL RESOURCES



New England's history and culture are inextricably linked with the ocean. The importance of the sea to the region's economy, character, and vitality is manifest in various ways. New England fishing harbors, the Freedom Trail in Boston, summer vacations at the beach or on a small island, lobster bakes, and countless other images and activities are inseparable from the experience of living in or visiting New England, where recreation and tourism comprise about half of the region's coastal economy.¹

Tourism is a particularly seasonal phenomenon, with summer employment in the tourism and recreation sector increasing by close to 90 percent (compared with offseason employment) in certain counties in Maine and Massachusetts.² Much of this seasonal employment occurs at the region's 10,000 eating and drinking establishments (restaurants and bars), which employ 150,000 people and generate more than \$5 billion annually in GDP, and at the region's hotels and lodging places, which employ more than 30,000 people and generate more than \$2 billion annually in GDP.³

In addition to these economic figures, however, there are many intrinsic or otherwise hard-to-quantify aspects of the region's history and culture. Countless sites and properties in New England are foundational to this country's history and pay homage to those who helped shape the region and the United States. Reflecting the region's maritime tradition and continuing connection to the sea, working waterfronts and island communities continue to be vital connections between the land and ocean, supporting commercial fisheries, recreational

opportunities such as boating, fishing, and wildlife viewing, and a host of other activities for residents and visitors alike. Coastal parks, wildlife reserves, a National Marine Sanctuary, and National Park Service properties provide other opportunities to experience the New England coast. Cultural opportunities such as museums, theater, art, crafts, and music festivals abound and are not confined to the region's urban centers; many of the cultural events and institutions are known the world over and bring national and international visitors to the region.

Importantly, for far longer than the time of European settlers, Native American cultures in the Northeast have been inherently connected to the region's ocean waters. The ocean and its resources supported a variety of hunting, harvesting, fishing, and foraging activities for more than 12,000 years before the arrival of European settlers. Ocean resources remain important to the cultural fabric of present-day Native American life through sustenance, medicinal applications, and spiritual well-being as well as tribal travel, trade, recreation, and ceremonial activities. Tribal members view themselves as





caretakers of the land and waters of the region; if the land and waters are kept healthy, they will provide for future generations. Ocean planning provides tribal members an opportunity to pursue their priorities of preserving cultural sites, promoting ecosystem health, restoring fisheries and habitat to ensure sustenance, planning for a changing climate, and using traditional knowledge to strengthen partnerships.

REGULATION AND MANAGEMENT

Relevant laws, regulations, and programs

Several federal laws, regulations, and related federal, tribal, state, and local programs are directly related to consideration of cultural resources in general. For the purposes of the Plan, the following are among the most pertinent:⁴

- **Section 106 of the National Historic Preservation Act** (NHPA), which requires federal agencies to take into account the effects of their activities on historic properties that are listed or eligible for the National Register of Historic Places. It also requires federal agencies to consult with states and tribes, and, with respect to tribes, determine whether a federal activity may affect a property to which a tribe attaches religious or

cultural significance. Section 106 also requires an inventory of sites on the National Register; however, submerged areas have not been inventoried. Other laws may apply to specific types of underwater historic resources, such as the Sunken Military Craft Act, administered by the US Navy, which protects sunken military craft that are the property of the US government.

- **NEPA**, which requires federal agencies to assess the impact of a major federal action affecting the human and natural environment, including cultural and historic resources.
- Additional laws described in Chapter 4 such as the **Archaeological Resources Protection Act**, **Native American Graves Protection and Repatriation Act**, and the **American Indian Religious Freedom Act**.
- Each New England state participates in the formal protection of cultural and historic resources through designated **State Historic Preservation Officers** (SHPOs) and programs, for example, which implement state-specific laws, rules, and regulations related to the protection and conservation of historic and cultural resources, including shipwrecks. Tribes also have designated **Tribal Historic Preservation Officers** (THPOs) who are involved with the protection of tribal cultural resources.

In addition to these formal programs, countless nonregulatory, funding, or technical assistance-oriented programs provide support for protection of historic and cultural resources or are intended to help preserve aspects of community character. While there are too many of these types of federal, state, local, and tribal programs to identify in this section, working waterfront programs are particularly relevant to this Plan because of their link to offshore activities and resources. Each working waterfront program, alliance, or network is unique, but they generally seek to enhance the capacity of coastal communities and stakeholders to make informed decisions, balance diverse uses, ensure access, and plan for the future of working waterfronts and waterways.⁵ In each state, there are state-level resources such as funding and technical assistance available to help ensure that communities consider long- and short-term needs for working waterfronts. Many of these efforts are intended to help communities maintain access for traditional and economically and culturally important uses, including commercial fishing and recreation.



Environmental and regulatory review

The NHPA requires federal agencies to take into account the effects of their undertakings on historic properties and to consult with SHPOs, and, when appropriate, THPOs. There are 10 federally recognized tribes in New England with almost all having, developing, or sharing a THPO, and each state has an SHPO. If the agency's undertaking could affect historic properties, it consults with the SHPO (and THPO[s] as appropriate) and conducts additional studies as necessary. Historic districts, sites, buildings, structures, and objects listed in the National Register of Historic Places are considered. Unlisted properties are evaluated against the National Park Service's published

criteria for a designation of "eligibility" for the National Register, in consultation with the SHPO and THPO(s) associated with tribes that may attach religious or cultural affiliation to the properties. For listed and unlisted properties, the agency consults with the SHPO/THPO and makes an assessment of adverse effects on the identified historic properties. If these state and tribal historic preservation officers agree that there will be no adverse effect, the agency proceeds with the undertaking and any agreed-upon conditions. If the officers find that there is an adverse effect, the agency begins consultation to seek ways to avoid, minimize, or mitigate the adverse effect. Consultation usually results in a memorandum of agreement (MOA), which outlines agreed-upon measures for the agency to take in order to avoid, minimize, or mitigate the adverse effect. In some cases, the consulting parties may agree that no such measures are possible, but that the adverse effects must be accepted in the public interest.⁶

Pursuant to NHPA regulations (36 CFR § 800), there are several considerations related to historic or cultural properties under NEPA. These considerations generally take into account NHPA responsibilities as early as possible in the NEPA process and, to the extent possible, preparation of draft environmental impact

statements that integrate impact analyses and related surveys and studies required by the NHPA. Consideration of an undertaking's likely effects on historic properties is part of an agency's determination of whether an action is a "major federal action significantly affecting the quality of the human environment," and it therefore requires preparation of an environmental impact statement under NEPA.⁷ While NHPA focuses on impacts on properties included in or eligible for the National Register of Historic Places, other authorities, such as the American Indian Religious Freedom Act (AIRFA), may require consideration of other cultural resource types from a tribal perspective. NEPA itself provides for considering all aspects of the cultural environment including, for example, the cultural use of natural resources.

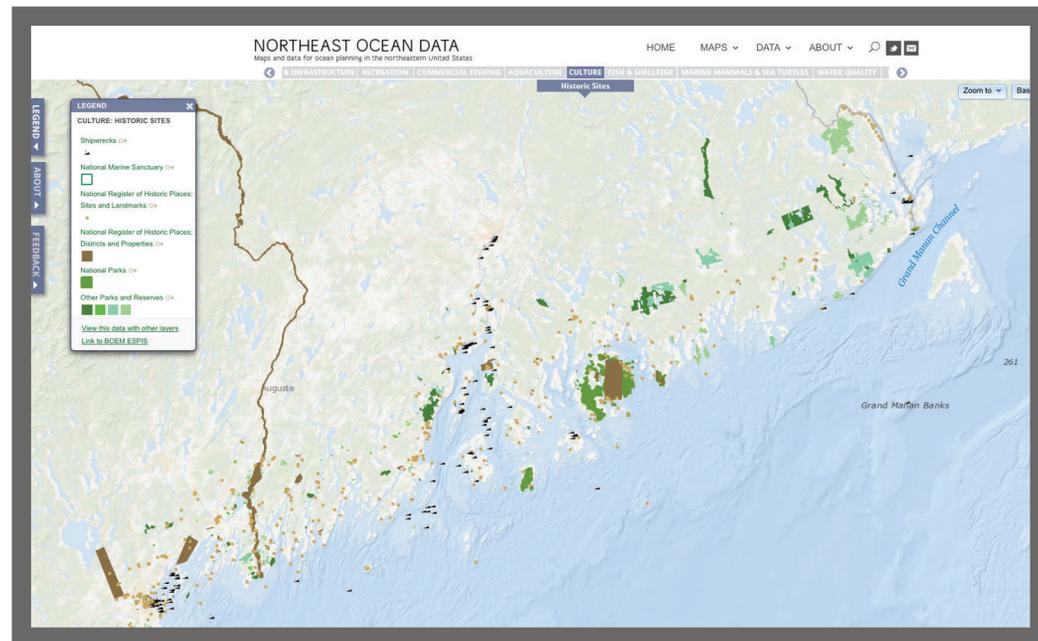


MAPS AND DATA

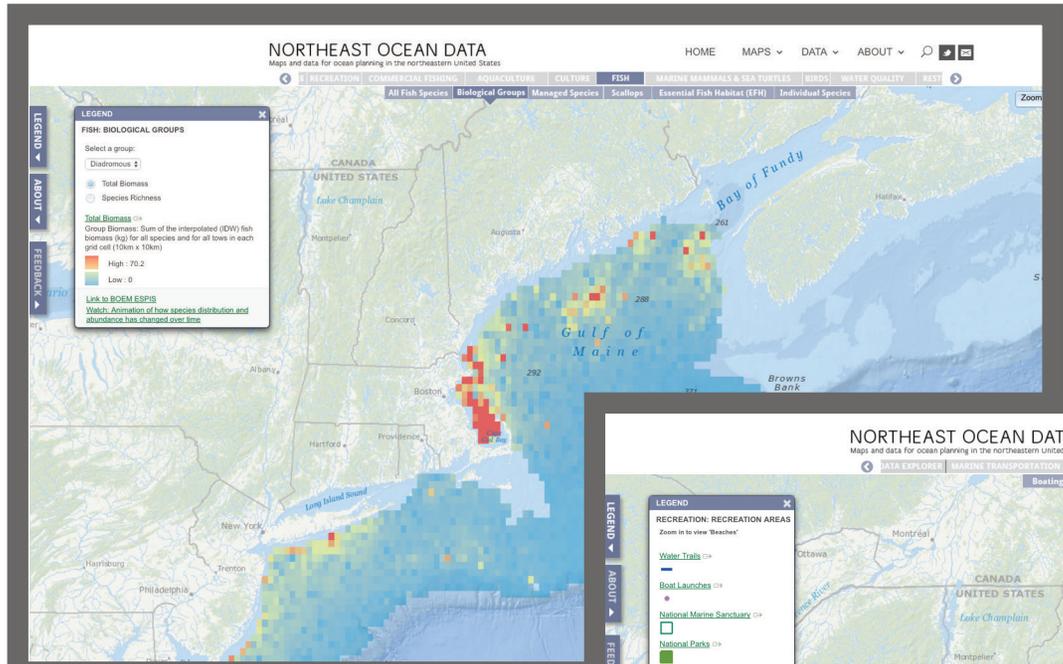
The National Park Service (NPS) maintains the National Register of Historic Places.⁸ The Culture theme on the Portal provides historic district and site location information from the National Register for Maine, Massachusetts, New York, and Rhode Island (as of 2016, other Northeast states are being updated). The states and NPS provided these data. Although project proponents are required to consult the National Register to assist in identifying potentially affected sites, they are also required to consult with the appropriate SHPO(s) and/or THPO(s), recognizing that some identified sites or properties may not be listed publicly (e.g., particularly sensitive sites that are considered confidential and thus not included in available data) or that a particular project may affect a site or property that is eligible for, but not yet listed on, the National Register.

Additionally, the Portal provides information from the Automated Wreck and Obstruction Information System (AWOIS) data layer, which can be used to identify the potential location of

some shipwrecks (although there are limitations to its use, given issues with the precision and accuracy of the underlying data). Lastly, the Portal includes layers showing NPS properties, the Stellwagen Bank National Marine Sanctuary, and other federal, state, and local parks and reserves identified based on the cultural importance of these areas.

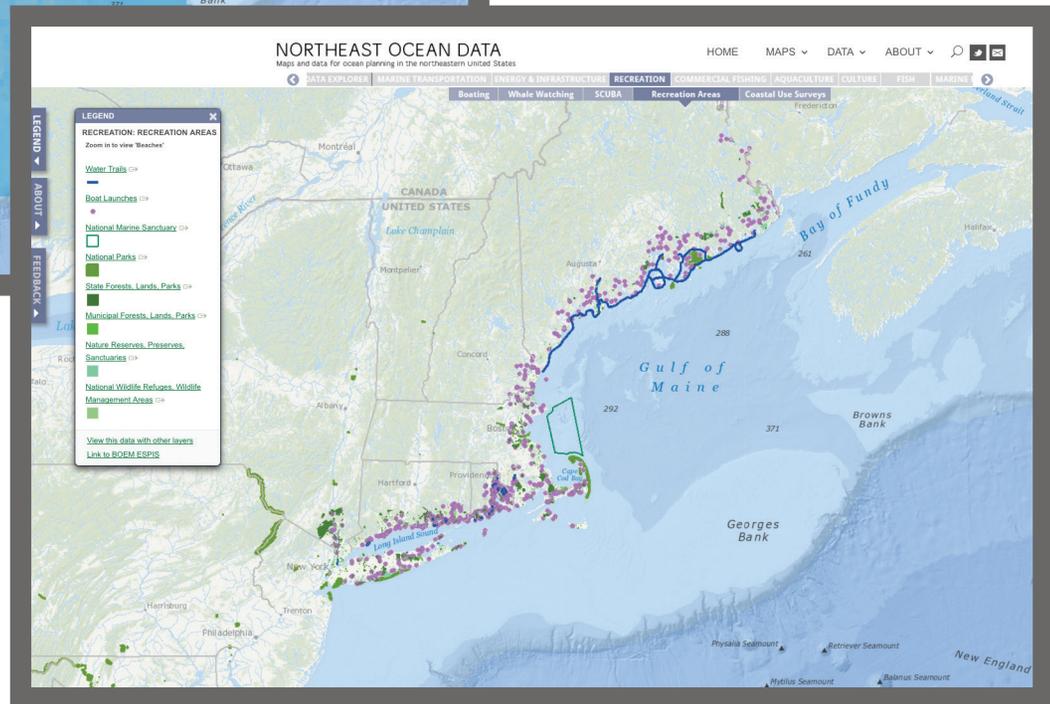


Historic properties, parks, open space, and islands along the coast of Maine



Diadromous fish biomass as caught by the federal trawl survey

Maps of historic properties, recreational areas, and wildlife populations can help identify cultural resources and connections between coastal communities and the ocean.



Coastal recreation areas and access points



OVERVIEW

ACTIONS

- CR-1 Maintain and update maps and data on the Portal
- CR-2 Incorporate additional maps and data into the Portal when available
- CR-3 Use the Plan and the Portal to identify potential impacts during environmental and regulatory review
- CR-4 Identify potentially affected tribes and stakeholders

ACTIONS: MAINTAIN AND UPDATE DATA

CR-1. Maintain and update maps and data on

the Portal: The RPB, through the NPS, states, and the Portal Working Group, will review and update the National Register site data on an annual basis. The RPB will also incorporate data about National Register sites in New Hampshire and Connecticut as information becomes available. The RPB will also maintain links to AWOIS data, as served by the Marine Cadastre (an online federal source of spatial data maintained by NOAA and BOEM).⁹

CR-2. Incorporate additional maps and data

into the Portal when available: RPB agencies will periodically review existing activities and programs to provide relevant updates to the Portal. As described in Chapter 5, BOEM, the Narragansett Indian Tribe, and the University of Rhode Island (URI) are developing methodologies to identify submerged archaeological and paleocultural resources. If these efforts result in releasable map and data products, the RPB will work with BOEM, tribes, and other interested parties to incorporate the appropriate products into the Portal.

ACTIONS: INFORM REGULATORY AND MANAGEMENT DECISIONS

CR-3. Use the Plan and the Portal to identify potential impacts during environmental and regulatory review:

RPB agencies will engage in the following specific activities to ensure the data and information in the Portal and the Plan are used to identify potential impacts to cultural resources during the environmental and regulatory review processes described above.

- RPB agencies will use the Portal to the extent practicable as an initial screening tool to help identify potentially affected historic properties under NHPA. The Portal contains information on thousands of historic properties on the National Register. While it is incomplete, data on the Portal will at least provide an initial indication of whether there are historic properties in the areas of a proposed project, especially once information for New Hampshire and Connecticut is added. Consultation with appropriate federal, state, tribal, and local officials and community groups is always required as the National Register does not identify resources that are considered confidential or are potentially eligible for designation, including areas of potential cultural resources offshore.

- As appropriate, RPB agencies will use the Portal and other information in the Plan (including the baseline assessment) to understand and describe the different factors that contribute to the connections between the ocean and the culture and the economy of island and coastal communities. For example:
 - > Maps of marine transportation, commercial fishing, and recreational activities can be used to demonstrate connections between specific communities and the ocean areas upon which local economies and culture depend.
 - > Maps showing the distribution and extent of marine life populations and important habitats can be used to show the recreational, wildlife viewing, and spiritual connections between communities and different ocean areas.
 - > Information from the baseline assessment showing the volume of fishery landings and cargo by port, ocean sector employment, economic productivity, seasonal housing, and other data can be used to demonstrate the importance of the ocean to the local economy.
- RPB tribes will use the Portal and this Plan to promote ecosystem-based management, recognizing the importance of a holistic approach to understanding the potential impact of new activities to tribal culture. RPB tribes will

overlay marine life data with information on existing and emerging human uses to analyze projects from an ecosystem perspective. In addition, RPB tribes will use the following specific datasets, representing resources that are particularly relevant to tribal culture, to inform their engagement in regulatory consultations:

- > RPB tribes will use marine life data to better understand the distribution and abundance of ecological and functional groupings of marine mammal, sea turtle, fish, and bird species when demonstrating areas of cultural significance. For example, the Portal can be used to identify potential restoration sites and to characterize the importance of fish species for historic sustenance (American eel, Atlantic salmon, shad, herring, Atlantic sturgeon, and pollock).
- > RPB tribes will use information on shellfish species (razor clams, soft shell clams, quahogs, and mussels) to demonstrate areas that are important to tribal sustenance and that might be a priority for water quality restoration projects.
- > RPB tribes will use data related to climate change (e.g., primary productivity trends, trends in marine life distribution) to help characterize the impacts of changing conditions on habitats and resources important to tribes (e.g., eelgrass beds, shellfish sites, restoration areas, and tribal cultural sites).

- RPB agencies will direct project proponents to the Portal to assist with preliminary identification of potential effects of a particular action on historic, cultural, and archaeological sites, recognizing that certain sites may not be included in public data.
- RPB agencies will use Plan information as one source of regional contextual information for characterizing cultural resources in the affected environment section of NEPA and other similar environmental documents.

CR-4. Identify potentially affected tribes and stakeholders:

RPB agencies will use the Portal and this Plan to identify tribes and stakeholders with cultural interests who may be affected by a proposed activity. This action includes using information in the Plan to help identify the range of local stakeholders representing the different environmental, cultural, or economic interests that compose the culture of coastal and island communities. This action also relates to the best practices regarding coordination with stakeholders described in Chapter 4.



MARINE TRANSPORTATION



Marine transportation involves waterways and ports that move goods (e.g., agriculture, oil and gas, cars, clothing, appliances) and people (e.g., on ferries, cruise ships, sightseeing vessels). It has broad-reaching impacts to the Northeast region, as well as nationally and internationally. It is economically critical, providing for jobs—such as pilots, port operators, and vessel staff—as well as taxes to local, state, and federal entities. It is also crucial to national security by enabling the rapid movement of military resources and logistical support.

Marine transportation provides people an alternative means of transportation in some congested areas and may offer the only method to get to work in certain Northeast island and coastal communities. Northeast ferries carried 26.6 million passengers and 5.4 million vehicles in 2010, and they are expected to carry more in the coming decade.¹ The cruise industry is also seeing a 16 percent increase in expenditures over the past four years.² Movement of goods is another necessary component of marine transportation. Nationally, more than 75 percent of everything we consume arrives via ship, and the Northeast region is no exception.³ Just-in-time winter deliveries of home heating oil, liquefied natural gas, and propane, essential for heat and electricity, in general add up to more than 12,000 transits, approximately 8,000 of which were accomplished by tugs and tank barges. Container volume through the Port of Boston was more than 237,000 20-foot equivalent units (TEUs) in 2015. Container volume is likely to increase once the main Boston Harbor

shipping channels are dredged to accept larger container vessels transiting the recently widened Panama Canal.⁴

In total, marine transportation contributes \$5.4 billion to the regional economy as well as providing more than 37,000 jobs.⁵ The implications for ocean planning are that the Northeast must continue to sustain important marine transportation activities and systems while making sound decisions about how to manage the introduction of new infrastructure related to marine transportation or changes to the current marine transportation mix.

REGULATION AND MANAGEMENT

Over 25 federal agencies are directly or indirectly engaged with marine transportation, including the USCG, US Army Corps of Engineers (USACE), Federal Maritime Commission (FMC), Maritime Administration (MARAD), and NOAA, to name a few. The USCG has a unique multimission role involving waterway safety, security, environmental protection, and regulatory authority.⁶ The

USACE is responsible for permitting waterway infrastructure projects and maintaining navigable waterways. MARAD manages several programs that promote the use of marine transportation infrastructure, including ports, and has authority for the licensing of offshore LNG- and oil-receiving port facilities. NOAA provides all nautical charts and maps and geodetic measurements, including developing strategies for coastal mapping. The FMC is an independent federal agency responsible for regulating the US international ocean transportation system for the benefit of US exporters, importers, and the US consumer.

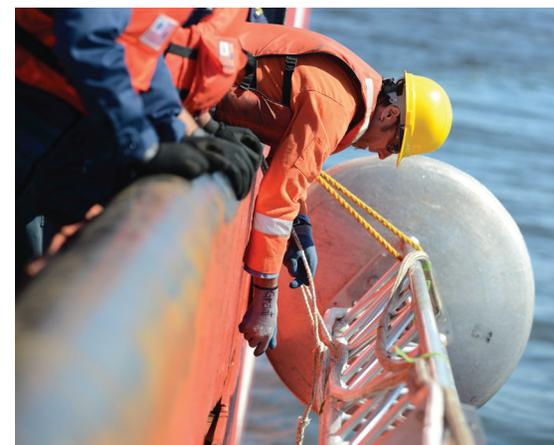
USCG regulatory and management responsibilities

The most relevant USCG missions for regional ocean planning are those that protect ports and sea lanes through waterways management, law enforcement, and environmental protection. The relevant USCG missions and responsibilities provide context for the USCG's role in the everyday operation and management of marine transportation as well as in the regulatory review process for offshore projects requiring a permit, lease, or license from other agencies.

The USCG's Ports, Waterways, and Coastal Security (PWCS)⁷ mission entails the protection of marine transportation infrastructure and the protection of those who live, work, or recreate near it; the prevention and disruption of terror-

ist attacks, sabotage, espionage, or subversive acts; and response to and recovery from those events that do occur. As part of this mission, the USCG is responsible for safety of navigation by inspecting foreign and domestic vessels, managing marine licensing, and enforcing treaties. The USCG's Aids to Navigation role⁸—to establish, maintain, and operate navigational aids—is well known, and relied upon, by mariners. The Ice Operations Program⁹ facilitates the movement of vessels through ice-laden Northeast waters. The USCG enforces the International Convention for the Prevention of Pollution from Ships (MARPOL), as well as ESA, CWA, the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), and other US environmental laws in an effort to protect the marine environment.¹⁰ Search and Rescue¹¹ entails “minimizing the loss of life, injury, property damage or loss by rendering aid to persons in distress and property.”¹²

The USCG protects waterways and reviews new offshore projects through several authorities including the Captain of the Port (COTP) Authority¹³ and the Ports and Waterways Safety Act (for assisting with decisions to permit Private Aids to Navigation, Bridges, and Marine Events), and participates as a cooperating agency for NEPA reviews, providing navigation safety evaluations to lead licensing, leasing, and permitting agencies (such as USACE and BOEM) for new waterway uses. Additionally,



under the Deepwater Port Act, the USCG has been delegated authority for application processing and environmental review functions for offshore LNG- and oil-receiving port facilities.¹⁴

The USCG has broad authorities over vessels, facilities, cargo operations, and the people that work on vessels and the waterfront. The USCG, through the District Commander or COTP, may establish different types of limited or controlled access areas and regulated navigation areas that may be used to mitigate risk to all waterway users. For example, a COTP order is one of several tools available to provide operational controls over a very specific emergent situation that poses safety, security, or environmental risks to the COTP's area of responsibility.



USACE regulatory and management responsibilities

The US Army Corps of Engineers' role in marine transportation is twofold. The USACE is authorized by Congress under its Civil Works programs to study, design, construct, operate, and maintain federal navigation projects (FNPs). Additionally, through its regulatory authorities (RHA, CWA, and MPRSA), the USACE issues permits for work, structures, the discharge of dredged or fill material, and the transportation for disposal of dredged material in navigable and ocean waters.

