

Environmental Sensitivity Index Maps

A Guide to Coastal Resources at Risk to Spilled Oil

Massachusetts and Rhode Island: Volume 2 Cape Cod



Office of Response and Restoration

November 2016

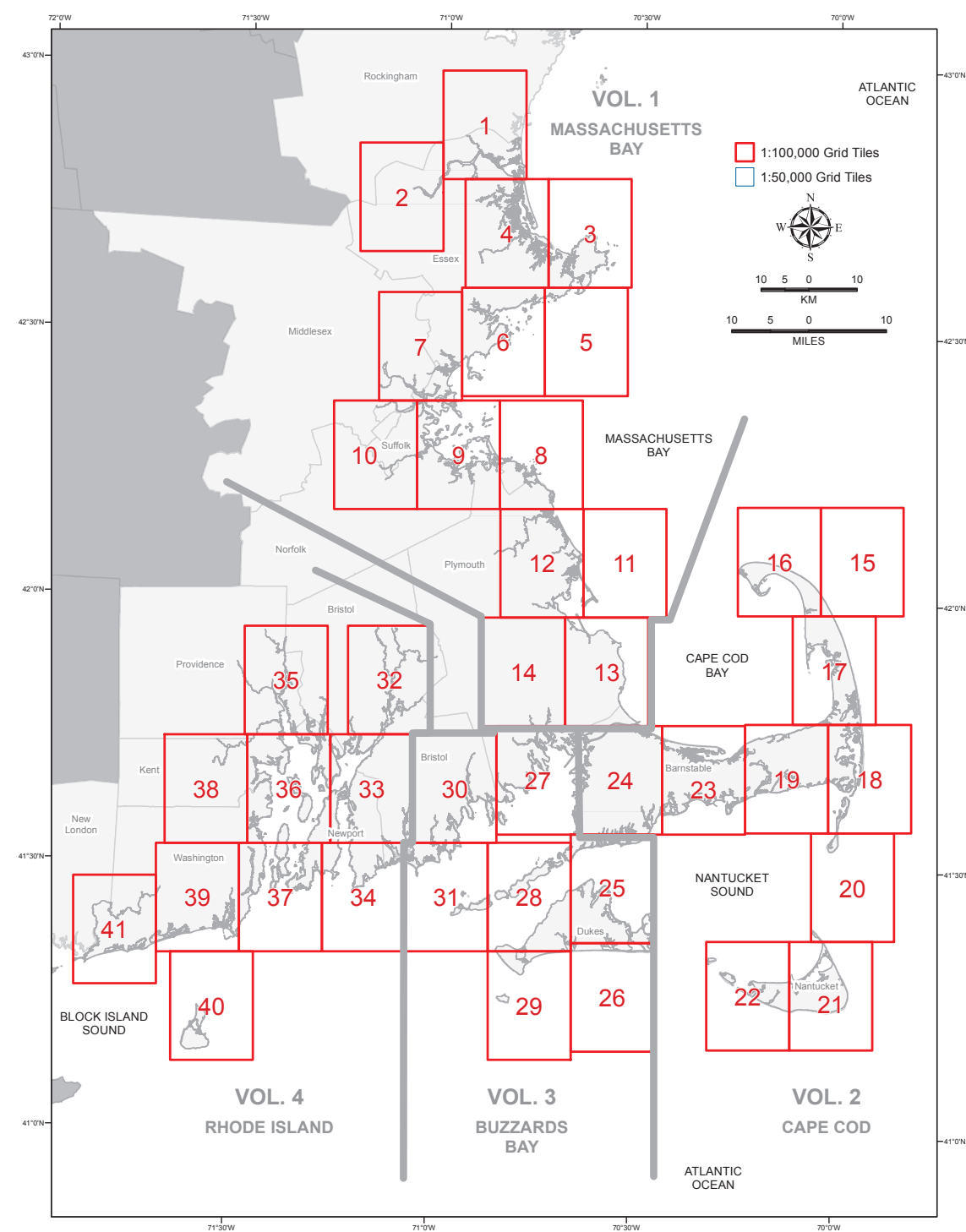
NOAA

Environmental Sensitivity

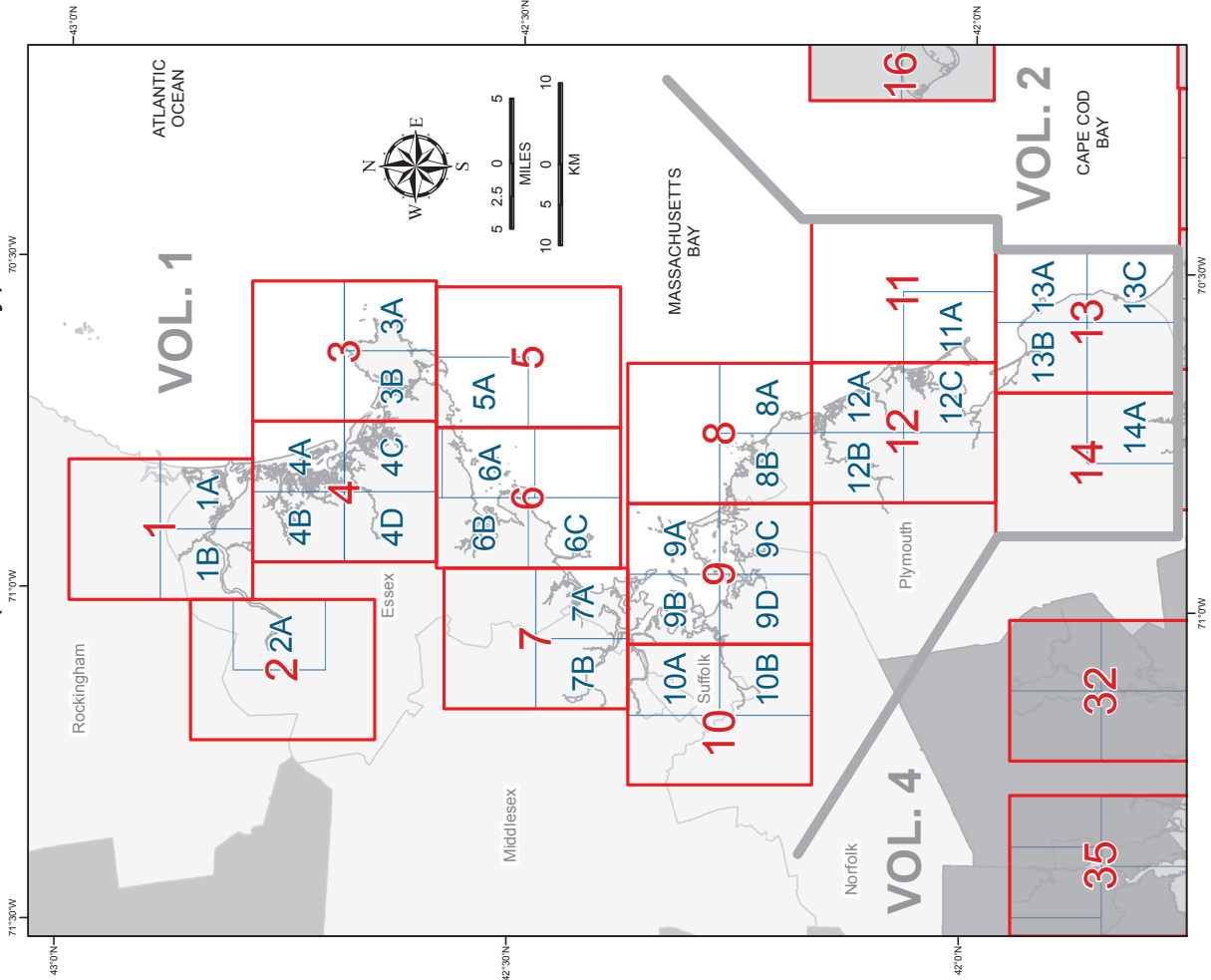
Index Maps

A Guide to Coastal Resources at Risk to Spilled Oil

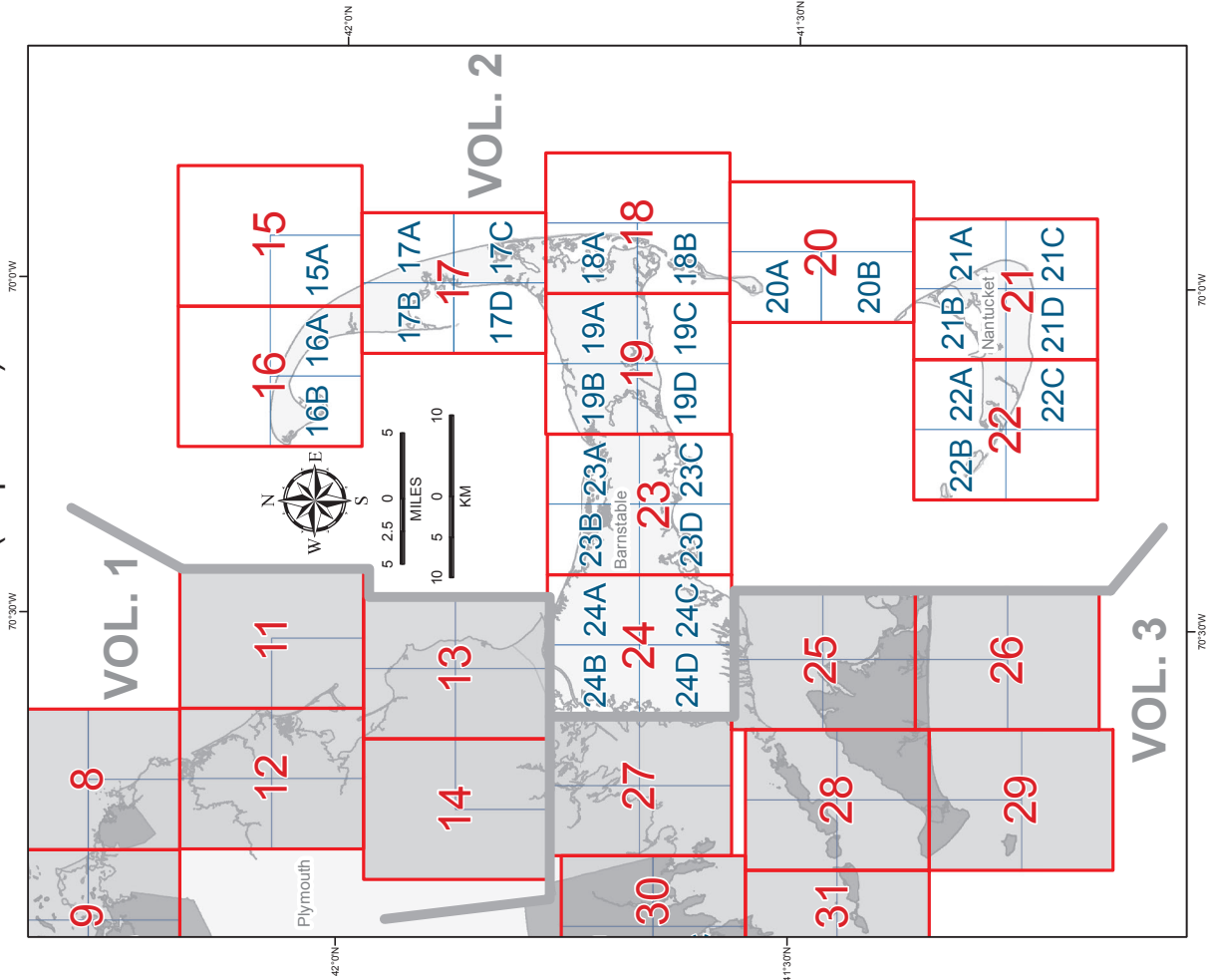
Massachusetts and Rhode Island



Massachusetts and Rhode Island: Volume 1
(Massachusetts Bay)



Massachusetts and Rhode Island: Volume 2
(Cape Cod)



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ENVIRONMENTAL SENSITIVITY INDEX: MASSACHUSETTS AND RHODE ISLAND

INTRODUCTION

This Environmental Sensitivity Index (ESI) atlas was developed for the marine and coastal areas of Massachusetts and Rhode Island. The atlas covers the coastal areas of Massachusetts westward to the coastal areas of Rhode Island. The study area also includes 11 bays that open into the Atlantic Ocean. These include Mount Hope, Assonet, Buzzards, Cape Cod, Duxbury, Massachusetts, Narragansett, Plymouth, Popponesset, Quincy, and Waquoit Bays. Major tidal tributary rivers include Black, Merrimack, Parker, Rowley, Eagle Hill, Ipswich, Castle Neck, Essex, and Annisquam in Massachusetts, and the Pawcatuck west of Narragansett Bay; Providence, Potowomut, and Warren draining to Narragansett Bay; and Sakonnet River draining east of Narragansett Bay in Rhode Island. The inland extent of the study area includes lands and fresh waters to five nautical miles from the shoreline of tidal waters. The ESI represents a compilation of information about three main categories: shoreline habitats, sensitive biological resources, and human-use resources. Though the data will be useful for many shoreline applications, the goal of the ESI data is to present a concise summary of resources that may be particularly vulnerable to spilled oil. The intent of the data should caveat other uses. As an example, the ESI is not intended to present a catalog or comprehensive listing of species present in an area, rather the focus is on species particularly sensitive to oiling and life stages where vulnerability may increase.

SHORELINE HABITAT MAPPING

The shoreline and classifications were fully updated using the following sources and methods. The shoreline and intertidal habitats were delineated using a mapped sequence of Light Detection and Ranging (LiDAR) and high-resolution digital orthophotography datasets. The LiDAR data was obtained from the U.S. Geological Survey (USGS) Topographic LiDAR: LiDAR for the North East program (2011)

The base shoreline was compiled at Mean Higher High Water (MHHW) first by LiDAR extraction, then refined within a Geographic Information System (GIS) utilizing high-resolution digital orthophotos. After the shoreline was delineated, digital orthoimagery from various sources was used to classify shoreline segments using the nationally, standardized ESI scale (see below). In addition, various imagery sources for Google Earth and Bing Maps (2014) were used during the classification phase.

Shoreline features of 10 meters (m) or greater in length were classified. In addition, wetland polygon datasets originally created by the United States Fish and Wildlife Service National Wetland Inventory (NWI) were modified and updated for use in conjunction with the ESI shoreline. These data were visually reviewed and classified against the aerial imagery and adjusted where necessary to allow for proper classification. All classifications reflect the specifications outlined in the Environmental Sensitivity Index Guidelines version 3.0 (2002). Where necessary, multiple types are used to describe a specific shoreline segment. GIS quality control measures were performed to ensure that all data meet the required specifications.