Under its Civil Works program, the USACE studies, designs, and constructs new projects, or makes modifications to existing projects either in response to congressional authorization or under its delegated Continuing Authorities Programs (CAP). For navigation projects, those with a federal cost of more than \$10 million are typically authorized by Congress, while those up to \$10 million are typically handled under the Section 107 (RHA) CAP program. Nonfederal cost-sharing is required for feasibility studies (50 percent), while design and construction is shared according to project design depth, in accordance with the requirements in the Water Resources Development Act (WRDA) of 1986.

Inherent in all federal navigation projects is the authority to maintain those projects in perpetuity. The majority of the USACE navigation program in New England in most years involves maintenance of existing FNPs. Currently, the USACE New England District (NAE) has one major deep draft navigation improvement project (Boston Harbor deepening), in partnership with Massport (the state entity responsible for the Port of Boston), that has been authorized by Congress and is currently in the final design phase. Another deep draft improvement project, the widening of the Portsmouth Harbor turning basin, in partnership with the New Hampshire Port Authority, has been forwarded to Congress for consideration for authorization, and is also in the final design phase. NAE also has several projects in the region under study as Section 107 small harbor improvements.

Other USACE authorities cover a range of business lines and project purposes. For example, the USACE also has the authority to address issues with damages to shorelines caused by FNPs (RHA Section 111), to restore habitat including areas formerly used as dredged material placement sites (RHA Section 1135), and to find beneficial use of dredged material for habitat creation or storm damage risk management (RHA Section 204).

MARAD regulatory and management responsibilities

The Maritime Administration promotes the development and maintenance of an adequate, well-balanced United States merchant marine, sufficient to carry the nation's domestic waterborne commerce and a substantial portion of its waterborne foreign commerce, and capable of service as a naval and military auxiliary in time of war or national emergency. MARAD seeks to ensure that the United States maintains adequate shipbuilding and repair services, efficient ports, effective intermodal water and land transportation systems, and reserve shipping capacity for use in time of national emergency. MARAD is also charged with meeting the country's commercial mobility needs while maintaining national security and protecting the environment. MARAD is an active participant at the national and international stage, advocating the need for consistent standards that value environmental protection.

Particularly relevant MARAD programs include the following:

Deepwater Port Program:¹⁵ MARAD, in consultation with the US Coast Guard, is delegated the authority to license deepwater ports (DWP),¹⁶ including facilities constructed at sea that are used as terminals to transport oil or natural gas to or from a state.¹⁷ MARAD carefully considers all licensing applications to ensure, among other things, that projects achieve the DWPA's

stated goals: to protect the marine and coastal environment; to prevent or minimize adverse impacts of port development; to promote the safe transfer of oil or natural gas to DWPs while minimizing the traffic and risk associated with such transport; and to protect the energy security of the United States.¹⁸

Ship Disposal Program: MARAD serves as the federal government’s ship disposal agent of obsolete, noncombatant vessels weighing 1,500 gross tons or more. The program seeks to dispose of obsolete vessels in the most expedient, best value, and most environmentally safe manner. The program prioritizes the removal of the vessels that present the highest risk to the environment first. While MARAD is authorized to consider alternative ship disposal methods, such as, for example, artificial reefing, donation, and SINKEX (sink at-sea live-fire training exercise), MARAD focuses on vessel sales and ship dismantling options as those have been deemed the most expedient, cost-effective, and environmentally friendly methods available.



America’s Marine Highway Program: America’s Marine Highway Program¹⁹ is an initiative led by the Department of Transportation to expand the use of waterborne transportation by integrating it into the nation’s surface transportation system while relieving landside congestion and reducing air emissions. This collaborative effort among federal agencies, academia, industry, and public stakeholders supports important sustainability-related improvements, including reductions in petroleum reliance and greenhouse gas emissions, and encourages the use of alternative fuel technologies, such as liquefied natural gas, through the strategic and diversified use of waterborne shipping routes.²⁰ The program seeks to provide public benefits that relate to the overall transportation system in the US by, for example, reducing wear and tear on surface roads and bridges through the use of

waterborne transportation; using less energy to transport goods; reducing air emissions; and providing local public health benefits from the mandatory use of modern technology on designated projects.

Maritime Environmental and Technical Assistance (META) Program: The maritime industry has increasingly become the focus of new environmental regulations, and it must now comply with a broad array of requirements in the areas of air and water quality, hazardous waste disposal, and aquatic species protection. The Office of Environment (OE) addresses these environmental issues through the META Program. The program provides marine transportation stakeholder support and assistance, including research and development, related to emerging marine transportation environmental issues. MARAD collaborates with industry, academia, and other public stakeholders to address critical marine transportation issues including, but not limited to, ballast water treatment, port and vessel air emissions, and alternative fuel technologies to develop solutions to the most-pressing environmental problems associated with the design, construction, and operation of ships. MARAD also encourages cooperative research programs in regional and international bodies with similar foci. META seeks opportunities to partner on research projects to advance sustainable vessel operations.

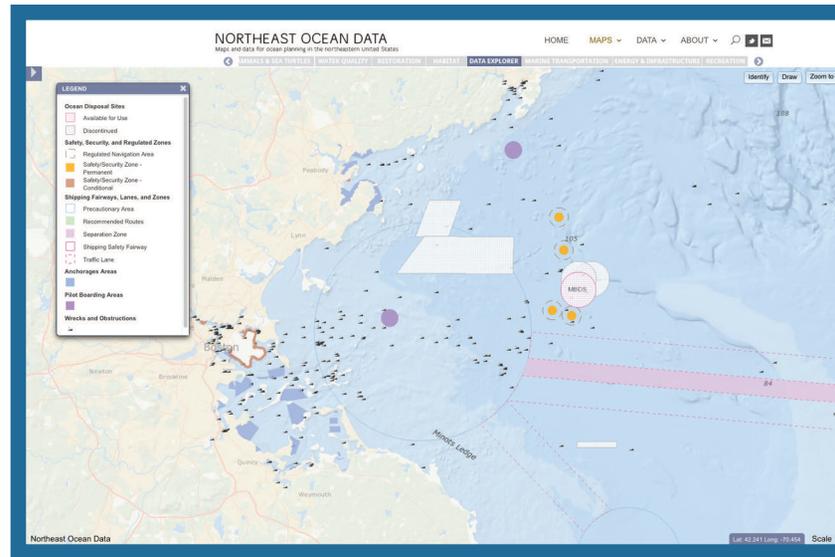


US Committee on the Marine Transportation System management responsibilities

The federal marine transportation agencies engage through the US Committee on the Marine Transportation System (CMTS). The CMTS was established by presidential directive in 2005 and authorized in statute in 2012 to regularly assess the state of marine transportation infrastructure; ensure that marine transportation is integrated into other modes of transportation; and to coordinate federal maritime policy. The CMTS interagency teams are developing enhanced marine safety information for the mariner; harmonizing among the navigation agencies the geospatial and referential information of navigable waterways; addressing marine transportation resilience risk factors; engaging academia to collaborate on research, development, and technology; enhancing interagency cooperation with vessel pollution treatment technologies; and investigating the use of public-private partnerships for infrastructure development. The CMTS is a one-stop-shop portal to engage the many federal marine transportation agencies in a holistic manner.

MAPS AND DATA

Agencies with authority over marine transportation rely on having access to relevant data to make decisions about day-to-day (even minute-by-minute) operational activities, and they also issue permits, a process that can last several years. Accurate maps and data are essential



This map displays the busy approach to Boston Harbor. Without any other ocean uses displayed, marine transportation in this area includes several navigational features: Regulated Navigation Area, Boston Traffic Separation Scheme (TSS) Precautionary Area, Ocean Disposal Site, a private aid to navigation at the Northeast Gateway Deepwater Port, and an inbound traffic lane for the Boston TSS, as well as numerous shipwrecks.

to moving people and goods in a safe, timely, and efficient manner. Having a central repository, such as the Portal, is a significant tool for implementing marine transportation authorities. The Marine Transportation theme on the Portal reflects two main categories: Navigation and Commercial Traffic.

Navigation

The Navigation map includes several features that are important to waterway users (e.g., pilots, mariners, fishermen, port authorities, industry representatives) and decision makers in order to maintain a safe and secure waterway. Features include Pilot Boarding and Anchorage Areas, Maintained Channels, Disposal Sites, Shipping Traffic Separation Schemes, Regulated

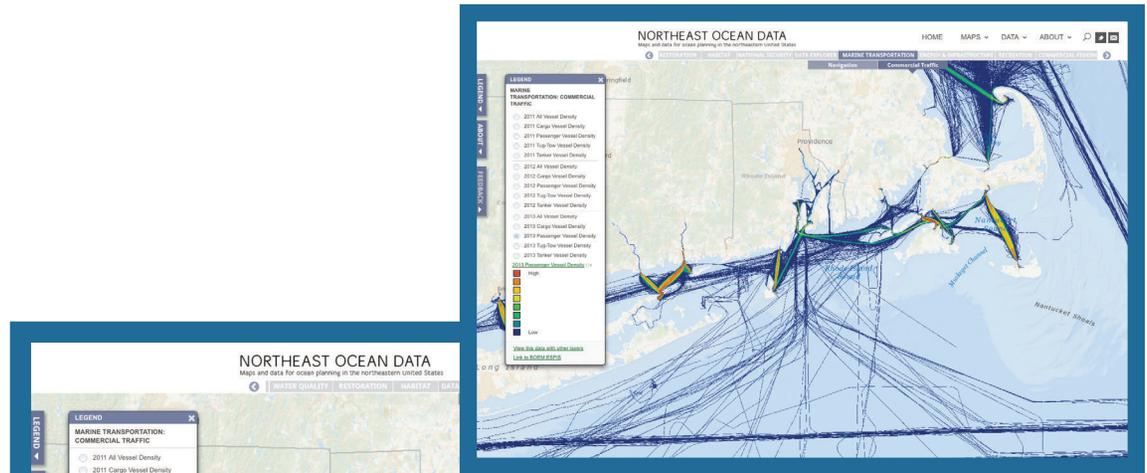
Navigation Areas, and Obstructions, as well as the Aids to Navigation System. These features were reviewed and finalized after much input from stakeholders.

Commercial traffic

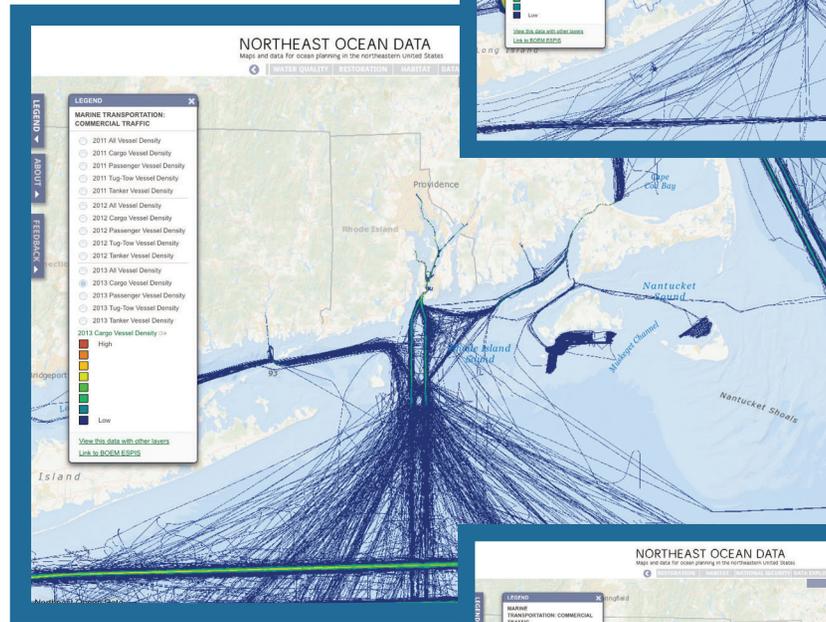
The Commercial Traffic map is composed of layers derived from the Automatic Identification System (AIS).²¹ It displays vessel traffic density, which can be parsed out by general vessel type (cargo, passenger, tug-tow, and tanker) for each year between 2011 and 2013. These maps do not directly show the number of transits, but rather the relative density of vessels in a particular block over the course of a calendar year.

These maps were reviewed and validated by the USCG and by vessel owners, pilots, and port authorities in the region who suggested the data be broken out by vessel type. This distinction is important because each vessel type may operate in a different manner, may employ different routes, may present different navigational risks, and may interact with other activities in unique ways.

After discussing these data with vessel operators, several operating patterns emerged. Cargo vessels will often wait in an anchorage for pier space to become available or for tide and current conditions to become favorable. Passenger vessels usually adhere to a rigid schedule, and security measures must be coordinated to avoid delays. Tankers generally employ tugs for docking assistance, and, if they are delivering LNG or propane, significant security measures are required by the USCG and local authorities. Tugs with barges towed astern are more restricted in their ability to maneuver than most other vessels, and they often transit routes closer to shore. Some vessels adhere to routes that have been chosen for a variety of reasons, including weather, fuel consumption, and safety concerns.

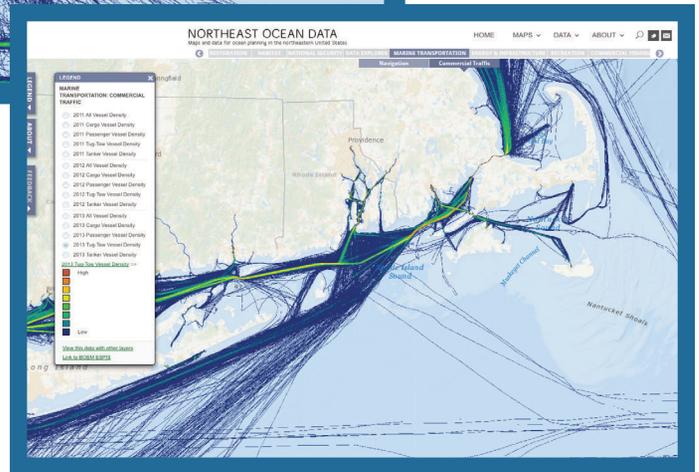


Passenger vessels



Cargo vessels

These maps show passenger, cargo, and tug-tow vessel activity in southern New England, where several offshore wind projects have been proposed. The maps demonstrate the unique patterns associated with different vessel types.



Tug-tow vessels



OVERVIEW ACTIONS

- MT 1 Maintain existing maps and data on the Portal
- MT-2 Provide additional data through new analyses
- MT 3 Use the Plan and the Portal to inform regular operations and management of marine transportation infrastructure
- MT-4 Use the Plan and the Portal to identify potential conflicts, impacts, and potentially affected maritime stakeholders during permitting and leasing for new proposed activities
- MT-5 Use the Plan to inform dredging and federal navigation projects
- MT-6 Continue outreach to maritime stakeholders to understand current trends and the potential effects of new activities on marine transportation



ACTIONS: MAINTAIN AND UPDATE DATA

MT-1. Maintain existing maps and data on the Portal:

Much of the marine transportation data on the Portal is provided by the Marine Cadastre including each of the datasets in the Navigation map except Pilot Boarding Areas and Safety and Security Zones. Those two datasets were developed by the Portal Working Group and reviewed by pilot associations and USCG staff in the region. At the time of the writing of this Plan, the Marine Cadastre began maintaining these two datasets as well. Therefore, the Navigation maps on the Portal will be maintained through updates provided by the Marine Cadastre, and regional USCG staff intend to ensure those maps are reviewed by marine transportation agencies and stakeholders.

The USCG is the original source for two vital datasets on the Portal: Aids to Navigation (ATON) and AIS vessel traffic. By law, the USCG has and will maintain the US Aids to Navigation System, which is reviewed and corrected on a regular basis by sector and district waterway managers and displayed on NOAA nautical charts.²² The USCG also developed and maintains the nationwide AIS.²³ The USCG Navigation Center (NAVCEN) gathers AIS data on a continual basis and provides real-time and historical annual data to government agencies, including ocean planning efforts such as this Plan. As of the publication of this Plan, USCG will provide annual AIS and ATON data to the

Marine Cadastre, which will provide it to the Portal Working Group for incorporation into the Portal.

MT-2. Provide additional data through new analyses:

While the Portal provides useful and accurate representations of vessel traffic, actual counts of unique vessel transits are a better measure for management purposes than the current maps of relative vessel density. In addition, USCG and representatives of the marine transportation sector recommended using AIS data to review monthly and seasonal traffic variability for different vessel types owing to economic and weather-related factors throughout the year. Regularly updated, detailed analyses of vessel traffic data over discrete time periods should demonstrate whether certain types of shipping are affected seasonally and/or on a long-term basis. This information will allow decision makers to better time planned restrictions on, or potential disruptions to, shipping lanes when coordinating competing ocean uses. As of the time of the publication of this Plan, the Portal Working Group is converting AIS data into maps displaying the number of unique transits occurring within a one kilometer block of ocean over a year. Preliminary maps of monthly vessel traffic have also been developed and are being reviewed through a time slider tool allowing the user to visualize monthly patterns. The Portal will be updated with these maps once the review process is complete.

ACTIONS: INFORM REGULATORY AND MANAGEMENT DECISIONS

MT-3. Use the Plan and the Portal to inform regular operations and management of marine transportation infrastructure:

On the operational side of the agency, the USCG needs access to data to inform decision-making and to focus further analysis. The Portal and this Plan are key to helping find solutions for the increasing conflicts on ocean use. On a regular basis, the USCG in the Northeast will consult the marine transportation data on the Portal to obtain an initial picture of particular attributes of a waterway and its use. The USCG First District Waterways Management Team communicated internally about the Plan and Portal frequently and extensively. Both at the First District and at Sectors within the Northeast region, Waterway Managers²⁴ and other decision makers will use the Plan to the extent practicable to understand the navigation risk profile of the relevant waterway, as well as to make decisions about how to use limited resources. The following are examples of potential uses of Plan data and information:

- Adding or removing federal or private ATON.
- Potentially adjusting existing fairways or traffic separation schemes, as identified in a Port Access Route Study (PARS).²⁵
- Conducting a Waterways Analysis and Management System (WAMS) study. The expansion of the Panama Canal and the



potential for increases in US petroleum production collectively have the potential to increase the number of vessels engaged in marine transportation, the size and capacity of these vessels, and the amount of commerce transiting US ports and waterways.

- Maintaining the Vessel Traffic Systems (VTS) and Vessel Movement Reporting Systems.
- Assisting decision makers in their response to marine event permit applications.²⁶
- Deciding where to deploy ice-breaking assets.
- Supporting cleanup actions in response to unlawful spills or discharge events.
- Providing a backdrop for USCG activities at Harbor Safety Committee²⁷ meetings with government and industry representatives.

Other USCG offices, such as the Bridge Administration Program²⁸ and the Marine Transportation System Recovery Units,²⁹ can review the Portal as they begin to work with agencies and stakeholders.

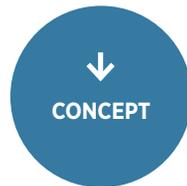
To the extent practicable, MARAD will use the Portal in monitoring changes in transportation routing, transportation trends, and activities in the region. MARAD also relies on a variety of public and purchased data sources to respond to its stakeholders. To ensure sound maritime policy, MARAD routinely compares data sources and analyzes variation. Identifying changing transportation patterns will assist MARAD and

the US Department of Transportation (DOT) in setting sound transportation policy and making wise investments in transportation infrastructure.

MT-4. Use the Plan and the Portal to identify potential conflicts, impacts, and potentially affected maritime stakeholders during permitting and leasing for new proposed activities:

For regulatory reviews of offshore projects, such as proposed Wind Energy Areas (WEA) in the Northeast, the USCG First District and Sector Waterways Management teams will use the Portal to the extent practicable to facilitate preapplication discussions with applicants,

affected stakeholders, and other government agencies. Additionally, the USCG plans on using internal policies and other maritime safety guidance to evaluate the risk of new activities on an existing waterway and users of that waterway. One example is the marine planning guidelines that came out of the Atlantic Coast Port Access Route Study (ACPARS; see <http://www.uscg.mil/lantarea/acpars/>). In the role of a cooperating agency for BOEM, MARAD, USACE, or other projects, the USCG will consider Plan data, to the extent practicable, in several ways during the three permitting phases of infrastructure projects.



Example use of the Portal

- Developer or lead permitting agency (LPA) utilizes source documents and ocean data portals to obtain a cursory understanding of potential conflicts with marine transportation and potential siting related to other uses.

- The USCG generally agrees with the data contained in the portals as a historical representation of ocean use.

- During unsolicited and solicited wind energy area identification phase, utilize historical AIS data layers, data portals, and port statistics to identify areas with low- to medium-impact to marine transportation.

- During this phase the USCG recommends that users consider the principles contained in the marine planning guidelines.

- Developers perform targeted analysis for turbine location based on the most recent AIS data and consultation with USCG, pilots, industry, recreational users, and other entities that factor in vessel handling characteristics, casualty data, and future trends.

- As a cooperating agency, the USCG will recommend to the LPA that the developer perform a navigational safety risk assessment (see Navigation and Vessel Inspection Circular for guidance).

The figure on the previous page provides an example of how the Portal, as marine planning guidance, can be used at various phases in the BOEM WEA permitting process. This usage includes an initial assessment of impacts or conflicts in a particular waterway. The Portal will help identify potentially affected marine transportation stakeholders and can be used to facilitate individual meetings or to convene stakeholders to understand potential impacts to the operation of marine transportation infrastructure. Such discussions often save time by identifying what is important to particular stakeholders, and they are helpful toward developing alternatives such as rerouting. As a project moves forward into the planning and development stages, navigation risk-mitigation strategies can be developed after reviewing AIS and engaging with vessel operators and owners.

MT-5. Use the Plan to inform dredging and federal navigation projects: The USACE prepares feasibility studies, dredged material management plans, and other decision documents covering its improvement and operations and maintenance (O&M) activities. Environmental assessments and environmental impact statements are also prepared to accompany these decision documents. Due diligence requires that all pertinent sources of information be investigated and considered in making decisions on project benefits and impacts. Federal laws,

regulations, policies, and executive orders concerning civil works activities must be considered and their compliance documented. To the extent practicable, the USACE will consult this Plan and the Portal in the preparation of its scopes of study for new projects and its dredged material management plans. For example, Portal data will assist in documenting marine traffic levels, patterns, and concerns as they pertain to the shipping upon which USACE new project recommendation decisions are made. Siting and management of open water dredged material placement areas will also benefit from the marine transportation data available through the Portal.

MT-6. Continue outreach to maritime stakeholders to understand current trends and the potential effects of new activities on marine transportation: The USCG has several communication tools for updating maritime stakeholders on a broad spectrum of information with varying degrees of timeliness. The most immediate communication is the Local Broadcast Notice to Mariners,³⁰ used to inform mariners over VHF radio of hazards, unusual operations (such as dredging of channels), or unusual conditions. The Homeport³¹ website publishes news, alerts, and notices of a less immediate nature, and Marine Safety Information Bulletins³² provide more-detailed long-range information at the national level and more-urgent

safety information at the local level. The USCG also intermittently carries out projects to improve marine transportation and associated infrastructure based on stakeholder feedback. Recently, the USCG partnered with USACE and NOAA to consider the future of navigation.³³

As cited earlier, the USCG encourages the formation of harbor safety committees (HSCs) and supports their activities through active participation in order to improve local coordination and identify potential marine transportation issues.³⁴ HSCs provide opportunities to communicate with many stakeholders within the port and can be used to recommend actions to improve the safety and efficiency of a port or waterway. Each HSC is composed of representatives of government agencies, maritime labor, industry organizations, environmental groups, and other public interest groups. The USCG plans to continue to participate in HSCs to review marine transportation data, learn about future trends, and discuss with stakeholders any projects or activities that may affect waterways.



NATIONAL SECURITY



Major conflicts, terrorism, lawlessness, and natural disasters all have the potential to threaten the national security of the United States. Multiple branches of the US Department of Defense (DOD) (i.e., US Navy, Army, Marine Corps, and Air Force) and the Department of Homeland Security (DHS) are responsible for our nation's security. In terms of national security at sea, the US Department of the Navy (Navy) and the US Coast Guard (USCG) are the primary branches that carry out training and testing activities at sea to be able to protect the United States against its enemies, to protect and defend the rights of the United States and its allies to move freely on the oceans, and to provide humanitarian assistance when needed.

While the US Navy is the primary focus for military activities related to ocean and coastal planning programs, the USCG also operates in the ocean, coastal waters, and harbors.

The USCG is tasked with law enforcement, border control, and ensuring the safety of our domestic waterways and their users. These responsibilities are executed through the region's several command centers. A command center facilitates the execution of all the USCG missions and provides valuable information and coordination capability to other government agencies and port partners. The USCG, through the Captains of the Port, is also the lead agency for coordinating all maritime security planning and operations in US ports and waterways in its designation as federal maritime security coordinator. Additionally, the USCG conducts training exercises in coastal waters to remain ready to execute its many and varied security missions.

The Navy operates on the world's oceans, seas, and coastal areas—the international maritime domain—on which 90 percent of the world's trade and two-thirds of its oil are transported. Naval forces must be ready for a variety of military operations—from large-scale conflict to maritime security and humanitarian assistance/disaster relief—to deal with the dynamic, social, political, economic, and environmental issues that occur in today's world. The Navy supports these military operations through its continuous presence on the world's oceans, and it can respond to a wide range of issues because, on any given day, over one-third of its ships, submarines, and aircraft are deployed overseas. To learn these capabilities, personnel must train with the equipment and systems that will achieve military objectives. The training process provides personnel with an in-depth understanding of their individual limits and capabilities, and helps the testing community

improve new weapon systems. The Navy's research and acquisition community engages in a broad spectrum of testing activities in support of the fleet. These activities include, but are not limited to, basic and applied scientific research and technology development; testing, evaluation, and maintenance of systems (missiles, radar, and sonar) and platforms (surface ships, submarines, and aircraft); and acquisition of systems and platforms to support Navy missions and give the Navy a technological edge over adversaries.

Operational requirements for deployment of US military forces worldwide drive and shape training doctrine and procedures. The nature of modern warfare and security operations has become increasingly complex. Naval forces carry out operations on and below the ocean surface, on land, and in the air simultaneously. To stay prepared to effectively counter the array of threats, naval forces bring together thousands of sailors and marines, their equipment, vehicles, ships, and aircraft. Military forces must operate in an environment of continuous readiness and training certification. Therefore, military readiness training must be as realistic as possible to provide the experiences that are vital to success and survival. While simulators



and synthetic training are critical elements of training—to provide early skill repetition and enhance teamwork—there is no substitute for live training with real equipment in a realistic environment.

The Department of Defense has historically used areas along the eastern coast of the United States and in the Gulf of Mexico for training and testing. These areas were established as geographic regions and named “range complexes.” A range complex is a set of adjacent areas of sea space, undersea space, land ranges, and overlying airspace delineated for military training and testing activities. Range complexes provide controlled and safe environments where military ship, submarine, and aircraft crews can train in realistic conditions.

The combination of undersea ranges and operating areas (OPAREAs) with land training ranges, safety landing fields, and nearshore amphibious landing sites is critical to realistic training, which allows electronics on the range to capture data on the effectiveness of tactics and equipment—data that provide a feedback mechanism for training evaluation. The range complexes, test ranges, and OPAREAs provide realistic environments with sufficient sea and airspace vital for safety, training complexity, and mission success. Range complexes must provide flexibility to meet these diverse training and testing requirements given the wide range of warfare specialties and array of skills and proficiencies the fleets must demonstrate before certification for deployment.

DEPARTMENT OF DEFENSE PRESENCE AND REGIONAL CONCERNS

The Boston, Narragansett, Atlantic City, and Virginia Capes (VACAPES) range complexes are located along the Mid-Atlantic and Northeastern Seaboard of the United States. Combined, these areas are the principal locations for portions of the DOD's major training and testing events and infrastructure, including activities originating out of nearby Navy and Air Force installations. Three separate range complexes



(the Boston Range Complex, the Narragansett Bay Range Complex, and the Atlantic City Range Complex) are collectively referred to as the Northeast Range Complex. The Northeast Range Complex spans 761 miles along the coast of Maine, New Hampshire, Massachusetts, Rhode Island, Connecticut, New York, and New Jersey. The Northeast Range Complex also includes OPAREAs and associated special-use airspace for Navy and Air Force training and testing activities. The Naval Undersea Warfare Center Division Newport (NUWC DIVNPT) Testing Range consists of waters within Narragansett Bay; nearshore waters of Rhode Island Sound; Block Island Sound; and coastal waters of New York, Connecticut, and Massachusetts.

Proximity of the range complexes to naval homeports is strategically important to the Navy because close access allows for efficient execution of training activities and nontraining maintenance functions, and access to alternate airfields when necessary. The proximity of training to homeports also ensures that sailors and marines do not have to routinely travel far from their families. Less time away from home is an important factor in military readiness, morale, and retention. The proximate availability of the range complexes is critical to Navy efforts in these areas. Several military installations, including the Portsmouth Naval Shipyard

(PNSY), Naval Station (NS) Newport, Naval Submarine Base (NSB) New London, Naval Weapons Station Earl, and Joint Base McGuire-Dix-Lakehurst (JB MDL), are located on land adjacent to the offshore Northeast Range Complexes. These installations use the waters and airspace of the range complexes for training or testing activities (as well as other nearby range complexes such as VACAPES).

The Northeast Range Complexes also supports training and testing by other branches of the military, primarily the USCG and the US Air Force (USAF) from nearby bases, as well as visiting operators with home bases located farther away. Overall, minimal surface training occurs within the Northeast OPAREAs due to the time and distance from the operators' homeports and home bases. The primary activities in the Northeast OPAREAs consist of submarine and submersible training and testing. Submarine and submersible testing and training is conducted out of NSB New London, Portsmouth Naval Shipyard, and the Naval Undersea Warfare Center Division Newport, while Bath Iron Works builds and tests surface ships in the area. In addition to these users, non-DOD users are likely to use the offshore range complexes for research, including assorted government agencies such as various branches of the NOAA, research institutions such as Woods

Hole Oceanographic Institution, universities such as the University of Rhode Island, the University of Connecticut, and Rutgers University (among others), and various state agencies. The USCG also conducts weapons training in areas beyond three nautical miles from shore for small boats and in areas beyond 12 nautical miles (typically in Navy-designated ranges) for larger vessels such as the national security cutters.

The series of range complexes along the East Coast provides a critical controlled environment for all military branches that accommodate training and testing operations in realistic combat conditions. Most of the operating, warning, and restricted areas were initially established before or during World War II and have been in use for decades. Maintaining access to, and usage of, offshore training areas is of the utmost importance. Through a variety of internal and public documents, the DOD attempts to quantify potential impacts to offshore ranges in order to minimize incompatibilities and maximize range sustainment. Some concerns are summarized in the following pages.



Airborne noise

The central issue of airborne noise is the perceived impact of this noise on people, animals, structures, and land use. The magnitude of noise and resulting complaints, pressure to modify or suspend operations, and threats of litigation are directly related to the degree to which there are people, wildlife, and other noise-sensitive land uses in the vicinity of training space.

Competition for airspace and sea space

The DOD and DHS use shared resources that need to be available for testing, training, and operational missions. These resources must be of sufficient size and quality to provide effective training and testing. Public pressure to share or relinquish air or water resources may inhibit the military from accomplishing its training and test objectives.

Competition for scarce resources

Community pressure to gain access to valuable resources located in littoral areas or seas that the DOD and DHS use may affect the ability to use these waters for operational training or test objectives. Access may include processing and transporting materials. There is also pressure to limit the DOD and DHS's access to the public's resources, as well as pressure on the DOD to develop renewable resources.

Threatened and endangered species

Restrictions for the purpose of protecting threatened or endangered species or their critical habitat can reduce the value of training space for testing and training by limiting the types of permissible activities in terms of composition, magnitude, or timing.

Maritime issues

Regulatory or permit requirements protecting ocean resources cumulatively affect the DOD and DHS's ability to conduct operations, training exercises, or testing in the marine environment.

Safety arcs and footprints

Land or water adjacent to range safety zones may not be suitable for certain types of use or economic development.

Electromagnetic spectrum

The competition for available frequency spectrum may lead to a reduction in available spectrum for training and testing activities. The lack of spectrum may decrease the

effectiveness of exercises by restricting the number of war-fighting systems that can participate. As the potential for residential and commercial encroachment increases, so does the risk of increased radio frequency emitters and receivers, which could result in interference with DOD and DHS electromagnetic systems from public or commercial systems.

Habitat

Prohibited or restricted access to sensitive littoral zones such as tidal wetland areas and buffer zones, essential fish habitat, and critical habitat can restrict existing training, preclude or restrict integration of new technology/weapons systems, or preclude future execution of new missions in amphibious, riverine, or estuarine operations.

Interpretation of environmental regulations

Regulatory or permit requirements may affect training and testing operations. Other nonmilitary actions may affect the current regulatory or permit requirements for DOD and DHS.

Interagency coordination

Use of land or sea space controlled by another federal or state agency can limit allowable uses and restrictions. Such allowable uses or restrictions are often the result of negotiations between the parties or are subject to the other federal agency's policies and regulations. Restrictive uses can limit training and operations.



Legislative initiatives that restrict operations

Congress may enact legislation that directly or indirectly limits the DOD and DHS's flexibility in conducting planned operations, training, or testing. Additionally, local ordinances and/or state legislation may limit military operations, training, or testing.

Potential training and testing impacts may occur due to the concerns listed in this section, which can severely affect the overall readiness of the military. For example, when range access is reduced, the limitations imposed on DOD and DHS units may degrade the realism and value of the training. If areas within training or testing space are permanently or temporarily unavailable for operations, avoidance areas may inadvertently be created. If the number of training days are reduced or if certain types of operations, training, and testing are prohibited or if operations are restricted for a period of time and/or in certain geographic areas, the DOD will be impaired in fulfilling its Title 10 requirements. In these cases, the testing or training must be conducted at other locations or a workaround must be developed, which can reduce realism and the value of the testing or

training experiences. Civilian and commercial use of airspace or development on the ground may prevent DOD forces from taking full advantage of training space. During testing or training, aircraft may be forced to fly at artificially low or high altitudes or artificially low airspeeds, which reduces realism. Night-time operations and training are essential to force readiness. However, while voluntary restrictions on military training at night may foster better community relations, such restrictions pose especially critical limits on militarily essential testing and training. Restrictions can also reduce opportunities for the use of live-fire ordnance, thereby reducing proficiency. While the use of simulation and inert ordnance can replace some live-fire training, testing or training with live ordnance remains essential for adequately preparing DOD forces for combat.

DOD MANAGEMENT PROGRAMS AND REGULATORY COORDINATION

The DOD has policies and processes that currently exist to manage military training and testing space, identify potential impacts to training, and integrate the DOD within other federal and state agency directives and programs. DOD offshore operations are subject to regulatory compliance and management measures that can be time-consuming and costly. Establishing (and maintaining) programs that build alliances between DOD, other federal

agencies, state regulators, and tribes is essential for sustaining a proactive approach to meeting requirements for compliance. Routine coordination and consultation with other agencies provide information regarding future agency actions and allow the DOD opportunity to advocate for the importance of training activities to sustain its mission. As future at-sea testing and training activities and required compliance efforts continue and expand, these relationships will prove invaluable. The following examples of existing regulatory, management, and coordination activities are most relevant to the Plan:

- The DOD coordinates with Federal Aviation Administration (FAA) representatives to foster better communication. A military liaison to the FAA is currently based at the FAA regional headquarters in Burlington, Massachusetts, and/or Jamaica, New York.
- The DOD coordinates with the appropriate frequency allocation and oversight agencies to identify frequency spectrum impacts on military operations and to develop strategies that will reduce encroachment while ensuring pending use of emerging spectrum technologies.
- The DOD participates in all of BOEM's inter-governmental renewable energy task forces, which include federal agencies as well as state, tribal, and local governments.



- The Navy has developed a working group, the Ocean Observing System Security Group (OOSSG), for tracking and addressing potential issues with ocean observing systems (OOS). Additionally, the Situational Awareness Office is developing a program to be used as a tool to help the Navy identify the locations and types of OOS worldwide. The program will tell the Navy where each OOS is, what type of data it collects, and how to avoid it (i.e., avoidance distances).
- To respond to and execute range sustainment and compatibility requirements, the Navy established a monitoring and coordination process based on networked regional coordination teams (RCTs). RCTs are composed of knowledgeable representatives from the fleets, system commands, and installation headquarters. RCTs are equipped to review and analyze potential encroachment problems, determine impacts on DOD operations,

and provide alternatives and mitigation requirements. Once an encroachment threat or issue is identified, either at the Navy HQ level or by a subordinate command or unit, the issue is forwarded to the appropriate RCT for initial analysis. The RCT then distributes the encroachment information to all relevant stakeholders.

- Under the Navy At-Sea Environmental Compliance Program, a number of environmental documents have analyzed Navy training and testing in nearshore and open-ocean areas. In conjunction with release of the Navy's Final Environmental Impact Statements/Overseas Environmental Impact Statements and the associated Records of Decision (RODs), NMFS and USFWS issue final rules and letters of authorization (LOAs) under MMPA, and biological opinions (BOs) or letters of concurrence under ESA. The Navy's RODs, final rules, LOAs, BOs, and concurrence letters outline requirements that the Navy must satisfy in order to remain in compliance with environmental laws and regulations.
- Under the Navy At-Sea Environmental Compliance Program, the Atlantic Fleet Training and Testing (AFTT) Environmental Impact Statement/Overseas Environmental Impact Statement was prepared to comply with NEPA, Executive Order 12114, CZMA, MMPA, and ESA requirements, and to assess the potential

environmental effects associated with military activities. The study area included the western North Atlantic Ocean along the East Coast of North America, the lower Chesapeake Bay, and the Gulf of Mexico. The study area also included several Navy testing ranges and range complexes including the Boston, Narragansett, and Atlantic City OPAREAs (more information can be found at <http://aftteis.com>).

MAPS AND DATA

The National Security theme on the Portal was developed and reviewed by DOD. It includes the following map layers showing DOD presence in the region, as previously described. Complete descriptions and appropriate DOD points of contact for each layer can be found on the Portal.

- Military installations
- Military range complexes
- NUWCDIVNPT testing range
- OPAREA boundaries
- Submarine transit lanes
- Warning areas
- Cape Cod TORPEX boxes
- Danger zones and restricted areas



OVERVIEW

ACTIONS

- NS-1 Maintain and update National Security maps and data on the Portal
- NS-2 Inform management and regulation of military activities



ACTIONS: MAINTAIN AND UPDATE DATA

NS-1. Maintain and update National Security maps and data on the Portal:

The DOD will update the national security data on the Portal periodically as needed, such as when applicable permits are renewed or when operations significantly change. All layers were provided by DOD with the exception of danger zones and restricted areas, which were provided by the Marine Cadastre and will be maintained through subsequent updates provided by the Marine Cadastre. In addition, DOD will update appropriate points of contact for the national security data layers, as necessary. Ensuring that agencies have appropriate points of contact improves interagency coordination and will enable decision makers to understand the implications of proposed regulations and development plans on DOD security, training, and testing, and on a variety of other mission-specific needs.

ACTIONS: INFORM REGULATORY AND MANAGEMENT DECISIONS

NS-2. Inform management and regulation of military activities:

The DOD intends to use the Plan and the Portal as one mechanism to guide and inform DOD programs, initiatives, and planning documents when involved in the multiple coordination task forces and other planning groups in which the DOD currently participates, including those listed in this Plan.

- DOD will to the extent practicable use the Plan and the Portal as one source of information to identify potential impacts on and encroachments to DOD operations resulting from existing or newly proposed activities, such as energy installations, aquaculture, and new navigational measures. The DOD regularly participates in a wide variety of existing local, state, and federal agency coordination groups, forums, and advisory panels across the nation, and will work to identify any additional outlets that it would be beneficial to participate in.
- DOD and DHS will to the extent practicable also use the Plan and the Portal as a research tool to obtain supplemental regional stakeholder and natural resource information related to proposed DOD and DHS actions and activities.

- DOD and DHS will to the extent practicable consult the Plan and the Portal in the preparation of internal agency guidance, existing procedures, and environmental planning. DOD and DHS will also, if practical, identify the Plan and the Portal as important sources of information in decision-making. DOD participation in future RPB efforts will be as directed by the DOD National Ocean Council Executive Steering Group (NOC ESG). Designated DOD and Joint Chiefs of Staff RPB representatives will coordinate Plan implementation actions between the RPB, DOD, and Joint Chiefs of Staff.



COMMERCIAL & RECREATIONAL FISHING



Commercial fishing in New England has a long and storied history. Its importance culturally and economically has lasted hundreds of years, becoming a part of many tales of the New England coast. Its economic importance is similarly well documented. In a single year (2012), the landings revenue by all species in New England was over a billion dollars;¹ once revenue generated by other related industries (processing, dealers, wholesalers, distributors, importers, and retailers) is included, total sales impact is estimated to be nearly \$13 billion in 2012.²

There is no single “commercial fishery” in New England. Fishing operations are different from harbor to harbor depending on a myriad of factors, which vary throughout the region and over time: targeted species, vessel sizes, proximity to fishing grounds (current and historic), changes in environmental conditions, economic and market-driven forces, shoreside supporting infrastructure, and many more. Commercial fishing in Maine currently looks quite different from that of southern New England. Ports such as New Bedford and Gloucester, Massachusetts (scallops and groundfish), and Stonington, Maine (lobster), have consistently ranked among the top US ports in terms of landings value in recent years.³ Assessing temporal trends needs to be fishery-specific: for example, the number of commercial ground fishing vessels has declined in recent years. Many coastal communities in the region remain closely connected to fisheries and thus are directly affected by trends in commercial fishing.

Similar to the case with commercial fishing, angling for recreational purposes is widespread and targets many different species. Striped bass, summer flounder, groundfish, and countless other species are targeted by shoreside anglers, surf casters, boaters, charter and party boats, and fishing tournaments throughout New England all summer long, drawing residents and visitors by the hundreds of thousands. In 2013, an estimated 5 million recreational fishing trips were taken in New England marine waters.⁴

Fisheries are an important issue for many coastal tribes, and they are embedded in tribal culture and history—from a commercial standpoint as well as for basic sustenance. Tribes are concerned about the restoration of diadromous fish populations and prioritize the restoration of water quality and fish habitat for Atlantic salmon and other species including American shad, river herring, and American eel. Currently, commercial fishing is an important source of income for certain coastal tribes.





REGULATION AND MANAGEMENT

The Magnuson-Stevens Fishery Conservation and Management Act (MSA) is the primary law governing fisheries management, including aquaculture for managed species, in federal waters. The MSA establishes eight regional fishery management councils, including the New England Fishery Management Council (NEFMC), whose primary responsibility is the development of fishery management plans (FMPs) pursuant to 10 national standards, or conservation and management requirements. Once a council develops an FMP (or any amendments to an existing FMP) and its management measures, NMFS reviews the council's recommendations and approves and adopts the recommendations into federal regulations, provided they are consistent with other federal laws such as NEPA, MMPA, MBTA, ESA, Administrative Procedures Act, Paperwork Reduction Act, CZMA, Data Quality Act, and Regulatory Flexibility Act. The Atlantic States Marine Fisheries Commission (ASMFC) is also an important fisheries management entity in New England; it has management responsibility for 25 nearshore species and may request that NMFS issue complementary regulations in federal waters. Other agencies become involved in issues related to fisheries management pursuant to existing authorities. For example, to

address potential impacts to birds, sea turtles, and marine mammals, USFWS and NMFS work with partners to study measures that could be effective at reducing impacts to species that are protected under applicable federal law such as the ESA. Additionally, under MSA the US Coast Guard has responsibilities related to commercial fishing vessel safety and to supporting a sustainable fishery by ensuring compliance with the MSA.

Federal agencies are required by existing law (such as NEPA and RHA) to assess potential impacts of federal actions, such as the potential issuance of permits and leases for proposed development activities on commercial and recreational fisheries, and, depending on the results of the assessment, to consider impact avoidance or mitigation measures. Such assessments occur during the NEPA process associated with these federal actions or, in addition to NEPA, through the individual review processes associated with each applicable federal law. Some examples include the RHA public interest review (conducted by USACE), the DWPA licensing process (MARAD and USCG), and OCSLA leasing (BOEM). Additionally, through the PWSA, the US Coast Guard has responsibilities that include assessing potential navigational risks associated with offshore activities (see the Marine Transportation section for more information).



States are also typically involved in review of the potential impacts of proposed activities on fisheries. State regulatory programs also may require assessment of fisheries impacts as part of the review of proposed activities. For projects that may impact the waters of multiple states or fishery resources managed regionally or coastwide under an FMP, states may coordinate their review through their representation on the NEFMC (and coordination with the Mid-Atlantic Fishery Management Council) and the ASMFC.

Assessing the impacts of proposed new activities on commercial and recreational fisheries, both quantitatively and qualitatively, has typically proved to be a difficult exercise in New England. This difficulty reflects the dynamic nature of fisheries, the unique characteristics of each fishery, and a basic lack of knowledge

about the interactions between various fishing gear and newly proposed activities. Even prior to an impact analysis, however, is the initial step of identifying specific members of the fishing industry to engage in a discussion of a particular project, which has also been difficult at times. Additionally, proposed developments may include a range of activities with different types of conflicts with fishing. For example, site assessment and survey-based activities occurring before construction of offshore infrastructure have different spatial and temporal characteristics and impacts from actual construction and installation, which are also different from the long-term operation and support of a facility. Discussions related to newly proposed offshore activities will often become quite detailed to account for all the potential interactions, including understanding fishing activities in a particular location (different gear types, fishing- or transit-related activities, time of year) and the results of displacement or interruption of such activities. Conflicts may also arise between commercial or recreational fishing and activities such as scientific studies, ship-based seafloor mapping projects, and dredging of port channels. These conflicts can emerge from various issues, but common root causes include communication difficulties and a general lack of

readily available information to assess potential impacts, and the consequent challenges in engaging fishing industry representatives. In New England, the extent of these issues is often magnified by the number of fisheries that operate in a particular area over the course of the year and by the dynamic nature of these fisheries. For recreational fishing, this issue may be even more complex, given the many private anglers who may fish in a particular area. Changes in environmental conditions, market trends, and other economic factors such as the costs of fuel and gear, advances in scientific understanding of the ocean environment, and fisheries management cause uncertainty when attempting to predict future conditions. For example, warmer water temperature in the Gulf of Maine is likely to contribute to changes in fish stocks, but the resulting future impacts on fishing and, subsequently, fishing communities are unknown. The manner in which commercial and recreational fisheries operate currently or in the past provides important insight, but is not necessarily a predictor of the future.

5M

Number of all types of recreational fishing trips in New England, 2013

\$13B

Total sales impact of fishing in New England, 2012



MAPS AND DATA

The Portal includes the following map products characterizing commercial fishing activity from a regional perspective.

Vessel activity

The Vessel Activity theme contains a series of maps depicting the spatial footprint of vessels operating in certain federally managed fisheries.⁵ These maps are derived from Vessel Monitoring System (VMS) data maintained by NMFS and are the result of extensive engagement with the commercial fishing sector, fishery managers, and scientists in the region. This theme includes layers depicting the relative density of vessels operating in each fishery over a defined period of time. For each fishery, there are also maps that use speed thresholds to differentiate fishing activity from vessel transit. Specifically, the vessel activity theme includes the following maps:

- Vessels reporting in the Northeast multispecies fishery
 - > 2006–2010: All vessel activity
 - > 2011–2014: All vessel activity
 - > 2011–2014: Vessels traveling at less than four knots⁶
- Vessels reporting in the monkfish fishery
 - > 2006–2010: All vessel activity
 - > 2011–2014: All vessel activity
 - > 2011–2014: Vessels traveling at less than four knots⁷
- Vessels reporting in the herring fishery
 - > 2006–2010: All vessel activity
 - > 2011–2014: All vessel activity
 - > 2011–2014: Vessels traveling at less than four knots⁸
- Vessels reporting in the scallop fishery
 - > 2006–2010: All vessel activity
 - > 2011–2014: All vessel activity
 - > 2011–2014: Vessels traveling at less than five knots⁹
- Vessels reporting in the surf clam/ocean quahog fishery
 - > 2007–2010: All vessel activity
 - > 2012–2014: All vessel activity
 - > 2012–2014: Vessels traveling at less than four knots¹⁰
- Vessels reporting in the squid fishery
 - > 2014: All vessel activity
 - > 2014: Vessels traveling at less than four knots¹¹
- Vessels reporting in the mackerel fishery
 - > 2014: All vessel activity
 - > 2014: Vessels traveling at less than four knots¹²

It is important to note that these map products are limited to those fisheries for which there are VMS data and that there are some vessels in the fisheries listed above that do not have VMS reporting requirements, such as some permit categories in the monkfish fishery. A lack of



VMS data in a given location does not mean no fishing is occurring. Fisheries not represented by VMS data include bluefin tuna, bluefish, black sea bass, dogfish, fluke, lobster, red crab, scup, skate, and tilefish. The recreational fishery is also not represented.