The ESI shoreline classification and ranking scale has been used to assess vulnerability of shoreline to spilled oil since the mid-1970s. Rankings range from 1 – least vulnerable, to 10 – most vulnerable, with a variety of qualifiers unique to the geographic region. The scale incorporates the following considerations:

- | | |
|--|--|
| 1) Shoreline type (substrate, grain size, tidal elevation, origin) | 3) Biological productivity and sensitivity |
| 2) Exposure to wave and tidal energy | 4) Ease of cleanup |

Prediction of the behavior and persistence of oil in intertidal habitats is based on an understanding of the dynamics of the coastal environments, not just the substrate type and grain size. The intensity of energy expended upon a shoreline by wave action, tidal currents, and river currents directly affects the persistence of stranded oil. The need for shoreline cleanup activities is determined, in part, by the slowness of natural processes in removal of oil stranded on the shoreline. The potential for biological injury and ease of cleanup of spilled oil are also important factors in the ESI shoreline ranking. Thus, shorelines exposed to high levels of physical energy, such as wave action and tidal currents, and low biological activity rank low on the scale, whereas sheltered shorelines with associated high biological activity have the highest ranking. The shoreline types delineated for Massachusetts and Rhode Island, presented in order of increasing sensitivity to spilled oil, are listed below.

- | | |
|--|--|
| 1A) Exposed, Rocky Shores | 8A) Sheltered, Impermeable, Rocky Shores |
| 1B) Exposed, Solid Man-Made Structures | 8B) Sheltered, Solid Man-Made Structures |
| 2A) Exposed, Wave-Cut Platforms (Bedrock/Mud/Clay) | 8C) Sheltered Riprap |
| 2B) Exposed Scarps and Steep Slopes (Clay) | 8D) Sheltered, Rocky, Rubble Shores |
| 3A) Fine to Medium Grained Sand Beaches | 9A) Sheltered Tidal Flats |
| 3B) Scarps and Steep Slopes (Sand) | 9B) Vegetated Low Banks |
| 4) Coarse-grained Sand Beaches | 10A) Salt and Brackish Water Marshes |
| 5) Mixed Sand and Gravel Beaches | 10B) Freshwater Marshes |
| 6A) Gravel Beaches | 10C) Swamps |
| 6B) Riprap | 10D) Scrub and Shrub Wetlands |
| 7) Exposed Tidal Flats | |

For each of these shoreline types, a photo and description of the physical attributes, predicted oil behavior, and response considerations is included at the end of the introductory pages.

SENSITIVE BIOLOGICAL RESOURCES

Biological information presented in this atlas was collected, compiled, and reviewed with the assistance of biologists and resource managers from the following agencies:

- Massachusetts Office of Coastal Zone Management (Mass CZM)
- Massachusetts Division of Marine Fisheries (MDMF)
- Massachusetts Division of Fisheries and Wildlife (MADFW)
 - Natural Heritage Endangered Species Program (NHESP)
- Massachusetts Department of Environmental Protection (Mass DEP)
- Massachusetts Audubon Society (Mass Audubon)
- Audubon Society of Rhode Island
- Rhode Island Natural History Survey
- Rhode Island Department of Environmental Management (RI DEM)
 - Division of Fish & Wildlife (RI DFW)
- University of Rhode Island (URI)
- University of Massachusetts Amherst
- Narragansett Bay Estuary Program (NBEP)
- Narragansett Bay National Estuarine Research Reserve (NBNERR)
- Save the Bay, Narragansett Bay
- Manomet Shorebird Recovery Program
- The Nature Conservancy (TNC)
- National Park Service (NPS), Cape Cod National Seashore
- The New England Aquarium
- Mid-Atlantic/New England/Martimes (MANEM)
- Northeast Regional Ocean Council (NROC)
- National Oceanic and Atmospheric Administration
 - Greater Atlantic Regional Fisheries Office – Gloucester, MA (GARFO)
 - National Ocean Service (NOS), Office for Coastal Management (OCM)
 - National Marine Fisheries Service (NMFS)
 - Northeast Fisheries Science Center - Woods Hole, MA (NEFSC)
- Woods Hole Oceanographic Institute
- U.S. Fish and Wildlife Service (USFWS)
- USDA-Natural Resources Conservation Science (NRCS)
- U.S. Environmental Protection Agency (EPA)

NOTE: The above agencies are cited throughout this document, often using the acronyms (in parenthesis) for simplicity.

The biological resources shown in this atlas were extracted from the ESI GIS data compiled for this region. The extracted features were mapped at scale of 1:50,000 and appear on the maps referenced by a combination of number and letter. For example, Map 1B will show the biological features in conjunction with the ESI shoreline. The biology maps on these maps is “layered” in the PDF maps. This allows the user to turn off the biological features to more clearly see the underlying shoreline and habitat polygons. The data published date appearing at the bottom of the maps and on the cover page reflect when the data collection and compilation was completed. This atlas represents those data and was published November 2016.

KEY BIOLOGICAL FEATURES ON ESI MAPS

- 1) Occurrences of animal and plant species that are at risk to spilled oil or may be impacted during a spill response are represented in the database by polygons, points, and lines.
- 2) To avoid clutter, the front of the map features occurrences that cover less than 10 kilometers of the map extent. A Map ID is associated with each of these polygonal, linear or point features.
- 3) Each map includes a tabular report summarizing the species found in the area. Features that are shown on the map are referenced by their Map ID. Features that cover more than 10 kilometers are presented in the report as Widespread in Mapped Area. Species occurrences that appear in the database as General Distribution are listed in a third category, Also Present in Mapped Area. To fully understand the diversity of species present, ALL sections of the map report should be reviewed.
- 4) Associated with each species in the table is the state (S) and federal (F) protected status as threatened (T) or endangered (E), as well as concentration, seasonality, and life-history information. Federal listings were provided by USFWS. State listings were provided by Massachusetts Division of Fisheries & Wildlife, Natural Heritage and Endangered Species Program, and the Rhode Island Natural History Survey.
- 5) The table includes a Mapping Qualifier with each species record (see table of mapping qualifiers and guidelines below). The mapping qualifier should help users understand particular vulnerabilities associated with the map data.
- 6) Feature level source information is included in the GIS database used to create these maps. The GIS data also provides the extent polygons for all mapped features; it can be queried, filtered, and used with other GIS datasets.
- 7) Species have been divided into groups and subgroups based on their behavior, morphology, taxonomic classification, and spill vulnerability and sensitivity. The icons below reflect this grouping scheme.
- 8) Colors depicting monthly seasonality roughly reflect Winter/Spring/Summer/Fall, but are primarily intended to ease readability.