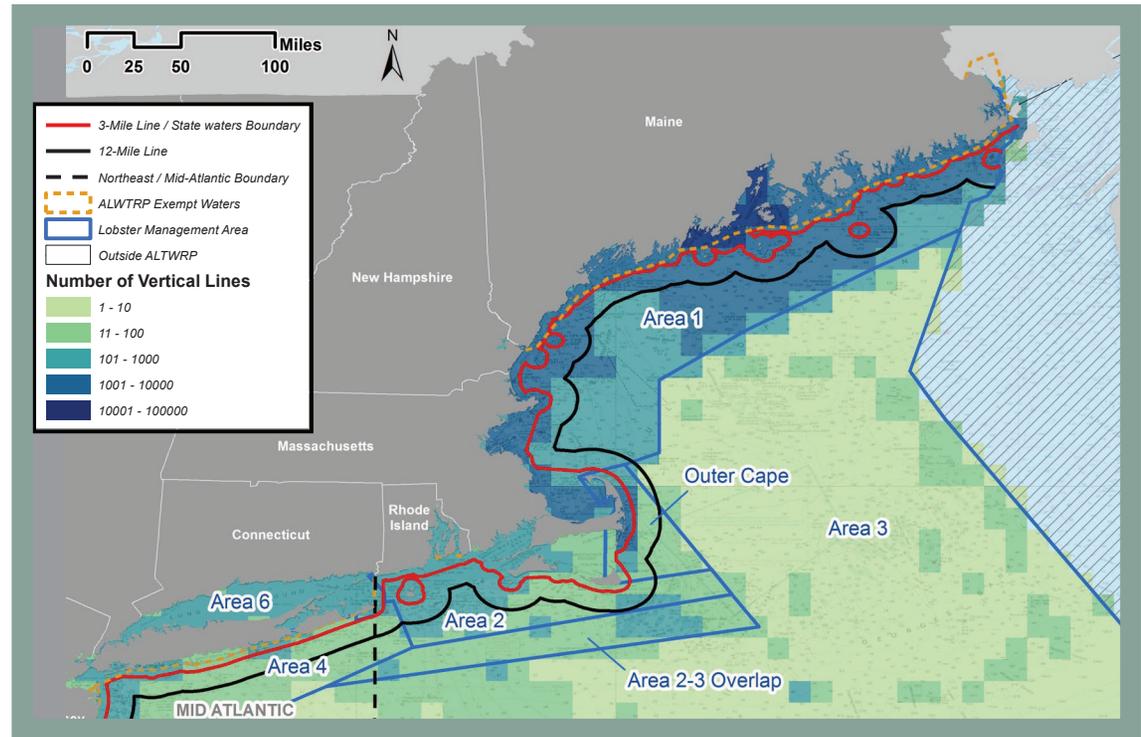
In addition, there are fisheries that are important locally that may not be represented by VMS data or may have their local footprint masked by a regional view (i.e., a regional view of a fishery may lose important local detail). Contact with the NEFMC and state fishery management agencies, and engaging the fishing industry to understand such issues are paramount.

Management areas

The Management Areas theme includes a series of maps showing the geographic extent of certain federal fishery management areas, as published by NMFS. These management areas were specifically selected because they are related to fisheries represented in the VMS-derived map products. They are an important supplement to the VMS maps: they inform the interpretation of fishing vessel activity patterns, because patterns in fishing activity are partly dictated by fisheries management.

Lobster fishery

In addition to the VMS-derived products and related fishery management areas on the Portal, the RPB considered developing maps and information on the lobster fishery. Spatial data related to the lobster fishery across the region is relatively limited and generally available only at a coarse scale. In discussions with fishery managers, fishermen, and scientists, the best available regionwide spatial depiction of the lobster fishery is a map of lobster trap end-line density.¹³ Higher-resolution portrayals of the lobster fishery exist for select smaller geographic areas (i.e., at the state level, particularly in Rhode Island, Massachusetts, and some parts of Maine). The RPB recognizes the need to develop additional information characterizing the spatial extent of the lobster fishery across the region.



Lobster trap end-line density

In this map, darker blues represent relatively higher density of end lines; lighter greens represent relatively lower density. This work was performed as part of the analysis associated with the North Atlantic Large Whale Take Reduction Plan to look at the density of vertical lines in the water column.

Party/charter fleet

Similar to the lobster fishery, information on the spatial extent of recreational fishing activity, including activity through for-hire party and charter boats, is limited. In partnership with several vessel captains, the ASMFC, the Atlantic Coastal Cooperative Statistics Program, and several states, the RPB has been conducting a pilot project to determine the potential for tablet-based technology to provide spatial data on party/charter fishing and transit patterns. The results of this pilot project are promising for improving spatial data on the party/charter fleet.¹⁴



OVERVIEW

ACTIONS

- CF-1 Maintain existing maps and data on the Portal
- CF-2 Develop additional regional maps and data of commercial and recreational fisheries
- CF-3 Inform regulatory and environmental reviews of agency actions for their potential impacts to commercial and recreational fisheries
- CF-4 Identify potentially affected commercial and recreational fishing stakeholders



ACTIONS: MAINTAIN AND UPDATE DATA

CF-1. Maintain existing maps and data on the Portal:

NMFS will maintain the commercial fishing maps and data that are currently on the Portal. NMFS Office of Law Enforcement (OLE) will provide annual updates of VMS-derived map products, using the processing and analysis methods developed for the existing maps. NMFS Greater Atlantic Regional Fisheries Office (GARFO) will ensure the map of fishery management areas related to VMS fisheries is reviewed and updated, if necessary, when VMS products are updated.

CF-2. Develop additional regional maps and data of commercial and recreational fisheries:

The RPB will develop and incorporate additional data characterizing commercial and recreational fisheries, including the following:

- NMFS GARFO will develop and make available maps and other data products using Vessel Trip Report information. This activity will initially focus on those federally permitted fisheries that are not currently included in the VMS maps.
- The RPB will work with regional partners to explore opportunities to develop regionally consistent spatial characterizations of the lobster and Jonah crab fisheries. See Chapter 5, Science and Research Priorities, for more information.

- The RPB will continue to work with regional partners to advance the party/charter fleet pilot project and/or other means of characterizing the recreational fishing industry. Additionally, spatial data are needed to depict private boat and shore-based fishing effort. See Chapter 5, Science and Research Priorities, or more information.
- The RPB will continue to seek additional ways to fill information gaps and address information needs by leveraging other projects. For example, in the Mid-Atlantic regional ocean planning effort, work has been done with Vessel Trip Report information to provide depictions of fishing activity according to gear type. The RPB will review these efforts to determine their potential utility. Additionally, the RPB will review the ability of AIS data (which, beginning March 1, 2016, is collected for fishing vessels over 65 feet in length) to fill information gaps. Finally, efforts such as the recently released *Lobster and Ocean Planning* report from the Island Institute provide useful information about the lobster industry in Maine and may be a model for other fisheries that currently lack spatial data as well.

ACTIONS: INFORM REGULATORY AND MANAGEMENT DECISIONS

CF-3. Inform regulatory and environmental reviews of agency actions for their potential impacts to commercial and recreational fisheries:

RPB agencies will, to the extent practicable, use the Portal when reviewing actions that may affect fisheries, including, but not limited to, proposals for new offshore development projects, scientific surveys involving research vessel activity or other actions with potential effects on commercial and recreational fishing, and conservation and restoration activities. While the RPB recognizes the limitations of available information, the consistent regional characterizations of certain fisheries can assist with the preliminary identification of potential conflicts by helping to identify fisheries using a particular area and the nature of that use (e.g., in transit or engaged in fishing). To the extent practicable, RPB agencies will also consider regional marine life and habitat data presented in the Portal when assessing conflicts or impacts with commercial and recreational fisheries, recognizing the connection between fishing activity and habitat. Specifically:

- USACE and BOEM through their permitting and leasing responsibilities are obligated to consider existing ocean uses, including fisheries, in leasing and permitting programs for



offshore energy and the use of offshore sand resources. The information in the Plan and the Portal will provide an important beginning step in identifying fisheries and fishing activity that may be affected by these activities. Furthermore, BOEM will amend guidance documents, such as the *Guidelines for Providing Information on Fisheries for Renewable Energy Development on the Atlantic Outer Continental Shelf Pursuant to 30 CFR Part 585*⁵ to direct potential lessees to the Portal for preliminary fishery-related information. See the Energy & Infrastructure section and Offshore Sand Resources section for more information.

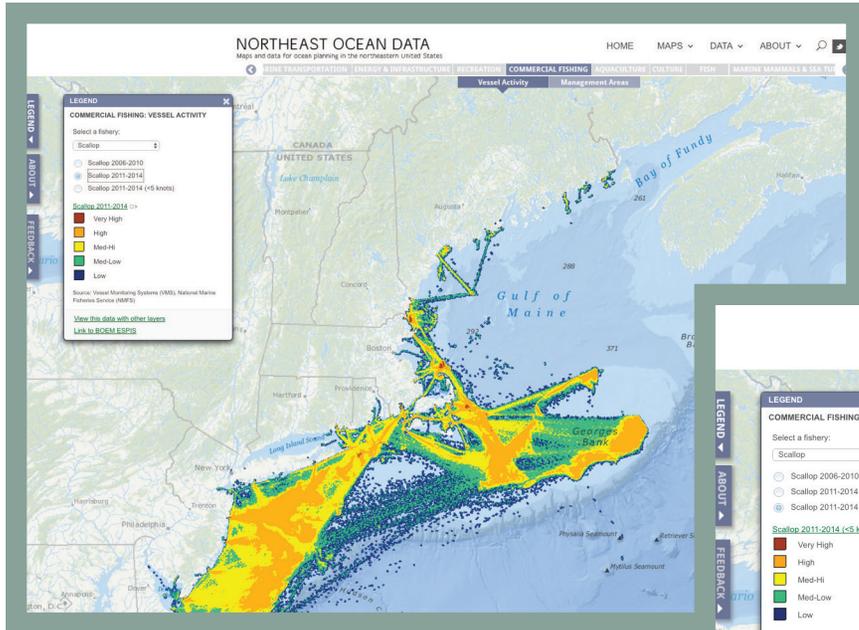
- As described in the Marine Transportation section, as part of the USCG's responsibilities as a cooperating agency during leasing, licensing, and permitting processes, to the extent practicable, the USCG will use the Portal to understand potential impacts to marine transportation and navigational safety. This usage includes determining potential conflicts, developing navigational risk mitigation strategies related to a particular waterway, and identifying potentially affected stakeholders (fishermen). See the Marine Transportation section for more information.
- The NEFMC will use the Plan data, as appropriate, to supplement traditional internal, state, and NOAA data sources to conduct analyses related to FMP development, and to satisfy the requirements of NEPA, MSA, and other applicable laws. The Portal may also inform NEFMC when considering climate change impacts to fisheries, developing and implementing ecosystem-based fisheries management, and resolving user conflicts. The NEFMC will inform its staff of the availability of the Portal.

CF-4. Identify potentially affected commercial and recreational fishing stakeholders: To the extent practicable, RPB agencies will use the Portal to help identify and improve communication with commercial and recreational fishing stakeholders who are potentially affected by agency actions. Because of the limitations in

existing data available on the Portal, this action should be viewed in combination with the best practices regarding coordination with state fishery agencies, the NEFMC, and fishing industry stakeholders described in Chapter 4.

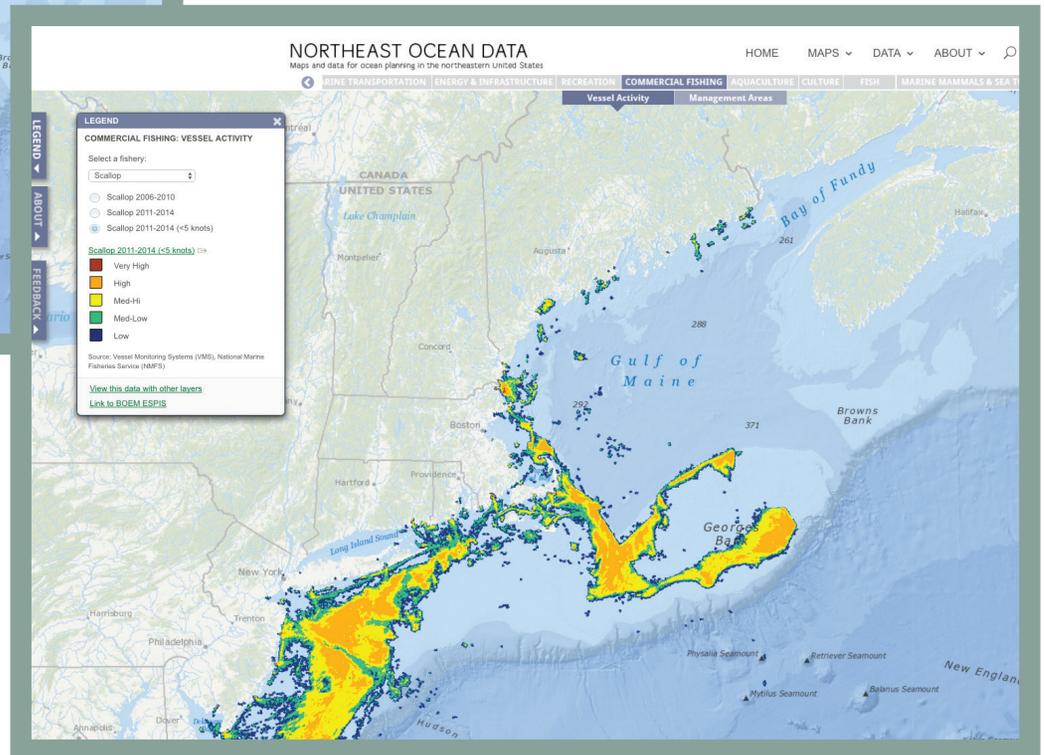
In addition, several recent efforts have attempted to improve communications with the fishing industry to better assess the potential impacts from newly proposed offshore activities. The following are most relevant to this Plan:

- In 2014, BOEM commissioned a study recommending a series of best management practices and mitigation measures for addressing potential impacts between fishing and offshore wind energy.¹⁶ In 2015, BOEM issued a separate document, *Guidelines for Providing Information on Fisheries Social and Economic Conditions for Renewable Energy Development on the Atlantic Outer Continental Shelf*.¹⁷ The practices outlined in this BOEM report have resulted in guidance to lessees.
- States have established advisory bodies to provide input into development of offshore wind energy in federal waters (the Rhode Island Fisheries Advisory Board and the Massachusetts Fisheries Working Group are two examples). Successes and opportunities from these efforts will be shared among RPB agencies to identify needs for further improvements.



All VMS scallop vessels 2011-2014

These VMS-derived maps indicate the general footprint of vessels operating in the federally managed scallop fishery. VMS-derived maps like these support a qualitative understanding of where vessels in certain fisheries operate, including potential transit and fishing areas. They can also help identify where certain vessels at a fishing ground originated. Therefore, they can help identify potential conflicts and potential fisheries interests to engage when new activities are proposed.



VMS scallop vessels traveling less than five knots (speed associated with fishing activity)



Coastal and marine recreation in New England is ingrained in the region's economic and social fabric. Recreation on the ocean and coast includes many of New Englanders' most time-honored and beloved activities, including boating, swimming, surfing, diving, fishing, bird-watching and whale watching. Cumulatively, recreation and tourism directly contributed nearly \$10 billion to the coastal economy of New England in 2013 (in GDP).¹

Residents of and visitors to the Northeast US spend approximately 100 million person-days (Massachusetts alone is about 30 million person-days) at over 1,000 ocean beaches, representing about 10 percent of total beach visits for the United States.² Most of this beach activity is concentrated in the summer months, and more than half of beach visits include swimming. In addition to beaches, many NPS properties are located along the coast, including Cape Cod National Seashore and Acadia National Park, which had almost 7 million visitors between them in 2014.³ There are also countless state, municipal, and private conservation lands and parks along the coast that support a range of recreational activities and provide access to the ocean. The top five recreational activities among individuals participating in a survey conducted for ocean planning were going to the beach, scenic enjoyment, swimming and body surfing, biking and hiking, and wildlife viewing.⁴

While the most highly used recreational areas are onshore or within a mile or two of the coast, recreational activities are widespread and can be found throughout the planning area. Scuba diving, fishing, whale watching, boating, and sailing can occur well offshore. Stellwagen Bank National Marine Sanctuary is entirely within federal waters, 25 miles east of Boston, and is a destination for each of these recreational activities. In addition, recreational events, such as sailing races, regattas, fishing derbies, and others, result in a high concentration of activity, often over a short period of time, in specific nearshore and offshore areas.

There is an abundance of anecdotal and experiential knowledge of recreational use of the ocean. However, traditionally, information actually documenting the spatial extent and economic impacts of some of these activities has been limited. As a result, the RPB engaged in a number of initiatives to better understand the extent and economic importance of recreational activities in the region:

- In 2012, the Northeast Recreational Boater Survey was conducted by a partnership of organizations including SeaPlan, NROC, representatives of the boating industry, the New England states, the state of New York, and the USCG. The survey characterizes when, where, and how New Englanders and New Yorkers motor and sail for fun,⁵ based on input from boaters themselves. The more than 12,000 boaters participating in the study provided important information about the economic output of recreational boating and boaters' perspectives on coastal issues. The survey identified nearly 374,000 marine boaters with boats registered between Maine and New York, with survey results suggesting that they collectively undertake more than 900,000 boating trips on the ocean each year. Such activity contributes approximately \$3.5 billion per year and the equivalent of nearly 27,000 year-round jobs to the



Northeast US economy.⁶ Most boating occurs within about 20 miles of the coast with an increasingly higher density of activity closer to shore. Certain whale-watching, other types of wildlife-viewing, sailing, and recreational fishing trips can extend farther offshore. Much of this boating is supported by hundreds of boat launches and 600 marinas, which employ more than 5,000 people and generate about \$400 million annually in regional GDP.⁷

- In 2015, the RPB conducted a study in partnership with Point 97, Surfrider, and SeaPlan to characterize other recreational activities in the Northeast.⁸ With input from industry

representatives, stakeholder groups, and an RPB steering committee, the study collected information, including the spatial footprint, on commercial whale-watching, scuba diving, and marine events through participatory workshops with industry representatives and using online mapping tools. Employing a different methodology, the study collected information on individual recreational uses, including sea kayaking, surfing, and other shore-based, surface water, diving, and wildlife and sight-seeing activities. Many of these activities have a seasonal focus (whale watching and diving occurring predominantly during the summer,



better-weather months), although activities such as scuba diving do occur year-round. Whale watching is one of the larger commercial components of the recreational sector operating offshore, with over 30 businesses throughout New England and New York. Companies operate vessels ranging from small charters with six passengers to large charters out of hubs such as Boston and Bar Harbor, Maine, that may accommodate up to 400 passengers and serve thousands of patrons daily.⁹

REGULATION AND MANAGEMENT

As with other marine-dependent uses, federal regulatory agencies are required by existing law to assess the potential impacts of proposed offshore activities to recreation through, for example, the environmental review process under NEPA and the requirements of specific permitting and leasing authorities such as RHA and OCSLA. The USCG has the responsibility of assessing and dealing with a wide variety of potential navigational risks to all vessel traffic in US ports and navigable waterways (see the Marine Transportation section). These assessments may inform the regulatory and environmental review processes identified above. Depending on the results of the assessment, these agencies may decide to develop impact avoidance, minimization, or mitigation measures.

State agencies are usually involved in reviewing the effects of proposed actions on recreational activities because they have extensive knowledge of different recreational uses. State coastal zone management programs help promote and protect public access to the coast. Other state agencies manage beaches, boat launches, coastal parks and trails, boat registrations, and saltwater fishing licenses and permits. State marine patrols or environmental police monitor commercial and recreational activities, support search and rescue operations, mediate disputes, enforce boat registration requirements, and generally have extensive knowledge of recreational uses in different locations.

Even with all these agencies monitoring recreational activity, however, assessing the potential impacts of new proposals to recreational activities can be challenging. Every stretch of the coastline provides recreational opportunities, and almost everyone who visits or lives near the coast participates in some form of coastal recreation. Also, because recreational use is so widespread, representation of the recreational users and sectors in permitting and regulatory processes is often diffuse and dependent on the specific areas and activities that are potentially affected. In addition, proposals for offshore projects often include several phases of activity,

each with its own unique spatial and temporal characteristics, which may or may not intersect with each particular form of recreation occurring in a given area. Therefore, local knowledge of the recreational activity is often necessary to fully understand how an area is used. Finally, as with other human uses, many recreational activities rely on a healthy ecosystem and can thus be impacted by activities throughout the system, not just at a given area.

Even with all of these considerations, impacts and conflicts with new activities are more likely to occur nearest to shore owing to the prevalence and variability of recreational activities in coastal areas. Recreational activity, both the intensity of use and the range of different recreational pursuits, tends to decrease farther offshore. In some cases, however, offshore activities present different types of conflicts and permitting considerations.

MAPS AND DATA

The Portal includes the following map products characterizing recreational activities.

Boating

The Boating theme features two maps from the *2012 Recreational Boater Survey*, including a map of actual boating routes provided during the 2012 boating season, and a map showing the relative density of those routes over that time. It also includes a map of long-distance sailing races from the *2015 Characterization of Coastal and Marine Recreational Activity in the US Northeast*.

Whale watching

The Whale Watching theme includes a series of maps depicting information obtained through participatory geographic information system (PGIS) workshops with approximately 20 whale-watching companies from New York through Maine during the *2015 Characterization of Coastal and Marine Recreational Activity in the US Northeast*. The maps show “general use areas,” reflecting the extent of whale watching in the past three to five years, and “dominant use areas,” indicating areas routinely used by most whale-watch operators, most of the time. It also includes “transit areas” from homeports to general or dominant use areas.

Scuba

The Scuba theme includes a single map of scuba diving areas derived from information provided by the scuba diving community and individual recreationalists during the *2015 Characterization of Coastal and Marine Recreational Activity in the US Northeast*.

Recreational areas

The Recreation Areas theme contains a series of map layers primarily depicting onshore and nearshore recreation areas and facilities. These areas and facilities include water trails, boat launches, national parks, state-managed and municipally managed properties, national wildlife refuges and wildlife management areas, and other preserves and sanctuaries. These maps were developed by the Portal Working Group, with input from recreational industry representatives and state agencies.

Coastal use surveys

The Coastal Use Surveys theme includes a series of maps with recreational activity points and board and paddle events. These data were provided by individual recreational users through the *2012 Recreational Boater Survey* and the *2015 Characterization of Coastal and Marine Recreational Activity in the US Northeast*.



OVERVIEW ACTIONS

- Rec-1 Maintain existing maps and data on the Portal
- Rec-2 Develop and incorporate additional data about recreational activities when available
- Rec-3 Inform regulatory and environmental reviews of agency actions for their potential impacts to recreational activities
- Rec-4 Identify potentially affected recreational stakeholders



ACTIONS: MAINTAIN AND UPDATE DATA

Rec-1. Maintain existing maps and data on the Portal:

The RPB will consider methods and opportunities to update the boating, whale-watching, scuba, and other maps derived from online surveys and participatory workshops. The intent of any new methodology will be to ensure the updated maps are informed by recreational stakeholders. However, different methodologies may be more suitable for budget conditions or new technologies, or for partnering with stakeholder groups and leveraging other efforts. The map of coastal recreation areas will be updated by the Portal Working Group annually using existing authoritative sources.

Rec-2. Develop and incorporate additional data about recreational activities when available:

RPB agencies will continue to seek additional ways to fill information gaps on recreational activities by leveraging other projects, incorporating information from state-based planning and management activities, and reviewing the results of government and industry-based surveys. Chapter 5 includes science and research priorities related to better understanding human activities and their connection to coastal communities. Maps and data will be added to the Portal when these priorities are addressed.

ACTIONS: INFORM REGULATORY AND MANAGEMENT DECISIONS

Rec-3. Inform regulatory and environmental reviews of agency actions for their potential impacts to recreational activities:

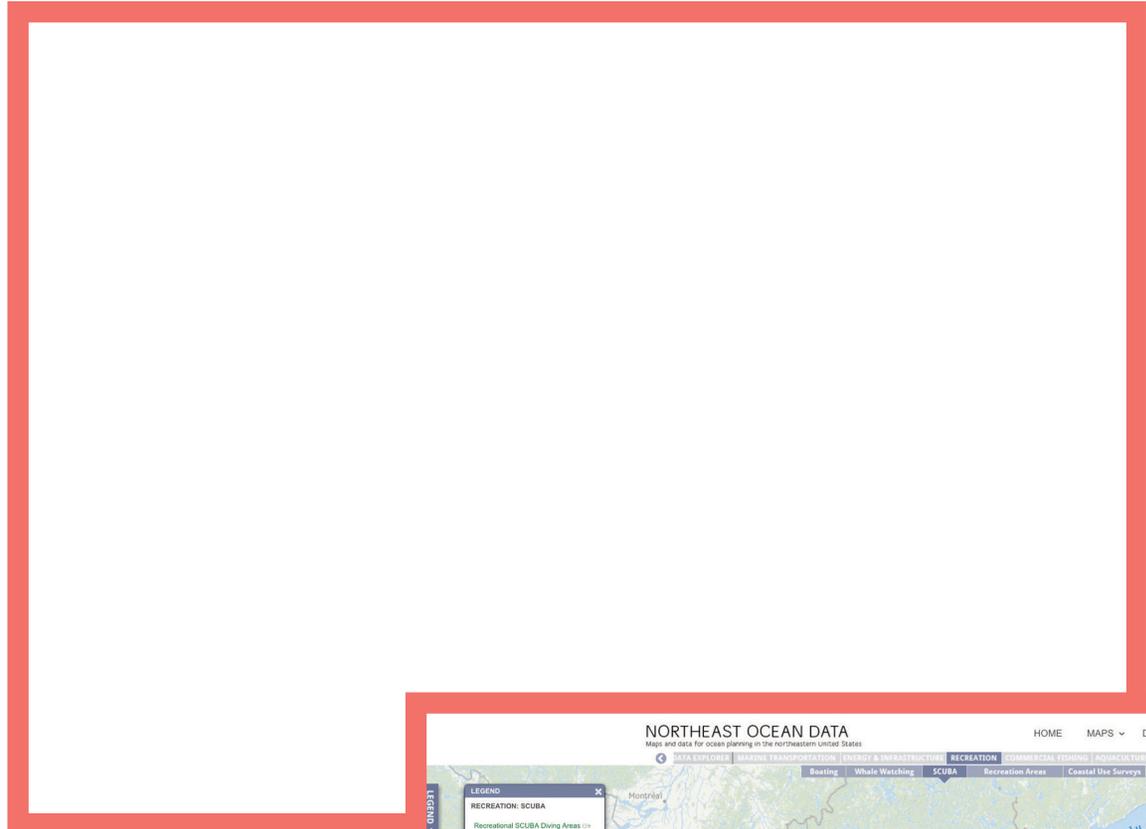
RPB agencies, to the extent practicable, will use the maps and data described in this section when considering whether new offshore projects or management activities may affect existing recreational activities. Conflicts with recreational activities are more likely to occur in nearshore areas because the majority of these activities have the highest concentration of use within the first several miles of the coast. For example, newly proposed aquaculture facilities, cables and pipelines making onshore connections, dredging and navigation projects, and nearshore energy

installations are more likely to intersect with recreational activities in the coastal zone. Farther offshore, conflicts and impacts may still occur to important boating, fishing, whale-watching, and diving areas, but the frequency and intensity of recreational activities generally diminishes away from the coast. However, the nature of all these interactions will be unique, according to the specific spatial and temporal characteristics of both the newly proposed activity and the form of existing recreation. These maps and the Plan will help identify additional information needs for determining whether a proposed agency action conflicts with or impacts recreational uses. Specifically:

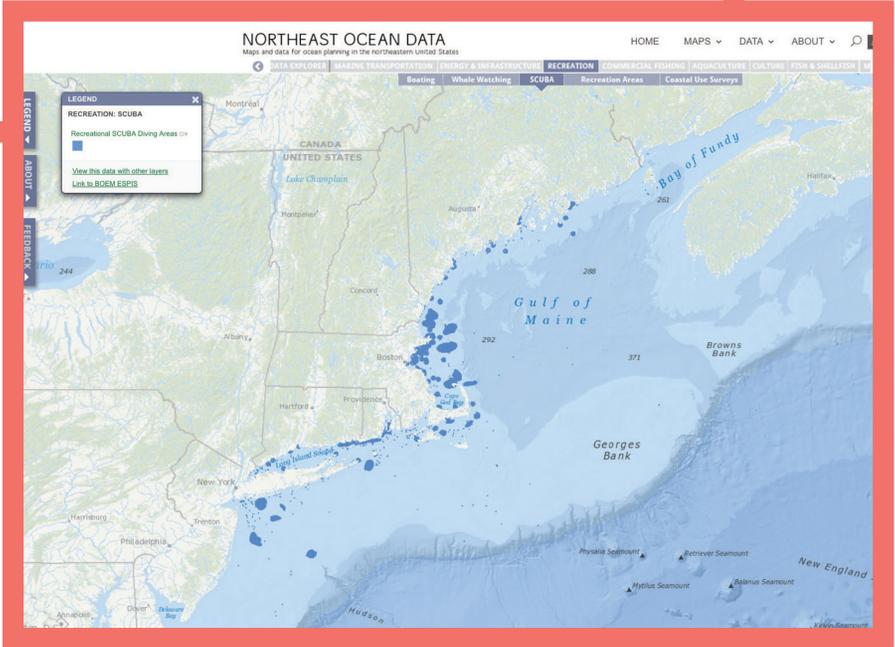
- USACE and BOEM, through RHA and OCSLA, are required to consider the potential impacts to existing ocean uses when making a permitting or leasing decision for new activities. The information and the data resources described within the Plan will provide an important beginning step in identifying recreational uses that may be affected by these new activities.
- The USCG and other agencies will use Plan data to help inform the regulatory and environmental review processes that affect recreational activities.

Rec-4. Identify potentially affected

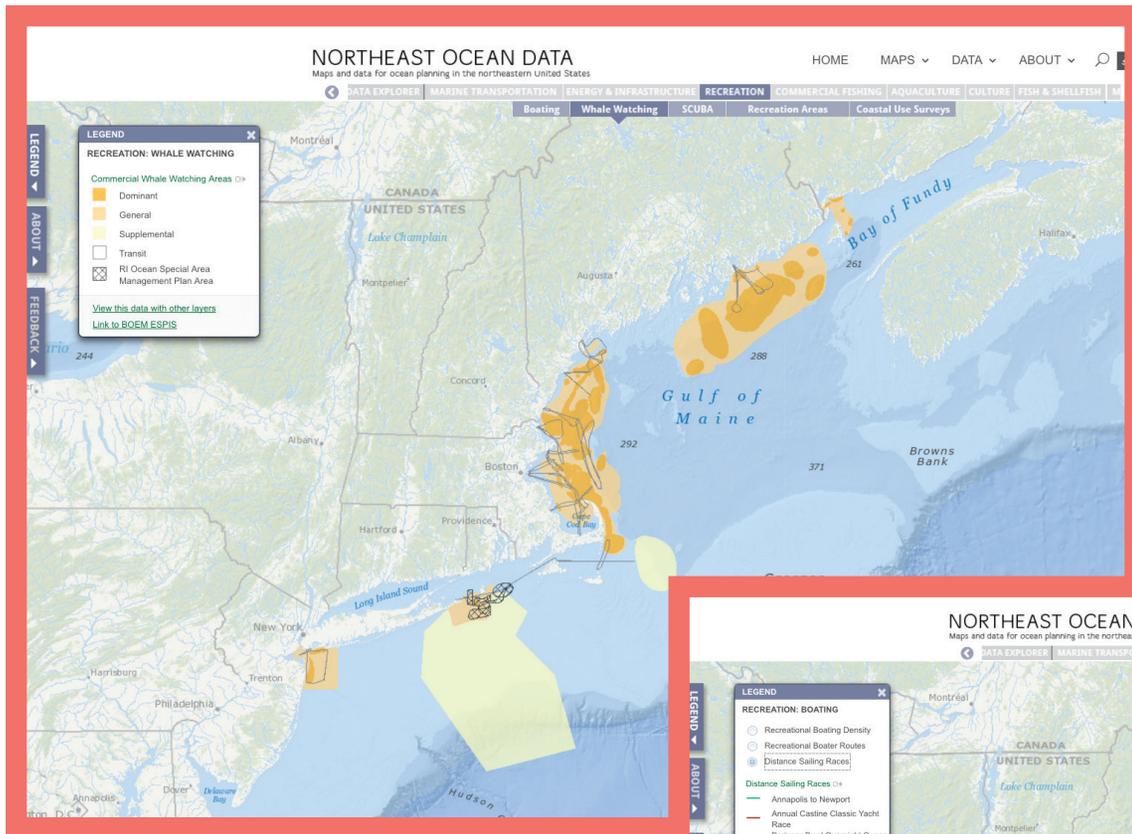
recreational stakeholders: RPB agencies will use the Portal to help identify recreational stakeholders potentially affected by a proposed agency action. There are countless opportunities to recreate on the ocean in New England, and recreational activities are widespread and important for tourism, spiritual enjoyment, and sporting and competitive events. Appropriately, the Portal contains information on a wide range of recreational activities, which will enable regulatory agencies to hone in on those activities or events that are most likely to be impacted and to identify the appropriate stakeholders to engage for additional information. In many cases, regulatory agencies can see obvious linkages in the maps between offshore recreational areas and onshore ports and communities, thereby focusing stakeholder engagement efforts on the most likely ports, communities, industries, and even parks and marinas to be affected. This action also relates to the best practices described in Chapter 4 regarding coordination with stakeholders, given that available data may not completely characterize all aspects of recreation in New England marine waters.



Recreational boating



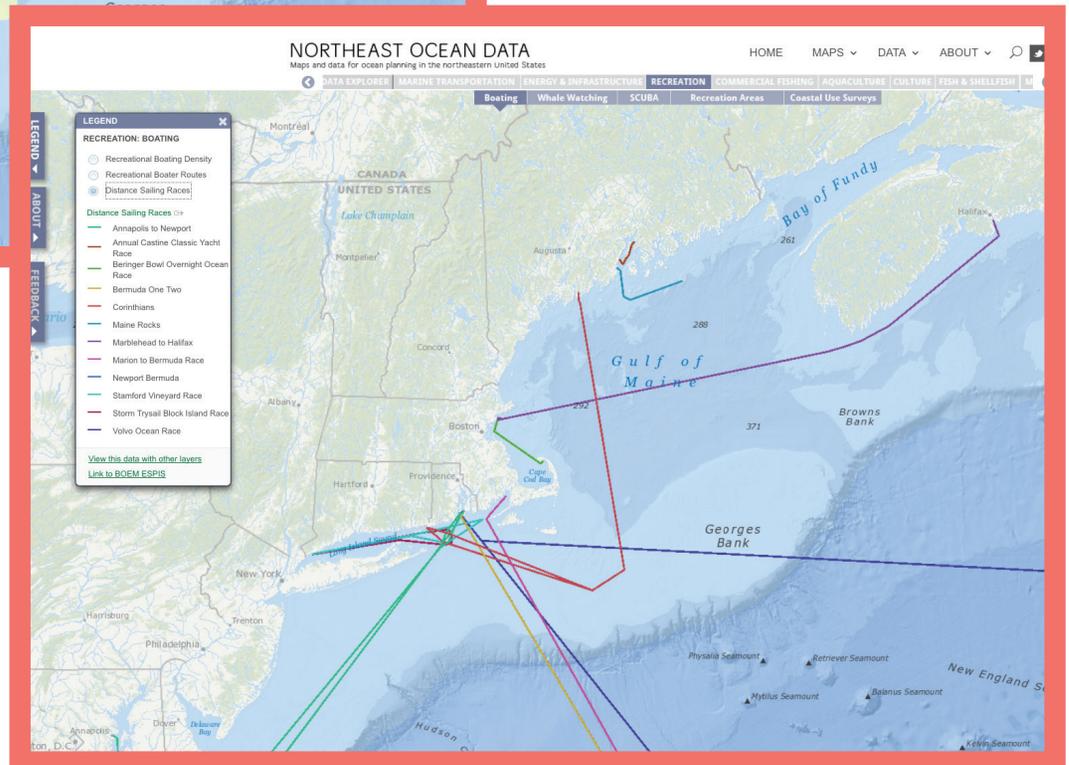
Scuba diving



Commercial whale watching

The highest density of recreational activity occurs within the first few miles of the coast. Therefore, nearshore projects, such as aquaculture facilities, cables and pipelines making onshore connections, dredging and navigation projects, and smaller energy installations are more likely to intersect with recreational activities.

There are also important whale-watching, diving, fishing, and recreational events occurring farther offshore. Although recreational activity farther offshore is comparatively less dense, the areas used for whale watching, diving, fishing, and for recreational events are important for them and sometimes to specific ports. These activities may intersect with larger energy and aquaculture installations proposed in those areas.



Recreational events: Distance sailing races



ENERGY & INFRASTRUCTURE



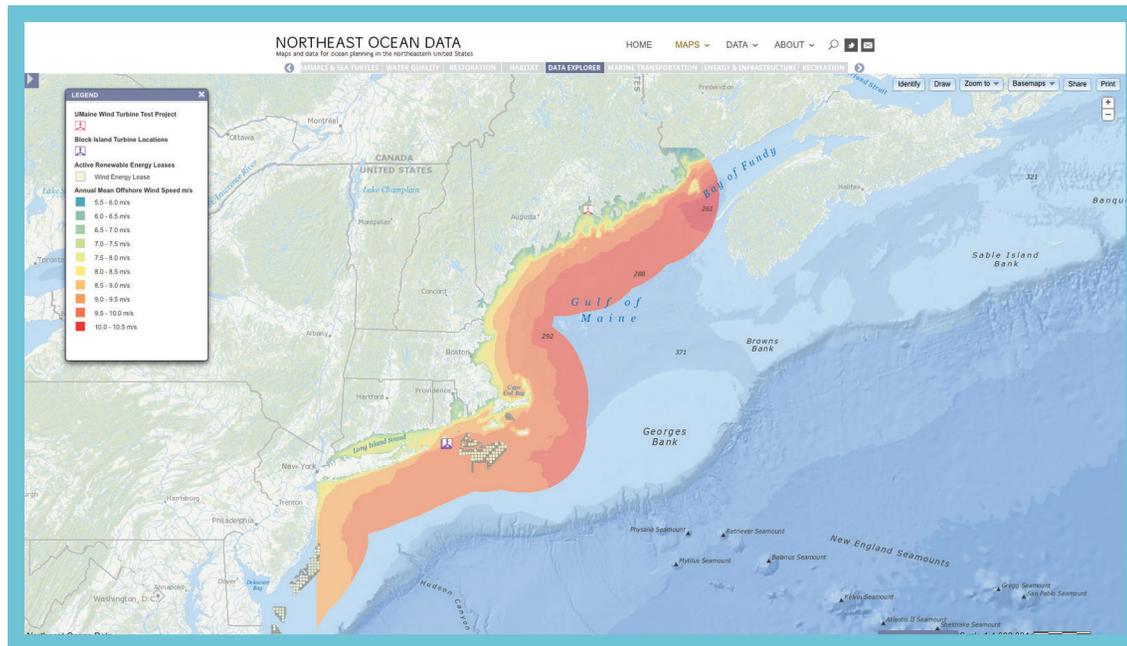
Energy is essential to our society and provides the means to light our homes, operate our businesses, and transport goods to markets. To date, New England does not have offshore oil and gas production, relying instead on the distribution of oil and natural gas by pipeline, truck, and shipping to local ports such as Portland, Boston, and New York. Notably, for ocean planning purposes, the energy infrastructure serving New England includes the HubLine high-pressure gas pipeline and two recently established deepwater LNG ports located in Massachusetts Bay.

Each LNG port includes large buoys that receive gas from shipping tankers and distribute the gas to the HubLine through a system of underwater pipelines. The use of these offshore LNG ports and the frequency of associated ship traffic are subject to the dynamics of the natural gas market. As of the writing of this Plan, one of the LNG ports received several shipments from 2008 to 2010 and again in 2015 and early 2016, while the second has not had any calls.¹

Regional electricity is primarily generated using gas, nuclear power, hydropower, and a range of renewable sources.² As part of a regional shift in electricity sources, reflecting market forces and increasing concerns about climate change, the region is beginning to look to offshore renewable energy sources, such as wind, wave, and tidal resources. Similar to how the recent shift to natural gas led to the development of offshore LNG ports, these renewable energy sources are introducing new activities along our coasts and in the offshore environment.

Offshore wind technologies are poised for national deployment to contribute to the nation's wind power portfolio, which is one of the fastest-growing sources of new electricity supply in the United States. The nation's significant offshore wind resources, potential siting near critical load centers with high electricity rates, current higher price relative to other energy sources in some locations, and the availability of long-term power purchase agreements are key technical and economic factors influencing the development of offshore wind. New England's offshore wind resources are abundant and provide the greatest opportunity for offshore renewable energy development in the near term due to available technology.

The region's offshore wind energy potential has generated substantial interest in demonstration- and commercial-scale energy infrastructure projects off the coasts of Rhode Island, Massachusetts, and Maine. Recent developments include the construction of a project with five wind turbines in state waters offshore



This map shows the extent of wind resources in the Northeast from a 2010 Department of Energy study,⁴ the location of the Block Island turbines, the areas currently under lease offshore Massachusetts and Rhode Island, and the demonstration-scale floating turbine in Maine.

Block Island (Rhode Island), ongoing efforts in Maine to develop a demonstration-scale floating offshore wind facility,³ and the leasing of areas in federal waters offshore Rhode Island and southern Massachusetts for larger-scale wind development. Further establishment and growth of offshore wind energy development will be influenced by continued efforts to reduce capital costs (which remain higher than those associated with land-based wind), variations in energy market prices, and evolving financing options. In the New England region, developments of both demonstration- and commercial-scale projects have been proposed for the coming decade.

Tidal current and, to a lesser extent, wave resources offshore of New England have also generated interest as potential energy sources. In recent years, several small-scale tidal projects have either been installed or are at different stages of permitting. These projects have focused on the few areas where nearshore ocean currents are currently viable for commercial development or experimental use. These projects include the operational Maine Tidal Energy Project in Cobscook Bay,⁵ proposals to establish small facilities in Muskeget Channel and the Cape Cod Canal in Massachusetts, and some interest in other high-energy locations such as eastern Long Island Sound.

Submarine cables are also an important existing and potential use of the seafloor. Submarine

cables transmit either energy or telecommunication signals across stretches of water. Importantly, submarine cables supply up to 95 percent of the intercontinental internet traffic and essential electricity service to island communities. In New England, transatlantic telecommunication cables run through Long Island Sound and out of Charlestown, Rhode Island, and Lynn, Massachusetts. A number of transatlantic cables make landfall just to the south of New England, in Long Island, New York City, and New Jersey. Electricity cables can be found along the shoreline, making critical grid connections from the mainland to islands offshore each state, and occasionally transiting longer distances with higher-transmission capacity, such as in Long Island Sound.



REGULATION AND MANAGEMENT

Oil and gas

OCSLA provides a process for identifying areas for lease on the outer continental shelf (OCS) extending from a state's boundary, three nautical miles from shore, to the limit of US jurisdiction, generally the edge of the exclusive economic zone at approximately 200 nautical miles. Every five years, the Department of the Interior (DOI) requests input from the public and consults with coastal state governors regarding offshore oil and gas leasing as part of its BOEM-led process for developing a five-year plan for exploration, development, and production of oil and gas on federal lands on the outer continental shelf. Under the OCSLA, only areas included and identified as available for leasing may later be offered for oil and gas development-related activities. The BOEM North Atlantic planning area, which includes the OCS offshore New England, New York, and New Jersey, has not been offered for leasing in over two decades and is not being offered in the next cycle, from 2017 to 2022.⁶ In state waters, oil and gas development is governed by each state separately and is not proposed for the foreseeable future. Prior to oil and gas leasing, private companies conduct seismic surveys to determine the potential locations of oil and gas deep below the seafloor. Seismic surveys are not expected because leasing has not been proposed in the Northeast.

Offshore renewable energy

The Energy Policy Act of 2005 amended OCSLA to address offshore renewable energy including energy derived from wind, waves, tides, and ocean currents. BOEM administers the process for leasing on the OCS for wind, wave, and ocean current energy sources. The USACE, under the CWA and RHA, is usually the lead federal permitting agency for wind energy development in state waters. The Federal Energy Regulatory Commission (FERC), under the Federal Power Act, is the lead federal agency for tidal energy, which is only available in coastal environments (primarily in state waters). While BOEM administers leasing for wave and ocean current energy sources on the OCS, FERC is responsible for project licensing under the Federal Power Act. The Department of Energy (DOE) also conducts NEPA analyses for DOE-funded research and development related to offshore renewable energy. As previously described in this chapter, any of these processes will include an evaluation of potential impacts to specific resources or uses, such as potential impacts to national defense, aviation safety, and marine transportation as determined through consultations with DOD and DHS.

Submarine cables

Different state and federal agencies are involved in permitting and licensing submarine cables, depending on whether the proposed cable is part of an offshore electricity generation facility, is a stand-alone electricity transmission project, or is to be used for telecommunications. The USACE will almost always be involved in project review and permitting under RHA or CWA. BOEM, FERC, and state public service commissions are likely to have roles depending on the type and location of electricity transmission projects. The Federal Communications Commission is likely to have a role with telecommunications cable projects. The Naval Seafloor Cable Protection Office (NSCPO) is the primary initial point of contact within the Navy for seafloor cable inquiries.

Liquefied natural gas terminals

The DWPA provides for the establishment of deepwater ports for LNG in federal waters. The DOT, through MARAD, authorizes activities in close consultation with the USCG (which has delegated authority to process applications, conduct environmental review, and manage other technical aspects of the application) and adjacent coastal states (whose governors have veto power). Any proposal to export natural gas from an LNG terminal requires an export authorization from DOE under the Natural Gas Act of 1938.⁷ Depending on the characteristics of their operations, deepwater ports may also

require permits from other regulatory agencies. For example, National Pollutant Discharge Elimination System (NPDES) permits will be required from EPA to authorize point source discharges of pollutants from a deepwater port in federal waters. Finally, LNG import terminals, which have been proposed throughout New England, are subject to licensing from FERC and to state approvals.

MAPS AND DATA

The Portal includes the following maps and data products related to energy and infrastructure:

Existing infrastructure

The Infrastructure theme on the Portal shows the footprint of energy and telecommunications infrastructure in the Northeast US as of 2016, when this Plan was published. This infrastructure includes the offshore LNG terminals, energy facilities located near the coast, onshore electricity transmission lines and substations, and submarine cables and pipelines. Each of these maps is derived from products maintained by the Marine Cadastre in collaboration with the authoritative public and private sources.

Renewable energy planning areas

The Planning Areas theme shows the current status of renewable energy projects and related planning areas throughout New England. This map includes a general classification of projects as operational, permitted, and currently in regulatory review. The map also includes renewable energy planning areas in state and federal waters, and proposed tidal or wave energy projects that have an active preliminary permit from FERC. This map is updated frequently to ensure project, permitting, and planning area status remains accurate. The Portal is kept current using wind energy lease areas on the OCS provided by BOEM, preliminary permit locations for tidal and wave energy projects obtained from FERC, and project areas in state waters obtained via collaboration with each state.

Other resource and human use maps and data

In addition to maps characterizing the offshore footprint for energy and infrastructure activities, this Plan and the Portal include a range of maps of marine life, habitat areas, cultural resources, transportation, fishing, and other human uses to be considered when new energy or other infrastructure developments are proposed. The BOEM Environmental Studies Program, in particular, funds the collection of data on all these topics in support of energy

development on the OCS. The Portal has recently been linked to the BOEM Environmental Studies Program Information System (ESPIS),⁸ which allows the user to search for data and final reports from BOEM's environmental studies and contains a geospatial component. DOE also funds targeted, applied research to characterize offshore renewable energy resources as well as to better understand and mitigate any environmental impacts of offshore renewable energy technologies. To this end, the DOE-supported online Tethys database serves to actively aggregate and disseminate information from across the US and around the world (in partnership with more than a dozen other countries) on the environmental effects of marine and wind energy development, which can provide useful data and information for the purposes of planned projects and activities in the Northeast.⁹



OVERVIEW

ACTIONS

- EI-1 Maintain existing maps and data on the Portal
- EI-2 Provide additional regional data related to energy and infrastructure permitting when available
- EI-3 Inform commercial leasing for offshore renewable energy development
- EI-4 Incorporate Plan maps and data into environmental reviews associated with new offshore energy or submarine cable proposals
- EI-5 Identify and notify potentially affected stakeholders
- EI-6 Improve outreach to industry and stakeholders related to renewable energy development
- EI-7 Ensure the Plan and the Portal are used by agencies and recommended to project proponents
- EI-8 Inform research and development
- EI-9 Enhance intergovernmental coordination related to offshore energy development



Photo: courtesy of Deepwater Wind

ACTIONS: MAINTAIN AND UPDATE DATA

EI-1. Maintain existing maps and data on the Portal:

The agencies identified in this section will continue to maintain and provide data on existing infrastructure and renewable energy planning areas. BOEM is committed to maintaining up-to-date maps regarding leasing areas on the OCS, including providing authoritative data on administrative and planning boundaries through the Marine Cadastre. Maps of existing infrastructure and federal planning and leasing areas will be updated by the Portal Working Group as updates are made to the Marine Cadastre. The RPB will coordinate with states to obtain maps of planning areas and infrastructure in state waters when the status or extents of the areas change and when states have new data to provide. All existing Portal data will be reviewed by the authoritative RPB source on an annual basis.

EI-2. Provide additional regional data related to energy and infrastructure permitting when available:

BOEM, DOE, and other agencies will review data collected through relevant research programs, including those identified in this section and in Chapter 5, Science and Research Priorities, to determine whether additional data should be provided for regional planning purposes. Through its Environmental Studies Program, BOEM will continue to collect and

make available important data and information about the environment in support of various laws and regulations. BOEM will ensure those data are provided to the appropriate repository specific to the dataset type (e.g., marine mammal data provided to the Ocean Biogeographic Information System Spatial Ecological Analysis of Megavertebrate Populations [OBIS-SEAMAP]). BOEM's science priorities are determined annually based on current and future leasing plans and are available on BOEM's website (<http://www.boem.gov/Studies>).