MARINE MAMMAL



Dolphin



Pinniped



Whale

HERPETOFAUNA



Amphibian/Snake



Turtle

TERRESTRIAL MAMMAL



Bat



Small Mammal

BIRD



Alcid/Pelagic



Diving



Gull/Tern



Passerine



Raptor



Shorebird



Wading



Waterfowl

HABITAT



Upland/Wetland/Plant

INVERTEBRATE



Bivalve/Barnacle/
Chordate



Cephalopod



Crab/Invertebrate/
Shellfish



Gastropod



Insect



Lobster



Shrimp

FISH



Fish



Nursery

MAPPING QUALIFIERS AND GUIDELINES

Element	Qualifier	Guidelines
All	Concentration Area	Areas where concentrations are considerably higher than other records of the same species in the area of interest.
All	General Distribution	Used for broad, general distributions of species that are often mapped to landscape- or habitat-scale features.
All	Vulnerable Occurrence	Intended for records of rare species with discrete occurrences, where the conservation value of the species should be highlighted for spill response.
Birds, Herpetofauna, Marine Mammals, Fish, Invertebrates	Migration	Used when an area is a known staging area of high importance to the species for birds; and/or areas are potential or known migration corridors in the marine environment for other elements.
Birds, Herpetofauna	Nesting	Applicable to all nesting birds and herps. Should represent known nesting areas rather than all potential nesting habitat.
Birds	Rafting	Similar to 'Concentration Area' qualifier, but specific to large on-water concentrations.
Birds	Wintering	Designates known areas of importance to wintering birds.
Benthic	High Ecological Value	For use in areas where benthic organisms provide high ecological services, high quality habitat, or known areas of high biodiversity.
Fish and Invertebrates	Harvest Area	May be used as a qualifier for distributions in special cases, where the general distribution was not mapped and/or widespread and the distribution of the harvested resources is used to depict important areas.
Fish and Invertebrates	Nursery Area	Refers to specific areas of known importance to early life history stages (e.g., larvae, juveniles) of a species.
Fish and Invertebrates	Spawning Area	Areas where animals are spawning. Spawning is loosely defined as the release of gametes or eggs from the adult.

MARINE MAMMALS

Marine mammals depicted in the Massachusetts and Rhode Island atlas include cetaceans (whales, dolphins, and porpoises) and pinnipeds (seals).

Cetaceans - General distribution polygons for whales, dolphins, and porpoises were based on:

- 1) NROC's 2016 habitat-based density models
- 2) Atlantic Marine Assessment Program for Protected Species (AMAPPS) line transect survey data (2013-2014)
- 3) The 2010 report *Marine Mammals and Sea Turtles of Narragansett Bay, Block Island Sound, Rhode Island Sound, and Nearby Waters: Analysis of Existing Data for the Rhode Island Ocean Special Area Management Plan* (Kenney and Vigness-Raposa).

Species distribution maps in the Rhode Island Ocean SAMP analysis were created using modeled seasonal relative abundance patterns generated from seasonal sightings per unit effort (SPUE) values, as well as aggregated sighting, stranding, and bycatch records.

With the exception of Cape Cod Bay, survey data within bays and sounds is limited and often terminates at COLREGS Demarcation Lines. These lines and the 20' depth contours were used to define the boundary between inshore and offshore marine mammal distribution polygons in this atlas. Input from local resource experts at the New England Aquarium, NEFSC, GARFO, and University of Rhode Island Coastal Institute provided inshore and offshore species presence and concentrations. Cetaceans mapped in Narragansett Bay are restricted to the harbor porpoise, a few species of dolphin, and pilot whales. A higher biodiversity of species are found in Buzzards Bay, Nantucket Sound, and Cape Cod Bay, and includes fin, humpback, and North Atlantic right whales. All cetaceans are cited as having a year-round presence, though seasonal concentrations vary among species and by location. Many species peak in offshore waters during the spring and summer and are rarest in winter, whereas Cape Cod Bay exhibits increased presence for some species during the colder months of the year due in part to mass stranding (Kenney, personal communication). A number of species, including the beluga and Bryde's whales, visit the atlas area but are not recorded with any consistency and are mostly anecdotal records. These species typically occur farther offshore and were not mapped due to their rarity in the marine extent of this area of interest.

Concentration areas for fin, humpback, and North Atlantic right whales are represented in Massachusetts based on vector data included as part of CZM's 2015 Massachusetts Ocean Management Plan Core Habitat vector digital data. The core habitats are considered a special, sensitive, or unique (SSU) resource and are based on sightings from 1998 to 2014. These state and federally endangered species, in addition to all other whale species included in this atlas, regularly use Massachusetts waters for feeding. Cape Cod Bay is particularly rich in nutrients and is a significant foraging area for other marine mammals as well.

Seals – Harbor seals are the most common pinniped species in New England coastal waters and have increased significantly in abundance over the last few decades. They are present year-round off the coast of Massachusetts and Rhode Island, but are most commonly winter residents south of Cape Cod as they migrate from the Gulf of Maine in September to warmer waters in pursuit of abundant food resources (Raposa and Dapp, 2009). Harbor seal haulouts are most active October through May and are concentrated along the Cape and Islands, Block Island, and Narragansett Bay. Gray seals are present year-round as well and can regularly be seen hauling out with harbor seals at Monomoy Island, Chatham Harbor, Jeremy Point in Wellfleet, Muskeget Island and shoals off Nantucket. Most gray seals in Rhode Island are recently

weaned pups in the spring and are spotted only occasionally with harbor seals, such as at the north end of Block Island (Kenney, personal communication). Gray seal breeding occurs during the winter months (December through February) and has been noted at haulouts on Monomoy, Muskeget, and Nomans Islands. Harp and hooded seals are present in Massachusetts and Rhode Island waters as well November through May, but do not haul out regularly like harbors and grays. Recorded occurrences are either stranding or from fishery bycatch records (Kenney, personal communication).

Harbor and gray seal haulout locations, seasonality, and breeding activity in Massachusetts were provided by Beth Josephson, NEFSC. Harbor seal haulouts in Rhode Island were mapped according the 2009 report *A Protocol for Long-term Monitoring of Harbor seals (Phoca Vitulina Concolor) in Narragansett Bay, Rhode Island* (Raposa and Dapp) that is based on seal counts conducted in 2007 and 2008. This information was supplemented by vector point data from Cheryl Schroeder and Wenley Ferguson of Save the Bay; they provided data for two sporadic haulout sites along the Sakonnet River.

Expert contacts for Massachusetts/Rhode Island marine mammals*:

Name	Agency	City	Phone	Species
Wenley Ferguson	Save the Bay	Providence, RI	401-272-3540 x105	Seals
Beth Josephson	NOAA, NEFSC, Protected Species Branch	Woods Hole, MA	508-495-2362	Marine Mammals, Seals
Lisa Sette	Center for Coastal Studies	Provincetown, MA	508-487-3623 x102	Marine Mammals, Seals
Robert Kenney	URI Coastal Institute; North Atlantic Right Whale Consortium	Narragansett, RI	401-874-6664	Marine Mammals
Michael Asaro	NOAA, GARFO, Protected Resources Division	Gloucester, MA	978-282-8469	Marine Mammals
Scott Kraus	New England Aquarium	Boston, MA	617-973-5457	Marine Mammals, North Atlantic Right Whale
David Wiley	Stellwagen Bank National Marine Sanctuary	Scituate, MA	781-546-6014	Humpback, Fin, and North Atlantic Right Whales
Debra Palka	NOAA, NEFSC, Protected Species Branch	Woods Hole, MA	508-495-2387	Marine Mammals
Jooke Robbins	Center for Coastal Studies	Provincetown, MA	508-487-3623 x116	Whales
Erin Burke	MDMF, Protected Species	New Bedford, MA	508-990-2860 x142	Marine Mammals, North Atlantic right whale
Stranding/Rescue Hotline (NE)	New England Aquarium	Boston, MA	617-973-5247	Marine Mammals

***Note: this list is not meant to represent all marine mammal experts for the region.**

Major Data Sources Used: Marine Mammals

Beth Josephson, National Oceanic and Atmospheric Administration, Northeast Fisheries Science Center. 2016. Atlantic Marine Assessment Program for Protected Species (AMAPPS) Northeast Aerial and Shipboard Cruise Spring and Winter 2014. Vector digital data; Expert knowledge. Content available at <http://seamap.env.duke.edu>.