ACTIONS: INFORM REGULATORY AND MANAGEMENT DECISIONS

EI-3. Inform commercial leasing for offshore renewable energy development:

The BOEM process for offshore renewable energy development occurs in four phases: planning and analysis, lease or grant, site assessment, and construction and operations.¹⁰ Throughout the process, BOEM uses the best available information to make decisions, such as the locations to hold a lease sale or environmental monitoring requirements for industry. To the extent practicable, the Portal will help inform the identification of locations for offshore renewable energy development and the range of activities that occur throughout the four phases of development by taking into account regional perspectives on the marine life, habitat, human uses, and cultural resources that may be present.

Whether the projects being considered result from solicited or unsolicited proposals, or are for commercial development or for research purposes, the Plan will assist BOEM and project developers, to the extent practicable, in identifying the relevant species or locations that require further detailed data collection through the assessment of a site. BOEM guidelines for developers include the recommendation to use the most recent data available to inform any proposed survey work.¹¹ Developers may also use the information to inform the siting of their structures within a lease area.

EI-4. Incorporate Plan maps and data into environmental reviews associated with new offshore energy or submarine cable proposals:

As part of the environmental review process, lead agencies such as BOEM, MARAD, USACE, and DOE consult with federal, state, and tribal partners under the ESA, MMPA, MSA, CZMA, NHPA, and other laws. The Portal will be used to the extent practicable as important reference information about the distribution and densities of marine life species and the presence and extent of important habitats to be considered during environmental review and individual consultations. However, many large-scale activities will require the additional collection of site-specific information for impact assessment and monitoring. The Portal will also support cumulative analyses and other information necessary in NEPA documents that must take



into consideration all other existing and reasonably foreseeable human uses in an area. The Portal will contribute basic information about the usage of the area under consideration for development.

EI-5. Identify and notify potentially affected stakeholders:

The Portal helps identify important user groups such as commercial and recreational fishermen, commercial transportation, and the military that are most likely to interact with new offshore energy developments and therefore should be engaged in the commercial leasing process. Recognizing existing ocean uses and activities greatly expedites the project review process and informs the developer of areas where conflicts may be avoided, minimized, or mitigated.

- RPB agencies will use the Plan and data on human activities in the Portal to identify stakeholders potentially affected by agency actions or proposed projects related to offshore energy.
- Relevant federal agencies (i.e., BOEM, USACE, MARAD, or DOE, depending on the type of offshore energy or infrastructure development) will explore using the Portal as an additional resource for posting agency announcements to help ensure regional stakeholders have updated information about proposed energy and communications infrastructure development activities.

EI-6. Improve outreach to industry and stakeholders related to renewable energy development:

RPB agencies have identified the following activities to improve communications and engagement with stakeholders and to inform agency processes.

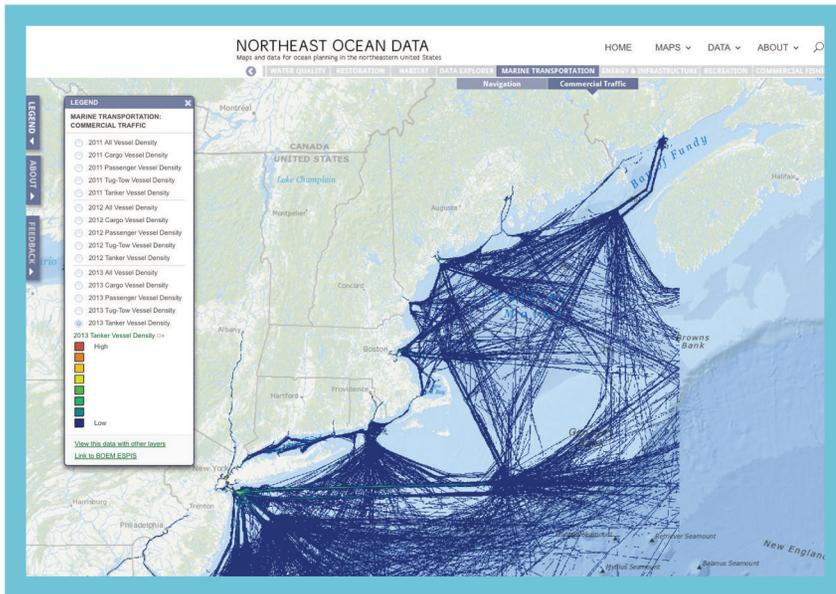
- **Engage industry and stakeholders in renewable energy strategic planning and administrative processes:** In order to better understand and meet potential challenges to continued development of the offshore renewable energy industry, BOEM and DOE will periodically request responses from industry and other stakeholders via sources such as workshops, public meetings, and *Federal Register* notices. Information gained through these sources will inform the agencies' strategic planning efforts, existing regulations, and renewable energy administrative processes.
- **Develop materials clearly describing renewable energy permitting and leasing processes:** In concert with the Mid-Atlantic RPB effort, BOEM will work to enhance coordination and management by developing an online outreach tool to more clearly detail offshore wind energy regulatory processes. The resulting tool will identify how programs intersect and will outline where and when relevant authorities play a role in decisions.

EI-7. Ensure the Plan and the Portal are used by agencies and recommended to project proponents:

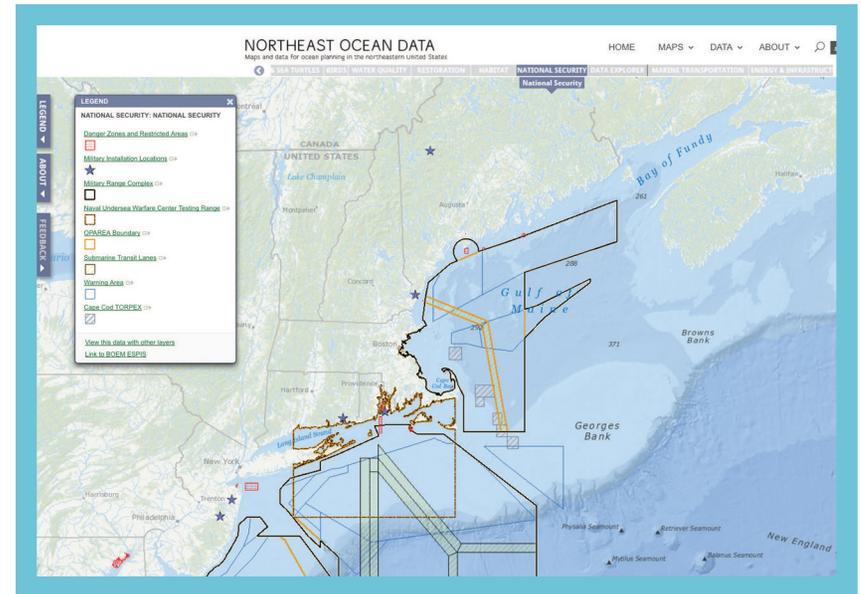
Federal agencies will, where practical, incorporate the use of the Plan and the Portal into existing internal agency guidance to support implementing NEPA and other laws. Relevant federal agencies, including BOEM, USACE, and MARAD, will, where practical, also identify the Plan and the Portal in guidelines to developers as an important source of information to inform proposed survey work associated with energy and communication infrastructure development proposals.

EI-8. Inform research and development:

Funding of research and development initiatives is the result of strategic planning and understanding of the state of the science. Regional planning data products will help improve DOE and BOEM strategic investments by highlighting data gaps (such as for marine life distribution), trends, habitat conditions, and resource characterization. Although many science and research priorities are published by various entities in the Northeast, the Plan's regional science and research priorities can inform future research and development efforts.

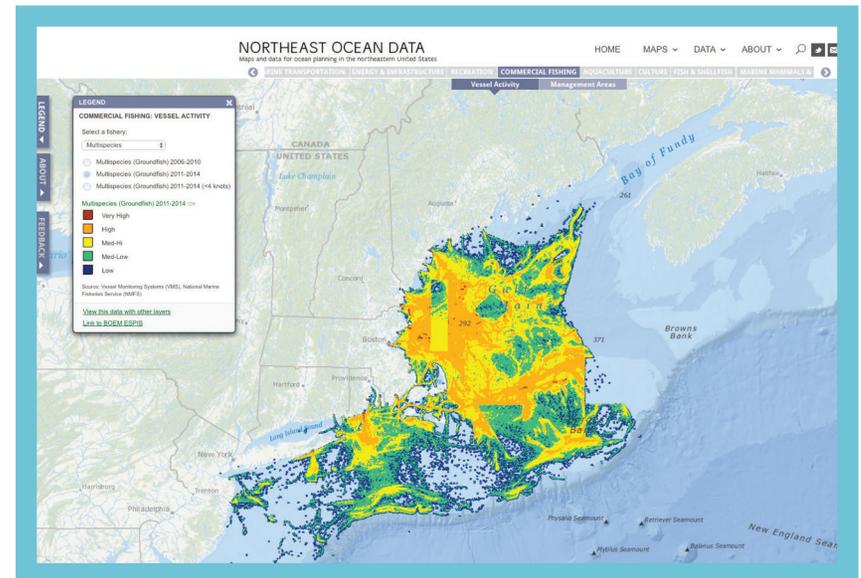


Tanker vessel density



National security use areas

The Portal helps identify important user groups—such as commercial and recreational fishermen, commercial transportation entities, and the military—that are most likely to interact with new offshore energy developments and therefore should be engaged in the commercial leasing process.



Multispecies fishing vessel density (representative of potential interaction with fishing activity)



ACTIONS: ENHANCE AGENCY COORDINATION

EI-9. Enhance intergovernmental coordination related to offshore energy development:

RPB agencies have identified the following ongoing and planned activities, which, taken together and informed by the Plan, will improve intergovernmental coordination related to offshore energy development.

- **Continue intergovernmental renewable energy task forces:** BOEM established and will continue to operate as-needed intergovernmental renewable energy task forces with many of the New England states to identify areas suitable for offshore wind energy development and to inform the process from planning through development. Each task force is a forum to share data and information to be used by BOEM in the decision-making process. Membership includes federal agencies with interests off the particular state's coast, state agencies, municipalities, and tribes.
- **Continue DOI/DOE collaboration on offshore renewable energy:** The DOI and the DOE will continue close collaboration in support of safe, efficient development of the offshore renewable energy industry in US waters. This collaboration will include reaching out to stakeholders for insight into technical, safety, and market challenges for the industry, contributing to updating the DOE/DOI National

Offshore Wind Strategy and other assessments, and coordinating research to better understand and mitigate the environmental impacts of offshore renewable energy technologies.

- **Obtain public, tribal, and state input on energy-related research:** BOEM will continue to partner in ongoing and planned studies, and commits to increased awareness of its research planning cycles to facilitate early involvement of the RPB entities. BOEM will continue to solicit and consider state, tribal, and public input to its annual National Studies List through outreach, webinars, announcements on data portals, and websites.
- **Develop an integrated regional ocean research agenda:** The RPB entities will collaborate to develop an integrated regional science and research agenda, including identifying opportunities, as appropriate, for coordination/collaboration with the Subcommittee on Ocean Science and Technology (SOST) on the overall agenda, and working with the National Oceanographic Partnership Program (NOPP) to facilitate discussion and support of specific research projects.
- **Continue collaborative federal and state data collection efforts:** BOEM will continue to engage in cooperative research efforts with states to collect data of mutual interest, as appropriate. For example, BOEM partnered with the state of Massachusetts to collect baseline information about marine mammals, sea turtles, and avian species in the Massachusetts Wind Energy Area.
- **Continue to participate in the Interagency Working Group on Offshore Wind:** BOEM and DOE are participating on the Interagency Working Group on Offshore Wind, which was established by the White House in September 2015 to promote effective coordination among federal agencies (including NOAA, DOT, EPA, USCG, DOD, USACE, and others). In March 2016, the Offshore Wind Permitting Subgroup, led by BOEM, was established for the purpose of identifying opportunities to improve interagency coordination on all aspects of permitting offshore wind projects.
- **Engage tribes in renewable energy leasing and permitting processes:** BOEM will continue its internal policy of inviting tribal partners to be cooperating parties in the preparation of NEPA documents, as well as in programmatic agreements and post review discoveries clauses with tribal partners for each stage of BOEM's renewable energy process.





AQUACULTURE



Aquaculture is an important maritime sector in New England with operations dotting the shoreline and providing locally grown seafood and jobs. Over a dozen finfish, shellfish, and algae species are, or have been, commercially grown in the region, including American oyster, Atlantic salmon, steelhead trout, Atlantic sea scallop, bay scallop, blue mussel, European oyster, green sea urchin, quahog, kelp, and soft-shell clam. Shellfish aquaculture is more widespread than finfish aquaculture in New England, with over 1,500 leases from Maine to Connecticut producing \$45 million–\$50 million per year of dockside value (point of first sale), with oysters representing the largest portion of that total.¹

Shellfish aquaculture operations in New England include small, family-owned companies (often with roots in fishing families or from communities looking for economic diversification from wild harvest fisheries) as well as large corporations. Commercial finfish aquaculture in New England almost entirely consists of Atlantic salmon rearing in Maine, which had a market value of over \$73 million in 2010.² At that time, the majority of this production came from one New Brunswick-based company, with a few other smaller, family-owned operations.

There is future growth potential for aquaculture in New England. National production of farm-raised seafood increased 8 percent per year from 2007 to 2012, with local shellfish production recently reaching all-time highs in several states.³ Interest in the production of new species, such as certain seaweed varieties, and in establishing polyculture facilities that combine multiple species at one site is also increasing.

Combining finfish, shellfish, and kelp in a single site can help buffer the effects of changing market and environmental conditions and can mitigate waste and nitrogen inputs from finfish aquaculture. In addition, while shellfish aquaculture has traditionally been located in intertidal or nearshore waters, there has been recent interest in locating operations farther offshore (including in federal waters). There are many potential advantages to siting aquaculture offshore. Offshore areas often have better water quality and fewer existing activities that may conflict with the development of new facilities; therefore, offshore areas may be better suited for larger operations. However, there is currently no federal leasing authority and no designated lead agency for aquaculture in federal waters, and existing permitting processes are complex. Other challenges to offshore aquaculture include exposure to high-energy ocean conditions, biosecurity concerns, and increased distance to portside support and infrastructure.

In 2014 and early 2015, two longline blue mussel operations intended for commercial production were permitted in federal waters—one eight and a half miles off Cape Ann and the other in Nantucket Sound—representing the first two locations permitted for aquaculture in federal waters offshore New England. Permitting for these two facilities helped clarify the regulatory process and will inform the industry and regulators about siting aquaculture in federal waters. Through that process, regulators and the permit applicants identified potential conflicts with paralytic shellfish poisoning (PSP) closure areas, navigational safety, existing fisheries, essential fish habitat (EFH), and endangered species. They also identified permitting concerns related to potential impacts to National Marine Sanctuary resources and to federal consistency review with the Massachusetts Office of Coastal Zone Management. Each project sought and continues to seek a better understanding of the commercial potential of offshore areas by evaluating shellfish growth rates, environmental conditions, and different gear configurations.





REGULATION AND MANAGEMENT

Permitting aquaculture facilities is the responsibility of federal, state, and local authorities, depending on location and species. The permitting process is complicated by the necessity of obtaining separate permits for deploying structures on the site, for handling sublegal (undersized) animals, for discharging pollutants (if applicable), and for commercial harvesting. In state waters, states manage aquaculture according to individual state laws and regulations. Depending on the state, project proponents must acquire a lease, license, or permit for the site and for the propagation of the species being grown. Federal permits, through the USACE and EPA, are also typically required for projects in state waters.

In federal waters, the USACE is currently the lead permitting agency (through RHA for siting facilities) with other federal agencies coordinating to address protected species and habitat (NMFS), water quality (EPA primarily, which, depending on the nature of the proposed facility, also may be the lead agency for a separate permit for discharges), navigational safety (USCG), or other siting-related issues. A NOAA permit is also required for aquaculture of federally managed species in federal waters.

There is currently no federal leasing authority for aquaculture in federal waters such as exists in many states. The inability to obtain a lease is cited by many aquaculturists as a hindrance. The differences between a permit and a lease can sometimes be complicated, but generally, permits provide the terms for the conditional use of an area and leases provide the additional right to occupy a given area for a specific time period. This additional occupation right is sometimes necessary to obtain project financing. While a formal aquaculture leasing process does not currently exist in federal waters, the Energy Policy Act of 2005 allows for alternative uses of existing facilities on BOEM leases. This allowance provides for the potential colocation of aquaculture with offshore energy installations (which may raise complicating issues such as the potential attraction of marine birds to concentrated food resources).

The National Shellfish Sanitation Program (NSSP) is the federal-state cooperative program recognized by the US Food and Drug Administration (FDA) and the Interstate Shellfish Sanitation Conference (ISSC) for the sanitary control of shellfish produced and sold for human consumption. The public health provisions of the NSSP have significant effects on aquaculture producers through growing area closures, product handling requirements, and labeling.

At the national level, several recent initiatives are aimed at encouraging offshore aquaculture, particularly in federal waters, by clarifying the regulatory process and advancing research. The most relevant of these for ocean planning purposes are the following:

- In 2008, the US Government Accountability Office (GAO) issued an assessment of offshore aquaculture focused on establishing a regulatory framework and highlighting the need for such a framework to address four overall issues: program administration, permitting and site selection, environmental management, and research.⁴
- In 2014, the White House National Science and Technology Council's Interagency Working Group on Aquaculture issued a five-year strategic plan for federal research to encourage aquaculture in the United States. This plan includes nine critical strategic goals and identifies federal agency and interagency research, science, and technology priorities.⁵

- In 2016, NOAA’s Office of Aquaculture⁶ issued a strategic plan that intends to provide science, services, and policies in support of “significant expansion and sustainability of US marine aquaculture.”⁷ It includes objectives and strategies to achieve overall goals related to regulatory efficiency, tools for sustainable management, technology development and transfer, and an informed public. Included in these objectives and strategies are topics such as developing tools to inform aquaculture and siting and management decisions, and improving interagency coordination on permit applications.⁸
- A memorandum of understanding (MOU) has been developed for permitting offshore aquaculture activities in federal waters of the Gulf of Mexico. This MOU is intended to improve coordination between the seven federal agencies involved and to streamline the regulatory process. The agencies involved are the USACE, NMFS, USCG, EPA, USFWS, BOEM, and the Bureau of Safety and Environmental Enforcement (BSEE) within DOI. The MOU is expected to be signed by all participating agencies soon. Although this MOU is limited to aquaculture operations located in the Gulf of Mexico, it could serve as a model for other areas of the US coast, including New England.

Numerous regional efforts to support aquaculture have been useful for informing ocean planning:

- The Northeast Regional Aquaculture Center (NRAC) is one of five US regional centers established by Congress to “support aquaculture research, development, demonstration, and extension education to enhance viable and profitable US aquaculture production which will benefit consumers, producers, service industries, and the American economy.”⁹ NRAC’s mission is to “focus ... on science and education that will have a direct impact on attaining long-term public benefits through enhanced aquacultural development in the region.”¹⁰
- In 2010, NRAC, in conjunction with NOAA, supported an effort by the East Coast Shellfish Growers Association to publish a best management practices manual.¹¹ The manual provides descriptions of various shellfish culture methods, lists state extension and advisory contacts, and includes “best management” guidance.
- The Northeast Aquaculture Conference and Exposition (<http://www.northeastaquaculture.org>) provides a forum for hundreds of growers, researchers and scientists, agency staff, and others to discuss the latest developments in technology and scientific research, announce new initiatives, and coordinate.

For certain tribes in New England, aquaculture (particularly shellfish) has important food provisioning and environmental value. Through the ocean planning process, RPB tribes also expressed interest in shellfish aquaculture sites and habitats (particularly for razor clams, soft-shell clams, quahogs, and mussels), recognizing that these areas are important to tribal sustenance and water quality restoration projects. Shellfish bed restoration opportunities have also been identified as being of interest to coastal tribes.



MAPS AND DATA

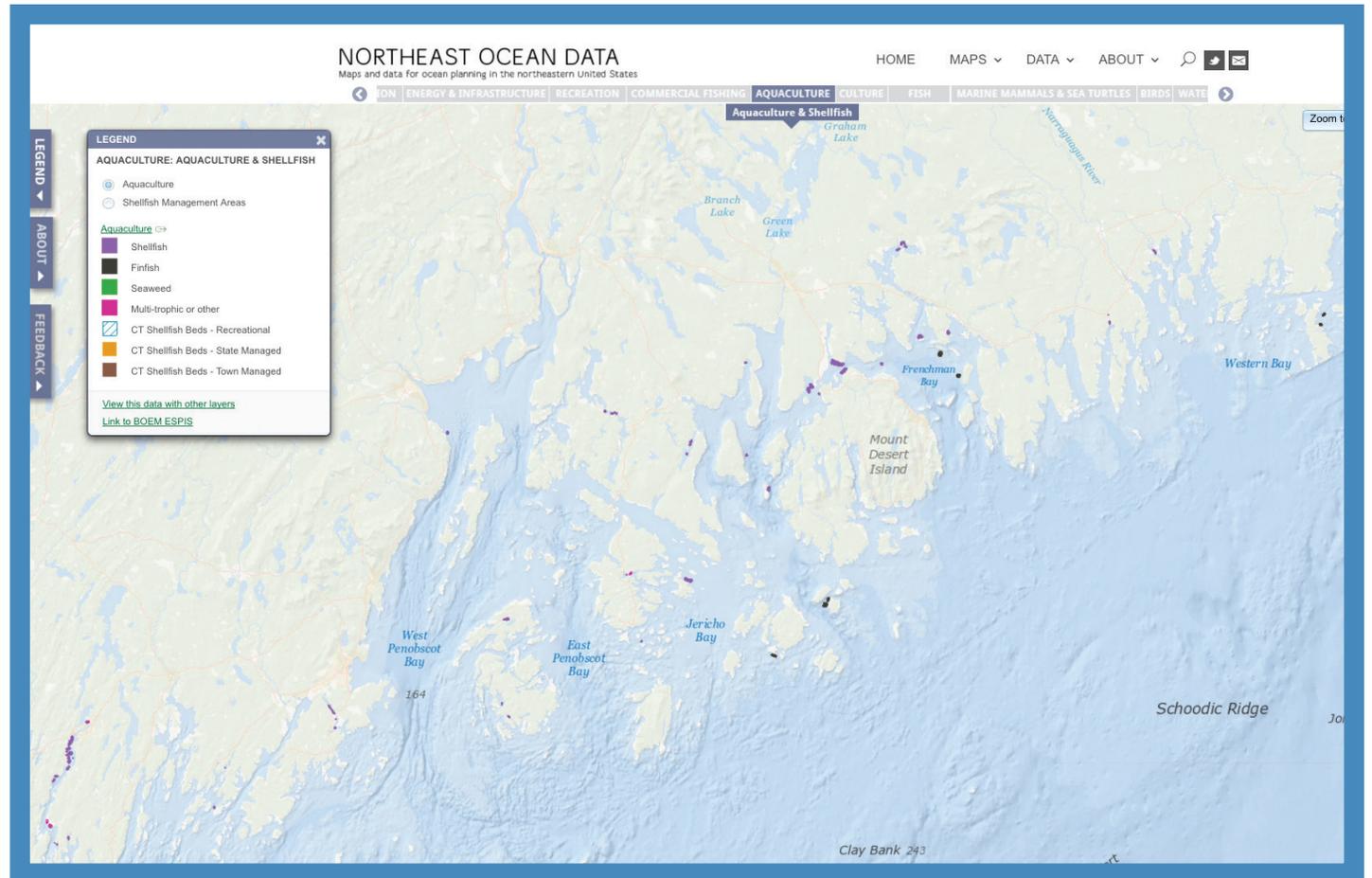
The Portal includes a series of maps characterizing the current footprint and relevant management areas for aquaculture in the region.

Current aquaculture footprint

The Aquaculture map shows sites that have been leased or permitted in the region. In addition, the map shows municipally managed, state-managed, and recreational shellfish beds in Connecticut. The map distinguishes between shellfish, finfish, seaweed, and multitrophic operations in each state's waters. These data are drawn from authoritative state sources and merged into a regional dataset with input and review from each of the data providers. The Portal map also includes the location of the two recently permitted blue mussel operations in federal waters. The location of these permitted sites was provided by USACE.

Management areas

The Shellfish Management Areas map includes shellfish growing and classification areas for New England states and New York. The classification scheme used in this regional dataset is adapted from the National Shellfish Sanitation Program's *Guide for the Control of Molluscan Shellfish*. These data are merged from the same authoritative state sources.



This map displays the areas currently used for shellfish, finfish, and seaweed aquaculture in the area between Penobscot Bay and Frenchman Bay, Maine.