Beth Josephson, National Oceanic and Atmospheric Administration, Northeast Fisheries Science Center. Seal Haulouts in Massachusetts. Vector digital data; Expert knowledge.

Robert Kenney and Kathleen Vigness-Raposa, University of Rhode Island. 2010. Marine Mammals and Sea Turtles of Narragansett Bay, Block Island Sound, Rhode Island Sound, and Nearby Waters: An Analysis of Existing Data for the Rhode Island Ocean Special Area Management Plan. PDF document <http://seagrant.gso.uri.edu/oceansamp/pdf/appendix/10-Kenney-MM&T>; Database files; Expert knowledge.

Debra Palka, National Oceanic and Atmospheric Administration, Northeast Fisheries Science Center. Atlantic Marine Assessment Program for Protected Species (AMAPPS) Northeast Aerial and Shipboard Cruise Summer and Winter 2013. Vector digital data; Expert knowledge. Content available at <http://seamap.env.duke.edu/>

Kenneth B. Raposa, and Rachel M. Dapp, Marine Acoustics Inc., Narragansett Bay National Estuarine Research Reserve. 2009. A Protocol for Long-term Monitoring of Harbor seals (*Phoca Vitulina Concolor*) in Narragansett Bay, Rhode Island. NBNERR Technical Report Series 2009:2. PDF document <http://nbnerr.org/wp-content/uploads/2016/12/2009-RaposaDapp-NBNERR-Tech-Series-2009.2.pdf>.

Roberts, J.J, B.D. Best, L. Mannocci, E. Fujioka, P.N. Halpin, D.L. Palka, L.P. Garrison, K.D. Mullin, T.V.N. Cole, C.B. Khan, W.M. McLellan, D.A. Pabst, and G.G. Lockhart. 2016. Habitat-based cetacean density models for the U.S. Atlantic and Gulf of Mexico. Scientific Reports 6:22615. Northeast Regional Ocean Council. Digital maps. Available at <http://northeastoceandata.org>.

Cheryl Schroeder, Save the Bay, 2005. Seal Haul-out Locations (Rhode Island). Vector digital data. Content available at <http://www.narrbay.org>.

The Massachusetts Office of Coastal Zone Management. 2015. North Atlantic Right Whale, Fin Whale, and Humpback Whale Core Habitats, 2015 Massachusetts Ocean Management Plan. Vector digital data. Content available at <http://www.mass.gov/eea/mop>.

BIRDS

The Massachusetts and Rhode Island atlas area encompasses the biogeographic regions of the Virginian and Acadian provinces, of which Cape Cod is the shoreward boundary. These two regions have distinct physical characteristics and support a diversity of biological communities including a variety of bird species that inhabit the rocky coasts of the north shore, shallow waters of Cape Cod Bay, sand dunes and mud flats around Cape Cod, and the significantly warmer waters south of the Cape and into Rhode Island. Bird species are included in this atlas either because of their likelihood of direct or indirect impact by an oil spill or similar incident, their general rarity or imperilment, or their special protection status as species of concern, threatened or endangered. Migratory or wintering concentration areas, nesting sites and colonies, and protected species are especially emphasized. Major sources of data used for mapping bird concentration areas in this atlas are described below. Additional data and expert input was

provided primarily by MA DFW NHESP, RI DFW, Massachusetts CZM, Massachusetts Audubon, Audubon Society of Rhode Island, NROC, and USFWS, Rhode Island NWR Complex.

2015 Massachusetts Wildlife Action Plan (MA SWAP) and 2015 Rhode Island Wildlife Action Plan (RI WAP) - These documents were developed to aid in the protection of Species of Greatest Conservation Need (SGCN) by MA DFW and a collaborative effort of RI DEM DFW, TNC, URI, and RINHS, respectively. All state and federally-listed species are included, as well as other species of particular conservation interest such as small, localized “at-risk” populations; globally rare, keystone, and indicator species; and species of regional concern or high regional responsibility. Each of the SGCN has a species profile or fact sheet that includes a statewide distribution map, narrative of life history, summary of habitats that are major and essential components of the species’ life history, and list of key threats. Corresponding GIS data for the RI WAP distribution maps were provided by TNC; these maps are not a comprehensive inventory but provide an estimated range of each species within Rhode Island, and in some cases represent potential habitat. General distribution, abundance, and life history activity including seasonality was mapped for species in the Massachusetts and Rhode Island atlas according to these species profiles. Key habitats were mapped to the corresponding ESI Classified Shoreline habitat polygons (e.g. beaches, wetlands) in the geographic areas highlighted. If key habitats such as coastal dunes and thickets, or forests and grasslands, did not directly correspond to an ESI habitat, then either ESI habitat data were expanded to encompass the additional habitat, or generalized land polygons were created. Rocky habitats are represented by select areas of a .5 nautical mile coastal buffer.

2016 RI DEM Natural Heritage Areas – This dataset was developed as an aid in the identification and protection of plant and animal species listed in the RI Natural Heritage Data, which includes state and federally-listed rare or threatened species, or other species deemed noteworthy by the state. The Natural Heritage Areas consist of polygons developed from kernel density analysis of element occurrences (EO), or discrete observations of a community or nesting site of a Natural Heritage species. The calculation, based on a 30 meter pixel size, determines the mean number of EOs per square kilometer for each pixel, and non-statistically significant areas are eliminated. The result is a polygon dataset representing the estimated habitat and range of rare species in Rhode Island. RI DEM provided a supplemental species list identifying the species located within each Natural Heritage polygon. All Natural Heritage Area polygons mapped in this atlas were assigned the mapping qualifier of “Vulnerable Occurrence”.

Massachusetts Breeding Bird Atlas 2 : 2007-2011 (BBA2) – This is a presence/absence survey conducted by Mass Audubon that maps the breeding range of each bird species in the state based on behavioral activity. Data is registered by coarse blocks (1/6 of a USGS topo map), and only confirmed breeding observations within the blocks were used for the purposes of mapping nesting areas in this atlas, though nesting may be occurring elsewhere as well. Mass Audubon provided GIS data for BBA2 blocks and species files that were used as a guide to assign nesting areas to ESI habitat polygons and/or geographic locations corresponding with species distribution.

Colonial waterbirds and wading birds - Nesting areas for colonial waterbirds in Massachusetts (terns, gulls, egrets, and herons) were mapped primarily using Mass CZM’s *Colonial Waterbirds Important Nesting Habitat* data layer developed for the 2015 Massachusetts Ocean Management Plan. These sites, buffered 0.3 nautical miles, represent areas where more than 100 pairs of individual species of colonial nesting waterbirds were observed during surveys between 1994 and 2006. They are considered a special, sensitive, or unique (SSU) resource and are based on a dataset that originated from MA DFW NHESP. GIS data for colonial waterbird nesting sites in Rhode Island were provided by RI DFW. Nest sites were observed between 1971 and 2015 and were either mapped as points or converted to polygons. Additional nesting areas for colonial waterbirds and wading birds, including marsh species such as rails and

bitterns, were mapped according to BBA2. MA DFW NHESP provided GIS data for roseate tern (state and federally endangered) and “rare tern” breeding, staging, and critical foraging habitats. The “rare tern” species group includes three state-listed tern species of special concern in Massachusetts: the Arctic tern, common tern, and least tern. The NHESP polygons were hand-delineated based on observation records using 2012 aerials and then modified to be congruent with the ESI shoreline and wetland polygons. The foraging areas were mapped in this atlas as general distribution polygons. Staging areas in the original NHESP dataset were determined by the presence of 100 or more individuals. The Cape and Islands (Martha’s Vineyard and Nantucket) in particular receive a huge influx of terns from across the northeast after the breeding season while the birds are preparing for migration. The birds are highly concentrated during that period of time (July through September), staging in flocks sometimes numbering over 10,000 birds (Mostello, personal communication). The roseate tern was mapped in Rhode Island according to the 2016 RI DEM Natural Heritage Areas with additional migration areas and general distribution mapped using the 2015 RI WAP. Nesting sites for the least tern (state threatened) in Rhode Island were mapped using data from RI DFW and the 2015 RI WAP.

In this atlas, select species were grouped by common activities including foraging/general distribution. Note that scientific names are provided only for species not otherwise included in the atlas: “egrets” (including great egret (*Ardea alba*), snowy egret (*Egretta thula*)), “gulls”, “marsh birds” (e.g. bitterns and rails, including Virginia rail (*Rallus limicola*)) and “wading birds” (herons, clapper rail, and glossy ibis). Individual species life history activity areas were mapped separately when data was available. Additional distribution and activity areas for coastal waterbirds and wading birds, including roosting and wintering were mapped primarily using the 2015 RI WAP and 2015 MA SWAP. Additional seasonality and breeding information by species was obtained through *Massachusetts Breeding Bird Atlas 1* (published 2003) and the *Mid-Atlantic/New England/Maritimes (MANEM), Waterbird Conservation Plan: 2006-2010*.

Waterfowl – Sea duck concentrations in Boston Harbor, Cape Cod Bay, Nantucket Sound, and Buzzards Bay were mapped using Mass CZM’s *Sea Duck Core Habitat* data layer developed for the 2015 Massachusetts Ocean Management Plan. These data represent regionally critical habitat for black scoter, common eider, long-tailed duck, surf scoter, and white-winged scoter. This wintering habitat is a special, sensitive or unique (SSU) resource area. It was mapped using effort-corrected sea duck sightings data from 2008 to 2012 provided by USFWS and long-tailed duck telemetry data from 2008 to 2009 collected by Mass Audubon. All five species were grouped as “sea ducks” in this atlas, as well as the red-breasted merganser, large numbers of which migrate to eastern Cape Cod Bay in the spring to join wintering sea ducks. Huge flocks of long-tailed duck, numbering in the 10,000’s, roost in Nantucket Sound as well. NROC data was used as a guide to map sea duck general distribution in federal waters. Sea ducks in Rhode Island were mapped according to the 2015 RI WAP and are concentrated in Narragansett Bay, coastal ponds, and nearshore waters including Block Island. Among other wintering and migratory waterfowl species mapped in this atlas to coastal waters (including inshore lakes, ponds, wetlands, and a coastal buffer of .5 nautical miles), are “diving ducks” (bufflehead (*Bucephala albeola*), canvasback (*Aythya valisineria*), common goldeneye (*Bucephala clangula*), greater scaup (*Aythya marila*), lesser scaup (*Aythya affinis*)), “geese” (Atlantic brant (*Branta bernicla hrota*), Canada goose (*Branta Canadensis*)), “waterfowl” (blue-winged teal, common gallinule, hooded merganser, wood duck (*Aix sponsa*)) and “dabbling ducks” (American wigeon (*Anas Americana*), northern pintail (*Anas acuta*), ruddy duck (*Oxyura jamaicensis*)). Nesting areas were mapped for select species using data from BBA2 and USFWS. Major data sources include the 2015 RI WAP, 2015 MA SWAP, and 2016 RI Natural Heritage Areas. Waterfowl presence in Narragansett Bay was supported by species observations from 2005 through 2015 identified in the Narragansett Bay Winter Waterfowl Survey. This survey is a joint effort of the U.S. EPA Atlantic Ecology

Division and NBNERR. Additional seasonality and breeding information was based on expert input and information provided by the USFWS, including the 2012 report *Atlantic Coast Wintering Sea Duck Survey 2008-2011* (Silverman, et al.).

Seabirds – Pelagic species mapped in this atlas include alcids, “loons” (common loon (*Gavia immer*), red-throated loon (*Gavia stellate*)) “shearwaters” (Cory’s shearwater (*Calonectris diomedea*), great shearwater (*Puffinus gravis*), manx shearwater (*Puffinus puffinus*), sooty shearwater (*Puffinus griseus*)), and phalaropes (e.g. red-necked phalarope (*Phalaropus lobatus*)). Broad distribution polygons were mapped using the 2015 RI WAP, 2015 MA SWAP, and NROC’s digital maps of predicted distribution and abundance of marine birds. Many pelagic species can be seen foraging off the coast May through October, while others are present year-round. Migration and wintering primarily occurs September through June; these areas were mapped for select species in mostly nearshore waters including Nantucket Sound and Nantucket Shoals, an area of particularly abundant activity. Additional nesting site data for Leach’s storm petrel (state endangered) was provided by MA DFW NHESP. This seabird spends most of its life over the open ocean and breeds at only two locations in Massachusetts: Nomans Land Island and Penikese Island.

Shorebirds – Shorebirds in this atlas were primarily mapped to coastal dunes, beaches and flats, and small islands buffered .5 n.m. from the shoreline. The majority of shorebirds are migratory March through October, though some species such as the purple sandpiper winter along rocky shorelines October through April. Current nesting locations for the piping plover (state and federally endangered) were provided by MA DFW NHESP and USFWS, Monomoy NWR. Hand-delineated polygons based on observation records and 2012 aerials were modified to be congruent with the ESI shoreline and habitat polygons. Nesting areas for the American oystercatcher were mapped using the 2012 report provided by MA DFW NHESP, *Summary of 2011 Census of American Oystercatchers in Massachusetts* (Melvin). Both piping plover and American oystercatcher (state special concern) nest sites in Rhode Island were provided by RI DFW; nest sites were observed between 1988 and 2014, and 2003 and 2015, respectively, and were mapped either as points or converted to polygons.