OVERVIEW

ACTIONS

- A 1 Maintain aquaculture maps and data on the Portal
- A-2 Identify additional data to support aquaculture siting
- A 3 Inform regulatory and environmental review of agency actions for their potential impacts to existing aquaculture
- A-4 Inform permitting, leasing, and environmental review of proposed aquaculture operations
- A-5 Ensure the Plan and Portal are used by agencies and project proponents
- A-6 Continue interagency work group to inform regulatory and siting issues
- A 7 Coordinate with national and regional initiatives to support and promote marine aquaculture

ACTIONS: MAINTAIN AND UPDATE DATA

A-1. Maintain aquaculture maps and data on

the Portal: USACE and NOAA (for federal waters) and the states (for state waters) will review the maps of current aquaculture operations and shellfish management areas annually and provide updates to the Portal Working Group. Although most of the data comes from state fishery and aquaculture agencies, data on the location of permitted aquaculture operations (particularly in federal waters) can be corroborated with USACE. In addition, NOAA will provide maps of federally designated PSP closure areas (for example, PSP closures have been issued as part of managing the surf clam/ocean quahog commercial fishery).¹²

A-2. Identify additional information to

support aquaculture siting: RPB agencies will consider incorporating additional data into the Portal, including recent permitting information from the Public Consultation Tracking System¹³ managed by NMFS that provides information on its regulatory consultations, information about the potential effects of aquaculture on listed species and critical habitat from recent biological opinions developed under ESA,¹⁴ and data resulting from new scientific studies.

ACTIONS: INFORM REGULATORY AND MANAGEMENT DECISIONS

A-3. Inform regulatory and environmental review of agency actions for their potential

impacts to existing aquaculture: To the extent practicable, RPB agencies will use the data referenced in the Plan and the Portal when considering the potential effects of proposals for new offshore projects. The data will assist with the preliminary identification of potential conflicts with existing aquaculture operations and shellfish habitat areas, aid in the identification of potentially affected stakeholders, and identify when and where additional information (for example, regarding compatibility with existing aquaculture) may be required.

A-4. Inform permitting, leasing, and environmental review of proposed aquaculture

operations: To the extent practicable, RPB agencies will use the Plan and the Portal to inform environmental review and permitting processes for newly proposed aquaculture operations. Data and information in the Plan will be used in the preparation of baseline information for environmental assessments. Additionally, maps of human uses—specifically, marine transportation, fishing, and recreation, which are the most likely existing activities to interact with new aquaculture operations—will



be used to help identify potentially affected stakeholders who should be engaged early in the project review process. Early engagement will assist with the identification of additional information needed for permit review, including details about any potential use conflicts.

Data related to marine life will also be used to help consider potential interactions with marine life species and habitat. Depending on the specific type of aquaculture, project proponents, agencies, and stakeholders can first consider those marine life species groups and habitats that are likely to have the greatest interaction.

For example, aquaculture may interact with birds that feed on the same fish and shellfish or forage in the same areas as the species that are being grown. Also, proposed offshore aquaculture operations with gear primarily located in the water column are relatively more likely to interact with pelagic species. An analysis of this type has actually already occurred using data from the Portal: project proponents for the longline mussel project in federal waters east of Cape Ann, Massachusetts, used marine mammal distribution and abundance and other information from the Portal in their biological assessment.

A-5. Ensure the Plan and the Portal are used by agencies and project proponents: RPB agencies will incorporate, where practical and appropriate, the use of the Plan and the Portal into existing internal agency guidance for implementing NEPA. Relevant federal agencies, including USACE, NOAA, and BOEM, and the Northeast states will also identify the Plan and the Portal in guidelines to developers, where practical, or refer aquaculture applicants to the Portal and the Plan as sources of information for siting decisions (particularly for potential operations in federal waters). States will use the Portal as one source of information in the review of offshore aquaculture proposals for federal consistency.

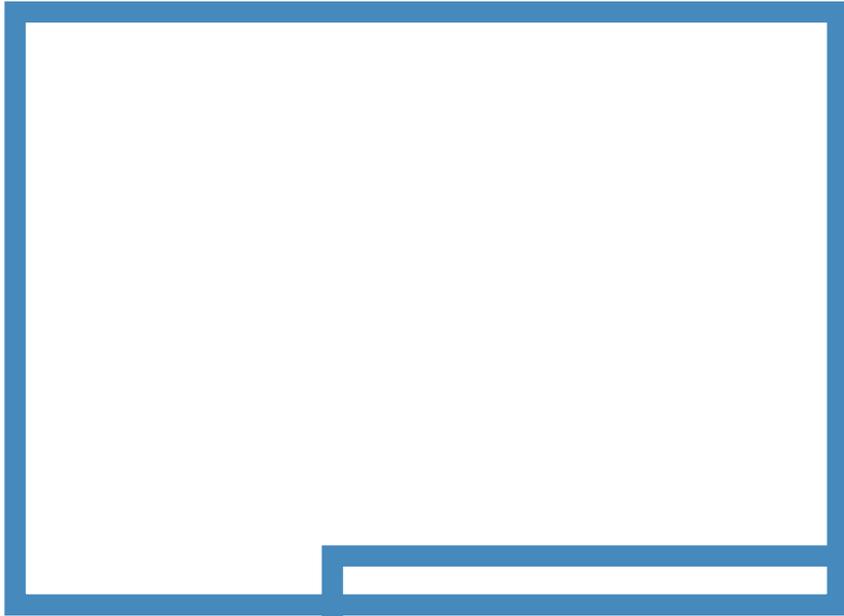
ACTIONS: ENHANCE AGENCY COORDINATION

A-6. Continue interagency work group to inform regulatory and siting issues: In recent years, federal agencies in the Northeast US have coordinated to consider ways to address permitting and other issues related to offshore aquaculture in federal waters. In particular, an interagency work group composed of staff from USACE, NOAA, EPA, and BOEM has met throughout the planning process to identify issues and inform the development of the Plan. These agencies will continue to meet (and include USFWS and states as appropriate) to advance the following activities:

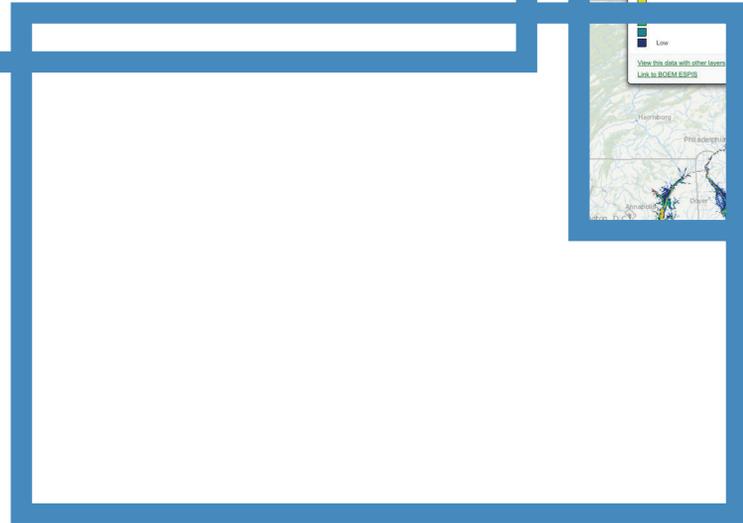
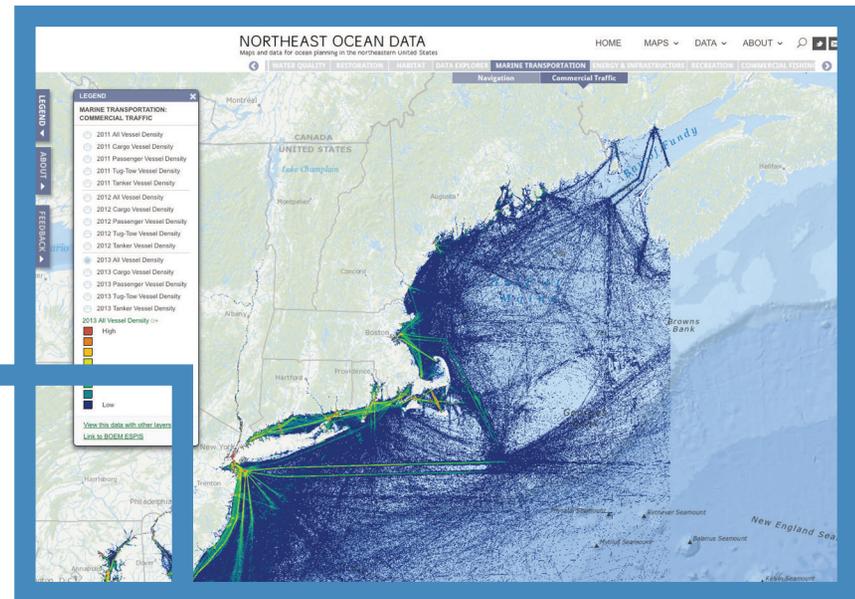
- Using data from the Portal and other sources, map areas of federal waters where potential aquaculture impacts (to specific priority species) and conflicts or synergies (with existing human activities) are more likely to occur and should be considered when siting an aquaculture facility. For example, bird data for species that could be drawn to aquaculture facilities (e.g., species such as gannets, scoters, and eiders that feed on blue mussels) could be examined to determine potential for depredation. Many considerations would have to be taken into account for this type of analysis, such as the specific type of aquaculture and whether the potential application of

AQUACULTURE

Herring fishing vessel density (representative of potential interaction with fishing activity)



Commercial shipping vessel density



Recreational boating density

Fishing, recreation, and marine transportation are the three ocean uses most likely to interact with new aquaculture operations.

the mapping effort would be useful, given dynamic ecological conditions and technological advancements.

- Develop information using Portal data and other sources to assist with the siting of aquaculture facilities, given the physical, biological, and chemical requirements of certain species and the logistical and operational limitations of different gear types. This information could include water quality, currents, bathymetry, or other physical and biological oceanographic characteristics used to help determine the feasibility and practicality of potential sites.
- Share information and best practices related to gear types and culturing methods for different species, including potential impacts on marine species and water quality. This activity includes sharing information about entanglement hazards for marine mammals and sea turtles, potential interactions with migratory birds, the strength and tension of different types of lines in the water, and water quality considerations including monitoring.
- Review the MOU developed in the Gulf of Mexico and determine whether an MOU for aquaculture in New England federal waters would improve regulatory coordination.

- Ensure that aquaculture proponents and stakeholders who have expressed an interest are able to participate in each of these activities; their knowledge will be critical to the success of these efforts. The interagency work group will engage the aquaculture community and others as these activities progress. Increasing public involvement and awareness through coordinated outreach efforts by the permitting and resource agencies will help to reduce user conflicts and can be beneficial in reaching resolution early in the permit review process.

A-7. Coordinate with national and regional initiatives to support and promote marine aquaculture: RPB agencies, particularly NOAA, will continue to coordinate initiatives to support and promote marine aquaculture, including the following specific activities:

- RPB agencies will continue to coordinate on the implementation of the five-year strategic plan for research issued by the White House National Science and Technology Council's Interagency Working Group on Aquaculture.
- RPB agencies will have opportunities to coordinate through the RPB in the implementation of the NOAA Office of Aquaculture strategic plan.

- NOAA/GARFO will facilitate and promote communications internally, and will collaborate with other federal and state agencies and with the marine aquaculture industry to identify information needs essential for streamlining NOAA's consultation activities as part of the permitting process.
- NOAA will also facilitate collaboration between GARFO, USFWS, NEFSC, and state agencies, and with the regional aquaculture industry, to identify and evaluate research and information needs to promote marine aquaculture development in the greater Atlantic region.
- NOAA will seek to advance public understanding with respect to benefits, potential impacts, and management of marine aquaculture through its outreach activities and associated funding opportunities in the greater Atlantic region.



OFFSHORE SAND RESOURCES



Hurricanes, nor'easters, and other strong storms may only last a day or two, but it may take years for coastal communities to recover and rebuild from the erosion and damage they cause. The effects of climate change—rising sea levels and the increasing frequency of strong storms—exacerbate these risks. Global sea levels are projected to rise by one to four feet by 2100, with most of the coastal Northeast United States expected to exceed this global average. A sea level rise of two feet, without any changes in the severity and frequency of storms, would more than triple the frequency of dangerous coastal flooding throughout most of the Northeast US.¹

Much of New England's shoreline is extensively developed, and low-lying coastal metropolitan areas in the region have considerable infrastructure at risk. Consequently, many coastal communities in New England are facing the reality of more frequent flooding and coastal erosion that adversely affect residential and commercial areas, recreation and other aspects of the coastal economy, critical infrastructure, and important habitat. The Northeast's coastal ecosystems and the species that inhabit them are highly vulnerable to rising seas. Beach and dune erosion, both a cause and an effect of coastal flooding, is a major issue in the region. Impervious urban surfaces and coastal barriers, such as seawalls, limit the ability of marshes to migrate inland as sea levels rise.²

There are many possible ways for coastal communities to address coastal erosion and vulnerability issues. These include the use of natural vegetation to help stabilize shorelines and dunes; construction of hard structures (sea walls, breakwaters, riprap, groins, jetties,

or bulkheads); relocation of infrastructure or structures; use of dredged material (such as from a nearby dredging project) to help rebuild and widen beaches; use of upland sources of sand and other material; and other site-specific activities.

The potential use of offshore sand resources from federal waters (beyond three nautical miles off the coastline) is another option currently being considered in New England. The Plan focuses on this option for several reasons, including that such sand extraction would be a new activity for this region. There is a growing need for sand, and there are currently no projects in New England that use federal sand resources. Therefore, this Plan provides the opportunity to advance the assessment of federal sand resources in the region and to better understand the potential impacts and benefits associated with the extraction and use of these resources in preparation for potential future needs.

Secondly, the Plan is being developed in response to regional priorities and a presidential executive order. The extraction of sand in federal waters was specifically mentioned in the RPB's *Framework for Ocean Planning in the Northeast United States*, and much like other topics in the Plan, this section focuses on emerging ocean uses in federal waters under federal authorities. Finally, many of the other coastal resiliency options are outside the purview of this Plan. There are existing processes to assess sand resources in state waters, and decisions about the appropriate method for addressing coastal erosion issues are made based on the unique characteristics of each location.

The potential identification and use of federal sand resources in New England requires more research. Sand deposits have not been well mapped in many areas, except for general trends (for example, larger sand deposits are more likely offshore southern New England than the more geologically and geomorphologically diverse areas offshore Maine, New Hampshire, and much of northern Massachusetts). There is also limited information on the impacts to important habitat and the resulting conflicts with and potential effects on commercial and recreational fisheries.

Offshore shoals and ridges may provide good sources of sand; they may also represent valuable habitat for fish and other species. Shoals

are dynamic features that attract a diversity of marine life, producing a variety of habitat types and foraging opportunities for a range of finfish, shellfish, and migratory species. Dredging can alter the bathymetric contours (depths and gradients) of shoals and ridges.

It is known that the structural complexity of rocky habitats, such as gravel and cobble that are often mixed in with sand resources in New England, provide fish with shelter and refuge from predators. These rocky habitats are highly used by commercially important species such as Atlantic cod and American lobster. They are vulnerable to disturbance due to slow recovery times, and excavation of these gravel and cobble sources could lead to a complete loss of habitat value in some areas. Therefore, the composition and habitat value of potential sand borrow areas must be studied carefully, and these areas should be avoided if unsuitable for extraction.

In addition to benthic habitat impacts in areas where sediments are extracted, the placement of sediment on beaches and nearshore areas can also impact neighboring shallow water habitats such as seagrass meadows and areas of high benthic complexity (e.g., gravel and cobble) as the new material moves offsite and buries adjacent bottom habitat. Sand placement can also impact macroinvertebrates and the bird and fish species that feed on them, an impact not unique to the use of offshore

sediment sources. These concerns underscore the need to use comparable material to existing sediments for nourishment, and to perform a detailed evaluation of neighboring habitats during the permit review process.

All of the options available for addressing coastal erosion and vulnerability issues, including the use of federal sand resources, involve complex scientific, financial, engineering, and policy issues. General trends such as sea level rise need to be considered in concert with the nearshore sediment processes that affect individual properties or neighborhoods. In addition, there are financial costs, impacts to the natural and built environment, engineering, and other considerations. At the same time, there are many potential public benefits for the use of offshore sand, including improved coastal access and recreational opportunities, protection of coastal infrastructure and residential and commercial areas, and the option for another alternative to using seawalls and other hardened structures. A full assessment of the appropriate coastal resiliency solution is generally completed on a case-by-case basis by the appropriate local, state, and federal agencies. For example, the enhanced storm protection, economic, and recreational benefits provided by a widened beach have to be weighed against the environmental and other potential effects and costs of removing, transporting, and placing sand onshore.

REGULATION AND MANAGEMENT

Permitting and leasing

BOEM is charged with environmentally responsible management of certain federal outer continental shelf resources (such as oil and gas, sand and gravel, and seabed for leasing and development of renewable energy infrastructure). Public Law 103-426 (43 USC § 1337[k][2]), enacted in 1994, grants the Secretary of the Interior (through BOEM) the authority to negotiate, on a noncompetitive basis, the rights to OCS sand, gravel, and shell resources for shore protection, for beach or wetlands restoration projects, or for use in construction projects funded in whole or in part, or authorized by, the federal government. As the steward for these resources, BOEM must ensure that the removal of any mineral resources is done in a safe and environmentally sound manner, and that any potential adverse impacts to the marine, coastal, and human environments are avoided or minimized.

BOEM's Marine Minerals Program (MMP) is the nation's steward and scientific expert for nonenergy marine mineral resources (i.e., mud, sand, gravel, and shell) in the OCS. The MMP authorizes use of OCS resources in support of USACE federally authorized and/or locally permitted coastal resiliency projects, since one of the primary missions of the USACE is flood risk management with beach nourishment as one way to achieve this mission. BOEM and USACE partner in varying capacities to support resilient coasts because of their complementary missions and roles.

BOEM uses three standard negotiated noncompetitive agreements (NNAs), as determined by the nature of a project, to formalize rights to use OCS resources: a two-party lease, a two-party memorandum of agreement (MOA), or a three-party MOA. The agreement or lease describes the project and procedures that will be followed to access and use the OCS sand and identifies environmental and operational stipulations. BOEM typically issues an MOA for projects using offshore sediment conducted by the USACE Civil Works Program. A lease is issued if the project is not federally funded and the USACE is involved in permitting under CWA or RHA.

The USACE may be the lead for flood risk management projects with a nonfederal partner using sediments from state waters (such as using dredged material). The USACE

Civil Works Program is authorized to implement small projects (for example, under \$10 million) executed with state or local municipalities under the USACE Continuing Authorities Program.³ Other opportunities on a regional scale, such as projects in western Long Island Sound after Hurricane Sandy, usually require congressional authorization and the state as a nonfederal lead.

Prior to proceeding with a project, BOEM and/or USACE must conduct a review of all environmental impacts through the NEPA process, by developing either an environmental assessment or an environmental impact statement, and must ensure that the project complies with applicable laws. This requirement includes considering the Coastal Zone Management Act (CZMA) with respect to state coastal program policies (federal consistency), the National Marine Sanctuaries Act with respect to potential effects to sanctuary resources, and numerous other consultations about potential impacts to existing uses and resources. For example, any project will likely require consultation with NMFS on impacts of the project to essential fish habitat (EFH) under MSA, to natural resources under the Fish and Wildlife Coordination Act, and to federally listed species under the ESA. NMFS would then work with the lead federal agency to help identify and evaluate options for reducing impacts.

Based on the NEPA analysis and other consultations, BOEM may include mitigation measures and other stipulations in the MOA or lease to protect physical, biological, and cultural resources. These stipulations often include the following: dredging time-of-year restrictions, dredge location constraints, lighting requirements, equipment requirements, monitoring requirements for threatened and endangered species, and buffers surrounding cultural resources and hard-bottom habitat.

To date, BOEM has conveyed rights to over 110 million cubic yards of OCS sand for coastal restoration projects in multiple states along the Atlantic and Gulf of Mexico coastlines. These projects have occurred along 260 miles of the nation's coastline. BOEM has seen a steady increase in the number of projects using OCS sand sources. While BOEM has not issued any sand leases in New England, demand in this region is expected to occur in the future as the needs increase with sea level rise and storm impacts.

Regional sand needs and assessing potential federal offshore sources

Hurricane Sandy highlighted the need for all stakeholders to take a more proactive regional approach to building coastal resilience, rather than addressing needs at the individual project scale. Under the Disaster Relief Appropriations

Act of 2013, BOEM received \$13.6 million for coastal resiliency studies and efforts undertaken in response to Hurricane Sandy. BOEM is also utilizing a portion of the Hurricane Sandy recovery funds to implement a regional approach to strengthening coastal resilience.

In 2014, 13 coastal states, including Maine, New Hampshire, Massachusetts, and Rhode Island, received funding from BOEM to update maps and databases of offshore sand resources to address future requirements. These cooperative agreements support capacity building, assessment of state sand needs, and evaluations of existing information on OCS sediment resources. Additionally, in 2015, BOEM initiated the Atlantic Sand Assessment Project (ASAP) from Florida to Maine to collaboratively identify new potential OCS sand resources. The ASAP was composed of geophysical surveys and geological samples (using sampling techniques such as vibrocores and sediment grabs) collected three to eight miles offshore in water depths less than 30 meters (approximately 90 feet), where extraction is the most economically and technologically feasible with current equipment. The ASAP, when coupled with broad-scale environmental monitoring, will facilitate a regional sand resource management perspective.

Also in 2015, NROC established the Sand Management Subcommittee. This subcommittee

is co-led by USACE, BOEM, and the commonwealth of Massachusetts, and it includes each of the other New England states, NOAA, EPA, and the US Geological Survey (USGS). The NROC Sand Management Subcommittee, later endorsed by the RPB, is a forum where state, tribal, and federal agencies can discuss future sand needs, collaborate on identifying sources of sand available for beach nourishment, and consider the potential issues associated with this use. Through the subcommittee, USACE and the states developed a preliminary list of onshore areas requiring replenishment, including the volume and type of material that is needed.

MAPS AND DATA

Although there is not currently an "offshore sand resource" map theme on the Portal, the Portal provides a range of information to support the identification of sand resources and to help identify any potential conflicts with proposals to extract sand for coastal replenishment. The Portal includes a centralized source of all federally available high-resolution multi-beam sonar surveys conducted over the past 10 years in the region, a compilation of derived products broadly characterizing sediment type and seabed forms (in the Habitat theme), and extensive data on marine life and existing human activities.



OVERVIEW

ACTIONS

- S-1 Maintain datasets related to the identification and use of resources on the OCS
- S-2 Develop an Offshore Sand Resources theme on the Portal
- S-3 Characterize areas for future sand resource data collection and assessment
- S-4 Incorporate the Plan and the Portal into environmental reviews associated with the identification or use of sand resources
- S-5 Ensure agencies use the Plan and the Portal
- S-6 Continue regional collaborations to identify sand needs and potential sand resources
- S-7 As funding allows, conduct additional geological and biological investigations of offshore sediment resources and pursue an intergovernmental effort to coordinate the use of sediment resources



ACTIONS: MAINTAIN AND UPDATE DATA

S-1. Maintain datasets related to the identification and use of resources on the OCS:

Currently, BOEM's MMP is developing a Marine Minerals Geospatial Information and Management System, which is compiling marine mineral data from historic BOEM cooperative agreements, lease information, and data, and will be incorporating information from current cooperative agreements and studies. Through this system, BOEM's MMP will have established workflows for updating the marine mineral datasets as well as the metadata using ArcGIS Geodatabase Technology. Federal OCS Sand and Gravel Borrow Areas (lease areas) will continue to be registered at <http://www.data.gov/> and <http://marinecadastre.gov/>. This dataset will be reviewed annually, at a minimum, through the National Geospatial Data Asset (NGDA) Dataset Lifecycle Maturity Assessment Survey process. BOEM will also update the marine mineral lease areas map as new leases are signed. Furthermore, BOEM's MMP is working on compiling potential sand resource areas identified through cooperative agreements, resource evaluations, and studies (such as those listed in BOEM's Environmental Studies Program Information System [ESPIS]⁴). This baseline dataset is in progress with state partners. Once complete, BOEM's intent is to provide locations of significant sand resources to the Portal.

S-2. Develop an Offshore Sand Resources

theme on the Portal: The RPB, in collaboration with the NROC Sand Management Subcommittee and the Portal Working Group, will develop an Offshore Sand Resources theme on the Portal. The theme will identify and present the data most relevant to identifying and potentially using sand resources within the region for coastal replenishment. The RPB and the subcommittee will consider the following maps and information:

- Areas needing sand resources
- Areas recently investigated or to be studied further for sand resources in state and federal waters
- Marine life, habitat, and existing human activities that are most likely to interact with potential sand borrow areas
- Other information provided by the states, USGS, USACE, and BOEM, including data from the federal Marine Minerals Geospatial Information and Management System

ACTIONS: INFORM REGULATORY AND MANAGEMENT DECISIONS

S-3. Characterize areas for future sand resource data collection and assessment:

RPB agencies will have access to data on the Portal and referenced in the Plan, along with many other sources of information, to support the characterization of areas for potential sand resource data collection and assessment. The Plan and the Portal provide information on environmental, human, and cultural resource constraints for development of candidate sand resource areas. For example, areas of particular concern due to heavy commercial or recreational fishing interests would ideally be avoided for assessment unless all other viable options have been exhausted.