For the purpose of mapping common migration areas for shorebirds in this atlas, several species were assigned to the species group “shorebirds” and include, among others, black-bellied plover (*Pluvialis squatarola*), dunlin (*Calidris alpina*), greater yellowlegs (*Tringa melanoleuca*), least sandpiper (*Calidris minutilla*), sanderling (*Calidris alba*), semi-palmated plover (*Charadrius semipalmatus*), semi-palmated sandpiper (*Calidris pusilla*), short-billed dowitcher (*Limnodromus griseus*), spotted sandpiper (*Actitis macularia*), upland sandpiper, whimbrel (*Numenius phaeopus*), and white-rumped sandpiper (*Calidris fuscicollis*). Individual species life history activity areas were mapped separately when data was available, e.g. migration areas for the red knot (federally proposed threatened). Additional distribution polygons and activity areas for shorebirds were mapped primarily using the 2015 RI WAP, 2015 MA SWAP, 2016 RI Natural Heritage Areas, and BBA2. Point data from 1974 through 2015 was also provided by the Manomet Shorebird Recovery Program’s International Shorebird Survey (ISS), which monitors shorebird populations and staging sites.

Rare Passerines – Nesting locations or vulnerable occurrences of rare, threatened or endangered passerines were included as polygons in this atlas if data was available from the 2015 RI WAP, 2015 MA SWAP, 2016 Rhode Island Natural Heritage Areas, or BBA2. These species are not generally thought of as at risk from an oil spill itself as they are hydrographically removed from large waterbodies, but were included in an effort to make this regional update more usable in an all-hazards context. Their SGCN status should be taken into consideration when conducting cleanup operations in the vicinity of known nesting locations. It should be noted that additional rare passerine species may be nesting in the AOI but were not included due to lack of data. Marsh obligate passerine species were grouped as “marsh passerine” for the

purposes of mapping shared distribution areas in this atlas and include the eastern meadowlark (*Sturnella magna*), marsh wren, Nelson’s sparrow (*Ammodramus nelsoni*), saltmarsh sparrow, seaside sparrow, and willow flycatcher (*Empidonax traillii*). These species inhabit marshes, which should be prioritized for protection in the case of an oil spill. Marshes are highly sensitive to oiling due to their biological productivity and the tendency for oil to persist based on low relative exposure to wind/wave energy. There are also difficulties associated with human cleanup activities in these habitats. Over 30 Neotropical and a few Nearctic short and long distance migratory species were assigned to the species group “passerine” and mapped as general distribution polygons in coastal thickets located in Rhode Island. These areas are heavily utilized during spring and fall migration and sometimes for wintering as well, and are also a breeding area for many species during the summer months.

Raptors – Nesting sites in Rhode Island for the northern harrier and peregrine falcon were mapped either as points or converted to polygons using data from the 2015 RI WAP. MA DFW NHESP provided GIS data for bald eagle wintering grounds along the Merrimack River and associated salt marshes (used for foraging), and nesting areas were mapped using BBA2. Nesting areas for barn owl, northern harrier, peregrine falcon, and short-eared owl were also mapped according to BBA2. Six raptor species (American kestrel (*Falco sparverius*), barn owl, northern harrier, northern goshawk (*Accipiter gentilis*), peregrine falcon, and short eared owl) were grouped as “raptor” and mapped to shared general distribution areas on both Block Island and the southern shore of Rhode Island with a concentration of “Common”. Both breeding and migration activity occurs in these geographic locations during the summer and fall. These species were not mapped in a similar manner in Massachusetts as populations are more disparate and rare. As with passerine species, raptors may not be immediately vulnerable to an oil spill, but due to their protected status responders should be aware of vulnerable areas, and cleanup crews should be aware of their presence. Raptors might also be secondarily affected in the case of an oil spill if carrion have suffered trauma. Monitored osprey (state special concern) nests from 2014-2016 were also mapped in this atlas as points in Rhode Island only and were provided by the Audubon Society of Rhode Island. Osprey nests are now ubiquitous in Massachusetts as well, especially on the Cape and Islands, by far the most important ecoregion for ospreys in Massachusetts, but were not included in the atlas due to lack of complete data. Mass Audubon should be contacted directly for up-to-date information or review of specific locations (see contact information below).

Expert contact for Massachusetts/Rhode Island Birds*:

Name	Agency	City	Phone	Species
Chris Raithel	RI DFW	West Kingston, RI	401-789-0281	Birds
Tom French	MADFW, NHESP	Westborough, MA	508-389-6355	Rare Birds
Andrew Vitz	MADFW, NHESP	Westborough, MA	508-389-6394	Rare Birds
Carolyn Mostello	MADFW, NHESP	Westborough, MA	508-389-6372	Waterbirds
Katharine Parsons	Mass Audubon, Coastal Waterbird Program; MANEM	Cummaquid, MA	508 362-7475	Waterbirds
Rick McKinney	EPA, Atlantic Ecology Division/ NBNERR	Narragansett, RI	401-782-3133	Wading Birds, Waterfowl
Peter Paton	URI	Kingston RI	401-874-2986	Shorebirds, Wading Birds

Name	Agency	City	Phone	Species
Chris Dwyer	USFWS, Migratory Bird Program, Northeast Region	Hadley, MA	413-253-8706	Migratory Birds
Joan Walsh	Mass Audubon	Lincoln, Massachusetts	781-259-2196	Breeding Birds
Susi von Oettingen	USFWS, New England Field Office	Concord, NH	603-223-2541 x6418	Red Knot
Kate Iaquinto	UMass Amherst/ USFWS Monomoy NWR	Chatham, MA	508-945-0594	Shorebirds, Piping Plover
Nick Ernst	USFWS, Rhode Island NWR Complex	Charlestown, RI	401-213-4406	Shorebirds, Gulls/Terns
Stephen Brown	Manomet, Shorebird Recovery Program	Plymouth, MA	508-224-6521	Shorebirds
Mark Faherty	Mass Audubon, Wellfleet Bay Wildlife Sanctuary	South Wellfleet, MA	508-349-2615	Osprey
Jon Scoones	Audubon Society of Rhode Island	Smithfield, RI	401-949-5454 x3044	Osprey

***Note: this list is not meant to represent all bird experts for the region.**

Major Data Sources Used: Birds

Kinlan, B.P., A.J. Winship, T.P. White, and J. Christensen. 2016. Modeling At-Sea Occurrence and Abundance of Marine Birds to Support Atlantic Marine Renewable Energy Planning: Phase I Report. U.S. Department of the Interior, Bureau of Ocean Energy Management, Office of Renewable Energy Programs, Sterling, VA. OCS Study BOEM 2016-039. xvii+113 p. Northeast Regional Ocean Council. Digital maps. Available at <http://northeastoceandata.org>

Massachusetts Division of Fisheries and Wildlife, Natural Heritage Endangered Species Program. 2016. Sensitive coastal species: Bird, Fish, Invertebrate, Plant, and Reptile data. Unpublished. Vector digital data; Expert knowledge.

Massachusetts Division of Fisheries and Wildlife, Natural Heritage Endangered Species Program. 2015. Colonial Waterbirds Important Nesting Habitat, 2015 Massachusetts Ocean Management Plan. Vector digital data. Content available at <http://www.mass.gov/eea/mop> .

Massachusetts Division of Fisheries and Wildlife. Massachusetts State Wildlife Action Plan 2015. Westborough, MA. Species profiles. Complete PDF document available at <http://www.mass.gov/eea/agencies/dfg/dfw/wildlife-habitat-conservation/state-wildlife-conservation-strategy.html> .

Rick McKinney, U.S. EPA. Narragansett Bay Research Reserve, Winter Waterfowl Survey, 2005-2015. Unpublished. Vector digital data; Expert knowledge.