Agencies responsible for obtaining sand resources will, to the extent practicable, first consider the data and maps provided in the Commercial Fishing, Marine Life, and Habitat themes on the Portal and refer to those sections in this Plan due to the higher likelihood of interactions with those uses and resources. In addition, specific marine life groupings and species may be more appropriate than others. For example, maps of regulated habitat areas and regulatory marine life groups will be used as one source to screen for potential impacts to protected species. Maps of certain ecological

groupings, such as benthic feeding bird species and demersal fish, will help identify areas where marine life species are more likely to be affected by disturbances to seafloor habitat. The identification of these areas through the ongoing mapping efforts will be useful in initial reconnaissance determinations for identifying potential offshore sand resources.

S-4. Incorporate the Plan and the Portal into environmental reviews associated with the identification or use of sand resources:

Agencies responsible for environmental analyses associated with the use of offshore sand resources will, to the extent practicable, use the data and information in the Plan and the Portal during project scoping. The data will enable consistent regional characterizations of existing conditions and trends, support the identification and avoidance of potential conflicts and resource impacts, and aid in the determination of potentially affected stakeholders. Lastly, the Portal and the Plan will help determine whether additional information or scientific research will be required to inform decisions.

Because BOEM has not issued a lease for an OCS borrow area in New England to date, the compilation of these environmental data provides useful baseline information from which to gauge potential impact, and to examine possible mitigation and minimization measures in federal waters. In addition, BOEM's environmental studies are often driven by data gaps. The ability to examine known data on a regional scale via the mapping effort will be vital in BOEM's internal deliberations about potential data gaps related to OCS sand source usage in the Northeast US. BOEM can then use this knowledge to identify potential questions or concerns that may arise through the NEPA process or during associated consultations that could be answered via an environmental study.

S-5. Ensure agencies use the Plan and the

Portal: To the extent practicable, RPB agencies will incorporate the use of the Plan and the Portal into existing internal agency guidance for implementing NEPA and other laws. As part of best practices in the use of best available data, BOEM and USACE will recommend applicants use the Portal as an information resource in their requests for sand and gravel.

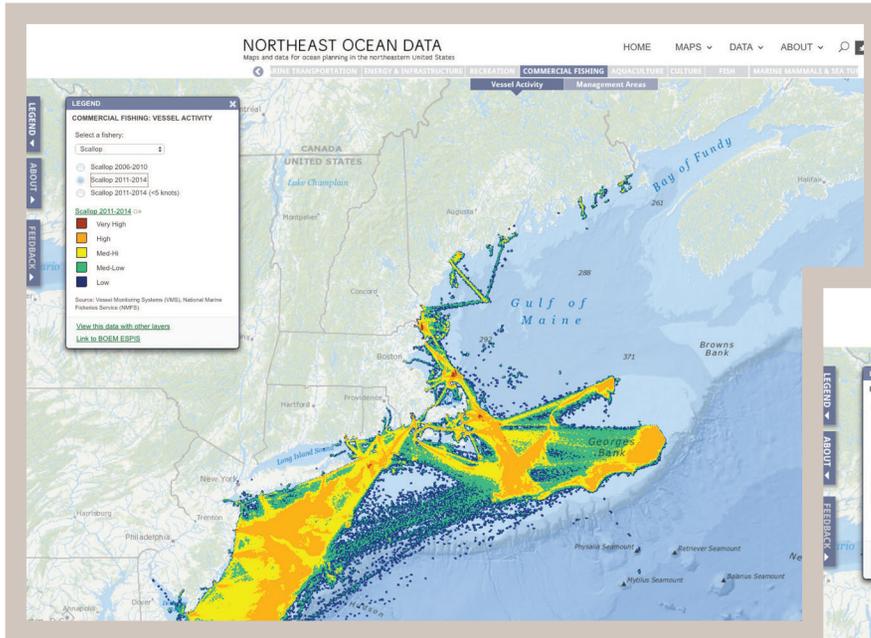
ACTIONS: ENHANCE AGENCY COORDINATION

S-6. Continue regional collaborations to identify sand needs and potential sand resources:

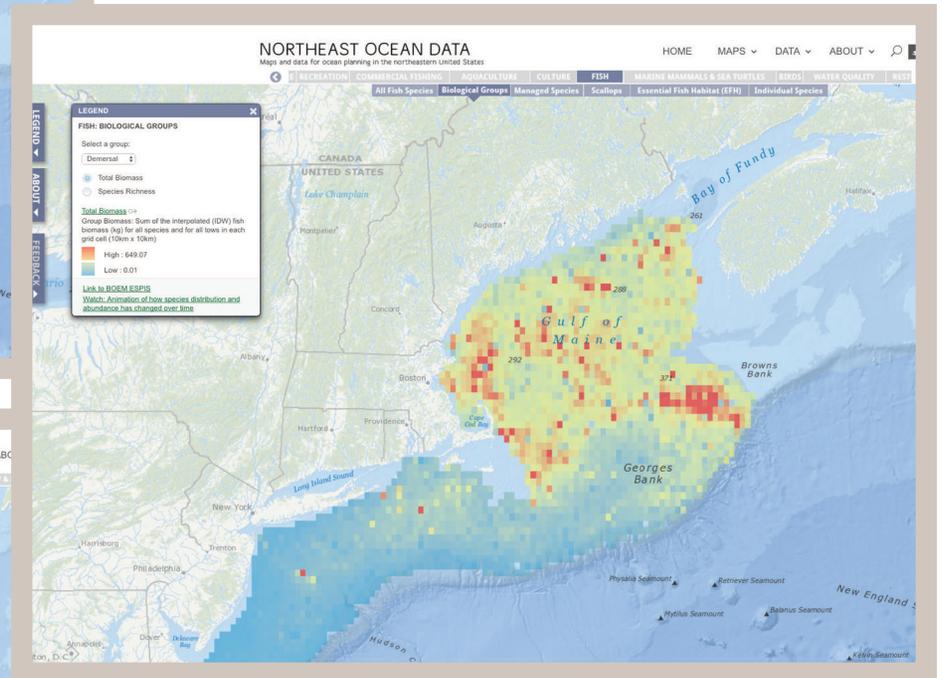
RPB agencies will continue to collaborate through the NROC Sand Management Subcommittee and existing federal and state cooperative agreements to implement the actions described in this Plan.

- NROC Sand Management Subcommittee:
 - The subcommittee will continue to be a regional forum where federal agencies, states, and tribes can coordinate on sand-related issues, particularly in federal waters. Specifically, this subcommittee will:
 - > For planning purposes, maintain a list of onshore locations potentially requiring sand resources, including the type and volume of material needed, and, where possible, will estimate the likely frequency at which each site will need to be replenished. Because shorelines are dynamic and priorities frequently change, the list will be updated regularly. The subcommittee will determine the appropriate method for sharing and publishing the list, recognizing that sand priorities can rapidly change and lists can become outdated.

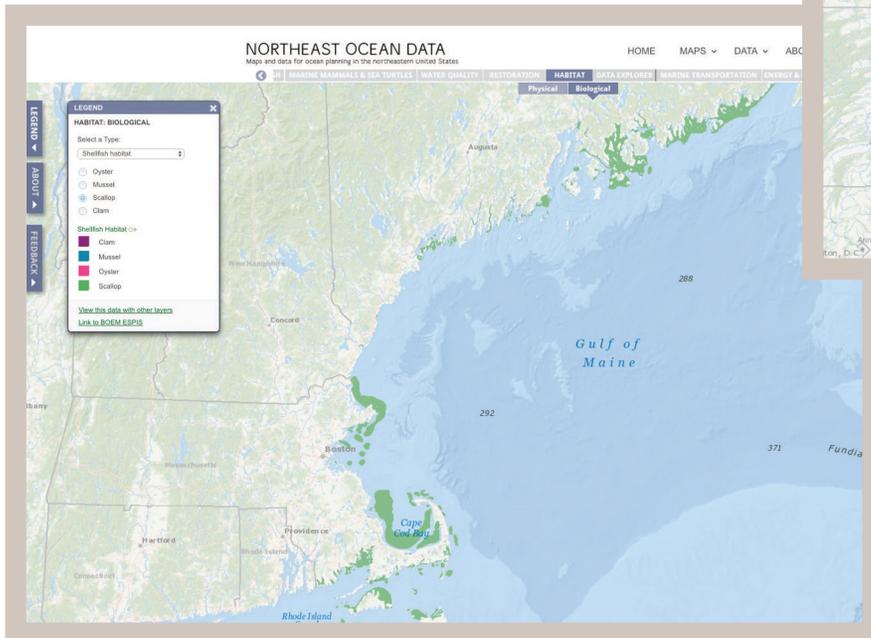
Scallop fishing vessel density (representative of potential interaction with commercial fishing)



The Portal helps identify fishing areas, marine life, and habitat that are more likely to be impacted by efforts to use offshore sand resources.



Total biomass of demersal fish species caught in the federal trawl survey



Nearshore shellfish habitat

- > For planning purposes, inform the prioritization of areas for future sand resource data collection. The subcommittee will be an important forum for consideration of future data collection activities.
- > Oversee the development of data and themes on the Portal related to the identification and use of offshore sand resources (as described in Action S-2).
- > Consider the environmental effects and advance research to better understand the potential impacts of offshore extraction and onshore placement of sand resources. Although there has been research into the effects of sand extraction on habitats south of New England, the results of that research may not translate well because of the unique or different habitats in New England's offshore environment. The subcommittee will help assess this issue and identify research needs that are specific to New England. As part of this task, BOEM and USACE will bring information to the subcommittee from relevant ongoing studies, such as those studies assessing the biological and habitat impacts of different dredging intensities. BOEM and NOAA will also collaborate on research to understand potential impacts to fish habitat.

- BOEM and state cooperative agreements: BOEM has partnered with the states on cooperative agreements to share data, identify future sand needs, identify OCS sand resource data gap areas, and evaluate existing data sources to identify potential OCS sand resources. These cooperative agreements support development of a regional inventory of potential offshore sand resources.

S-7. As funding allows, conduct additional geological and biological investigations of offshore sediment resources and pursue an intergovernmental effort to coordinate the use of sediment resources:

There may be a need for additional studies in the future, and for more formal oversight of coastal sediment issues in New England, which could evolve out of the NROC Sand Management Subcommittee. However, this type of effort would require additional funding, such as through a congressional authorization.

Coastal sediment replenishment in New England is a challenging initiative that will benefit from the USACE working with regional leadership. Several federal organizations such as the USGS are authorized to conduct regional geological and biological investigations of offshore sediment sources. Coordination of federal efforts to meet coastal resiliency needs should recognize regional priorities. The region particularly supports investigations that involve replenishment opportunities for multiple state or local intergovernmental jurisdictions, in order to promote a systems approach to meeting coastal resources needs. These coastal resiliency investigation projects may include federal, tribal, and state priorities for coastal storm risk management, ecosystem restoration, recreational beaches, back bays, and related purposes. Any individual projects recommended by these investigations would need to be implemented through appropriate authorities. The geological and biological investigations should complement and not duplicate the offshore investigations of BOEM and other state and federal agencies' investigations.

In addition to coordinating geological and biological investigations, participating agencies should make recommendations regarding efficient use of coastal sediment resources that fully consider the current extent of, and potential impacts to, marine life, habitat, and human activities. Agencies may formalize coastal sediment replenishment programs, techniques, and operations and ensure they are coordinated with the investigations and mappings of federal, state, and local agencies, as well as scientific and academic nongovernmental organizations.

Coastal sediment replenishment in New England is a challenging initiative that will benefit from the USACE working with regional leadership. Several federal organizations such as the USGS are authorized to conduct regional geological and biological investigations of offshore sediment sources. Coordination of federal efforts to meet coastal resiliency needs should recognize regional priorities. The region particularly supports investigations that involve replenishment opportunities for multiple state or local intergovernmental jurisdictions, in order to promote a systems approach to meeting coastal resources needs. These coastal resiliency investigation projects may include federal, tribal, and state priorities for coastal storm risk management, ecosystem restoration, recreational beaches, back bays, and related purposes. Any individual projects recommended by these investigations would need to be implemented through appropriate authorities. The geological and biological investigations should complement and not duplicate the offshore investigations of BOEM and other state and federal agencies' investigations.

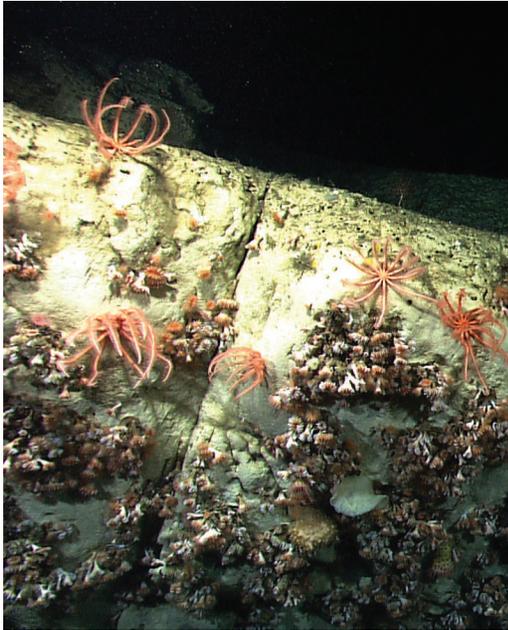


\$13.6M

Amount received by BOEM under the Disaster Relief Appropriations Act of 2013 for coastal resiliency studies and efforts undertaken in response to Hurricane Sandy



RESTORATION



Several sections of this Plan recognize the important linkage between the ocean and coasts, communities, and the ecosystem as a whole. Coastal communities and many marine species depend on healthy nearshore habitats, estuaries, marshes, and watersheds. In recognition of this relationship, the RPB included an objective and an action in the *Framework for Ocean Planning in the Northeast United States* to identify, support, and coordinate existing nonregulatory opportunities for activities, such as restoration, that are important management goals of many agency programs, tribes, and states.

Therefore, for the purposes of this section of the Plan, restoration refers to projects that are not associated with permitting, leasing, or licensing (recognizing that restoration activities may occur as part of the mitigation or other aspects of those regulatory programs), nor does this section address environmental reviews or specific permitting associated with restoration activities. Instead, by incorporating this topic into the framework, the RPB recognized the importance of coastal, nearshore, and estuarine habitats to the ocean and identified the opportunity to coordinate and highlight regional restoration activities.

Most fish and shellfish consumed in the United States complete at least part of their life cycles in estuaries.¹ Estuaries also help to maintain healthy ocean environments by retaining sediments from rivers and streams before they flow into the oceans and, through detrital export, by linking primary production of vegetated shallows and marshes to the coastal food web. Healthy salt marshes provide habitat and water quality improvement, and they can provide

other benefits such as flood damage reduction. Functioning riverine systems also provide habitat, connection to spawning grounds for diadromous fish, and other benefits to people and animal life.

In many places across the region, these important habitats are threatened or have been degraded by historic development practices, fragmentation of habitats, dams, pollution, inadequate sizing and design of culverts, and other factors. Additional future stressors affecting such habitats include sea level rise and stronger, more intense storms.

Thus, in recognition of the continued and future importance of these components of the ecosystem, many federal agencies, states, and tribes have developed or provide funding for restoration programs intended to restore lost habitat function. New England has a history of successful restoration of coastal, riverine, and nearshore habitats, and there are significant additional opportunities in the future to build on these successes.

CASE STUDY

COLLABORATIVE RESTORATION

The Ten Mile River Restoration Project is an example of a collaborative restoration project in the region that partially benefited from contributions of American Recovery and Reinvestment Act (ARRA) funds from USACE and NOAA, along with contributions from the Rhode Island Department of Environmental Management and many other federal, state, and nongovernmental organizations. That project, completed in 2015, is expected to restore and sustain a population of approximately 200,000 anadromous river herring (alewife and blueback herring) and up to 25,000 American shad in the Ten Mile River, which flows into upper Narragansett Bay in Rhode Island. The restoration partners in the Narragansett Bay watershed are currently working on a study to demonstrate the landscape-level regional benefits of the many projects already accomplished in the watershed.





Examples of the ecological value of restoration projects in New England are as widespread as the types of projects that have been undertaken. Improving estuarine habitats and restoring the connection of spawning habitats for diadromous fish through fish passage projects contribute to healthier fish populations in the ocean by providing vital spawning, nesting, and feeding habitats for many species of birds and fish. Appropriately sizing culverts, fixing tide gates so that they properly function, removing old fill material, or restoring tidal flow all can help restore salt marsh function. Projects have also included planting of eelgrass and other native coastal vegetation, controlling invasive species, restoring oyster reefs and clamflats, and removing marine debris. Such habitat improvements sometimes can include control or cleansing of stormwater runoff or other efforts to enhance water quality. All of these types of activities occur throughout the region as part of restoration projects.

Restoration projects provide economic benefits as well. Under the American Recovery and Reinvestment Act of 2009 (ARRA), NOAA awarded \$167 million in funding for 50 coastal restoration projects. On average, every \$1 of ARRA funds spent on these restoration projects resulted in \$1.60 of economic benefit. NOAA's restoration work under ARRA created an average of 17 jobs, and as many as 33 jobs, for every

\$1 million invested.² Those benefiting from ecological improvements also include commercial and recreational fisheries interests, as well as industries dependent on healthy coastal ocean habitats (e.g., the tourism sector).

RESTORATION SUBCOMMITTEE

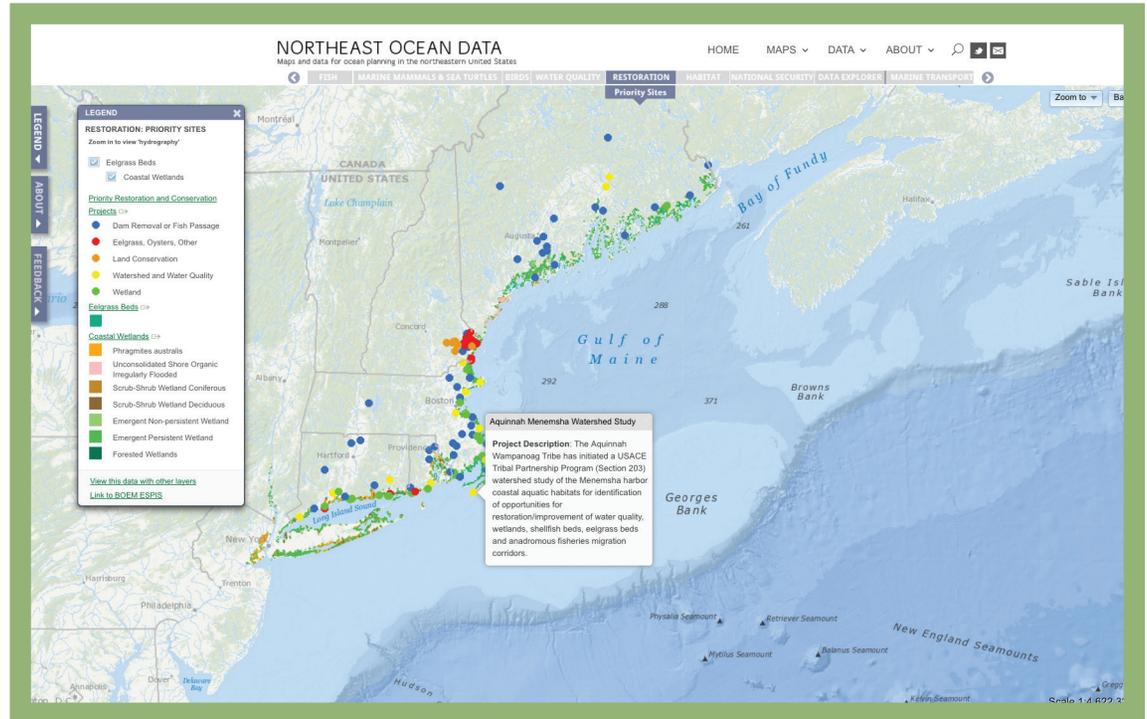
The RPB established a subcommittee of restoration experts in 2013. Led by the EPA and USACE, and including NGO, state, and tribal members, the subcommittee met and discussed several approaches to enhance regional coordination, noting that additional coordination and support from all levels of government are needed to advance the significant restoration opportunities throughout New England. To strengthen the impact of available funds and to highlight regional restoration opportunities, the subcommittee decided to identify existing potential restoration projects in need of funding, using an initial set of draft criteria. This initial set of draft criteria was intended to identify projects that, upon completion, would improve ocean or coastal watershed condition either directly or indirectly; complement adjacent habitat; have a strong likelihood of achieving a sustainable, restored condition; be adaptable in the face of climate change; and other goals. Recognizing the complexity of developing and implementing such criteria for the wide array of restoration activities that federal agencies, states, and tribes wish to pursue,

the subcommittee had extensive discussions regarding how these criteria could evolve in the future, including their use and relationship to specific management goals or questions. The subcommittee also discussed the importance of focusing on the various habitat types in need of restoration, and, as a result, the subcommittee generated an initial set of habitat types to inform its discussions. This set of criteria, habitat types, and related deliberations helped in identifying an initial list of restoration projects.

There are many federal, state, local, and nongovernmental funding programs in place to facilitate restoration, and better coordination among entities in the region on project opportunities could demonstrate the region's ability to effectively leverage additional resources and increase the pace and scale of restoration. To begin addressing this opportunity, the subcommittee developed a comprehensive list of federal funding programs for the region to help inform project financing opportunities. The list can be found in the "About" section of the Restoration theme on the Portal.

MAPS AND DATA

The Restoration theme on the Portal displays the location of potential Northeast US restoration projects (of various types) as initially identified by individual RPB subcommittee members (the list of projects is considered a work in progress). Each site in the Portal dataset includes a project description with information on habitat functions to be enhanced or restored, a link to the project website (if available), and information on project phase, cost, and acres or stream miles to be restored and/or enhanced. As described in Action Rest-1, this data layer will be reviewed and updated periodically to ensure that it remains current. A majority of the restoration and conservation projects are eligible for federal funding³ and require a nonfederal cost-sharing match. The Restoration theme also includes several data layers intended to provide context for the restoration projects, including coastal wetlands, eelgrass beds, and watershed information. Finally, the Portal also includes a list of subcommittee members and a list of federal funding programs.



This map indicates restoration projects identified by the subcommittee.



OVERVIEW
ACTIONS

- Rest-1 Maintain and update the Restoration theme and data on the Portal
- Rest-2 Maintain and update the list of funding sources
- Rest-3 Use maps and funding sources identified in the Plan to identify regional restoration opportunities
- Rest-4 Continue regional coordination through the subcommittee under the direction of the RPB



ACTIONS: MAINTAIN AND UPDATE DATA

Rest-1. Maintain and update the Restoration theme and data on the Portal: The subcommittee will review the restoration dataset for necessary updates and additions (since it is a work in progress). Over the course of a year, some projects in the data layer will likely be funded or constructed, and therefore will be removed from the dataset. Other projects for potential inclusion will be brought to the subcommittee through its members. The subcommittee will also consider whether additional marine life, habitat, or other data or information should be included in the map to provide context for the restoration projects.

Rest-2. Maintain and update the list of funding sources: The inventory of active funding programs available through various federal agencies will continue to be maintained by the subcommittee and provided as a resource through the Portal. The subcommittee will provide the updated or revised inventory to the Portal Working Group annually or as otherwise needed.

ACTIONS: INFORM MANAGEMENT DECISIONS

Rest-3. Use maps and funding sources identified in the Plan to identify regional restoration opportunities: RPB agencies will to the extent practicable use the maps and data in the Portal as a source of information to identify restoration opportunities. The restoration data layer and the inventory of potential funding sources will be valuable resources for coordinating practitioners, agency reviewers, and funders. The restoration map may also be particularly useful when funding opportunities, such as emergency recovery funding for natural events, become available.

Additionally, marine life and habitat, cultural, and human use data in the Portal may provide helpful regional context for restoration projects by, for example, helping to identify species and habitats that could be affected by restoration projects; helping to understand competing or conflicting human uses in restoration areas; and helping to identify potentially interested partners and potentially affected stakeholders.

ACTIONS: ENHANCE AGENCY COORDINATION

Rest-4. Continue regional coordination through the subcommittee under the direction of the RPB: The restoration subcommittee will continue, under the direction of the RPB, to provide a forum for federal agencies, tribes,

states, and NGO partners to build awareness of potential restoration projects, explore potential topics for regional coordination, and identify funding sources and new opportunities. The subcommittee will be led by federal, state, and tribal co-chairs, and it is anticipated that the subcommittee will meet at least twice per year. During and between those meetings, subcommittee members will review the Portal for potential updates to the restoration projects (as described in Rest-1) and will review and update the list of funding sources (as described in Rest-2). The subcommittee will also continue to consider additional ways to enhance regional coordination and provide for stakeholder review of subcommittee activities, including:

- Reviewing the initial criteria that were developed to inform the map of restoration projects.
- Reviewing the list of habitat types and the potential to assess restoration projects by their likely impact to each habitat.
- Creating opportunities to enhance the visibility of New England restoration projects.