Scott M. Melvin, Massachusetts Division of Fisheries and Wildlife, Natural Heritage Endangered Species Program. 2012. Summary of 2011 Census of American Oystercatchers in Massachusetts. Westborough, MA. Complete PDF document available at <http://www.mass.gov/eea/docs/dfg/nhesp/species-and-conservation/oystercatcher-census-report-2011.pdf>

Chris Raithel, Rhode Division of Fish and Wildlife. Colonial Nesting Sites. 1971-2015. Unpublished. Vector digital data; Expert knowledge.

Rhode Island Chapter of The Nature Conservancy, Rhode Island Department of Environmental Management, University of Rhode Island, and the Rhode Island Natural History Survey. 2015 Rhode Island Wildlife Action Plan. Kingston, RI. Vector digital data and species profiles. Complete PDF document available at <http://www.dem.ri.gov/programs/fish-wildlife/wildlife-huntered/swap15.php>

Rhode Island Department of Environmental Management. 2016. Rhode Island Natural Heritage Areas. Providence, RI. Vector digital data and supplemental species list supplied by Paul Jordan of RI DEM. Content available at <http://www.rigis.org/>.

The Massachusetts Office of Coastal Zone Management. 2015. Sea Duck Core Habitat, 2015 Massachusetts Ocean Management Plan. Vector digital data. Content available at <http://www.mass.gov/eea/mop>.

Emily D. Silverman, et al.. 2012. Atlantic Coast Wintering Sea Duck Survey, 2008-2011. PDF document. Available at <http://seaduckjv.org/pdf/studies/pr109.pdf>

Joan Walsh, Massachusetts Audubon Society. 2016. Massachusetts Breeding Bird Atlas 2 : 2007-2011. Lincoln, MA. Vector digital data; Database files. Project information available at: <http://www.massaudubon.org/our-conservation-work/wildlife-research-conservation/statewide-bird-monitoring/breeding-bird-atlases/bba2>

HERPETOFAUNA

Sea Turtles - Sea turtles depicted in this atlas for both Massachusetts and Rhode Island include green (federally threatened), Kemp's ridley (federally endangered), leatherback (federally endangered), and loggerhead (federally threatened). Although adults of hard-shelled species (green, Kemp's ridley, and loggerhead) are generally uncommon in these coastal waters, there is a regular presence of juveniles that is difficult to discern effectively during aerial surveys. Seagrass beds serve as developmental habitats, and green sea turtle juveniles have been known to navigate along the coast southward to warmer waters off the southern states (Dodge and Merigo, personal communication). Leatherbacks are relatively common in the AOI, and Vineyard Sound and Buzzards Bay are areas of particular vulnerability for this species as evidenced by frequent strandings and entanglements (Prescott, personal communication). There is little data to support sea turtle presence in Narragansett Bay and select shallower bays in Massachusetts, and so these areas were not mapped. Other species such as the Hawksbill turtle are known to occasionally visit the AOI but were not included in the atlas.

Seasonal presence for all sea turtles is summer through fall. General distribution polygons and concentrations are based on 2013 Atlantic Marine Assessment Program for Protected Species (AMAPPS)

line transect survey data, the 2010 report *Marine Mammals and Sea Turtles of Narragansett Bay, Block Island Sound, Rhode Island Sound, and Nearby Waters: Analysis of Existing Data for the Rhode Island Ocean Special Area Management Plan* (Kenney and Vigness-Raposa), and local resource expert input and review from New England Aquarium, NEFSC, GARFO, University of Rhode Island Coastal Institute, and Woods Hole Oceanographic Institute.

Inland reptiles and amphibians - Threatened, endangered and other rare reptiles and amphibians were added to the atlas based on their conservation status, their rarity in the region, or based on expert input.

Species in Rhode Island were mapped using either the 2016 RI DEM Natural Heritage Areas data or according to the key habitats and geographic areas highlighted in the 2015 RI WAP data and species profiles (see *BIRDS for complete description of these datasets*). Key habitats were mapped to the corresponding ESI classified shoreline polygons (e.g. freshwater marshes and swamps). Species that primarily utilize upland forest habitats and in some instances the surrounding wetlands and vernal were mapped to generalized land polygons. Natural Heritage Area polygons were assigned the mapping qualifier of “Vulnerable Occurrence” and include the eastern ribbon snake (state special concern), eastern spadefoot (state endangered), northern diamondback terrapin, northern leopard frog, and wood turtle (state special concern). Additional data for the northern diamondback terrapin at Napatree Point was provided by Nick Ernst of the USFWS, Rhode Island National Wildlife Refuge Complex.

The majority of species in Massachusetts occur in upland forest habitats and vernal pools and were mapped to generalized land polygons according to the geographic areas highlighted in the 2015 MA SWAP species profiles (see *BIRDS for complete description of this dataset*). Blanding’s turtle (state threatened) was mapped to the MA SWAP key habitat corresponding with the ESI scrub-shrub wetlands polygons. Distribution polygons for the eastern spadefoot (state threatened) and eastern box turtle within the Cape Cod National Seashore were supported by expert knowledge provided by Robert Cook, National Park Service. The Plymouth red-bellied turtle was mapped with the mapping qualifier of “Vulnerable Occurrence” using 2016 Critical Habitat Designation polygon data (USFWS, NOAA NMFS). “Rare reptile” data were mapped with the qualifier “Vulnerable Occurrence” and were provided by MADFW NHESP and Bob Prescott, Mass Audubon, Wellfleet Bay Wildlife Sanctuary. Rare herpetofauna species in Massachusetts were not included in their entirety in this atlas due to vulnerability of collection concerns by NHESP. NHESP should be contacted directly for up-to-date information or review of specific locations (see contact information below).

Expert Contacts for Massachusetts/Rhode Island herpetofauna*:

Name	Agency	City	Phone	Species
Kate Sampson	NOAA, GARFO, Protected Resources Division	Gloucester, MA	978-282-8470	Sea Turtles
Connie Merigo	New England Aquarium	Boston, MA	617-226-2102	Sea Turtles
Kara Dodge	Woods Hole Oceanographic Institute	Woods Hole, MA	508-289-2589	Sea Turtles, Leatherbacks
Debra Palka	NOAA, NEFSC, Protected Species Branch	Woods Hole, MA	508-495-2387	Sea Turtles

Erin Burke	MDMF, Protected Species	New Bedford, MA	508-990-2860 x142	Sea Turtles, Leatherbacks
Robert Kenney	URI Coastal Institute; North Atlantic Right Whale Consortium	Kingston, RI	401-874-6664	Sea Turtles
Robert Prescott	Mass Audubon, Wellfleet Bay Wildlife Sanctuary	South Wellfleet, MA	508-349-2615	Sea Turtles, Rare Reptiles
Nancy Karraker	URI Coastal Institute	Kingston, RI	401-874-2916	Northern diamondback terrapin
Chris Raithel	RI DFW	West Kingston, RI	401-789-0281	Reptiles and Amphibians
Robert Cook	NPS, Cape Cod National Seashore	Wellfleet, MA	508-487-3262 x0503	Reptiles and Amphibians
Mike Jones	MADFW, NHESP	Westborough, MA	508-389-7863	Reptiles and Amphibians
Jacob Kubel	MADFW, NHESP	Westborough, MA	508-389-6373	Amphibians

***Note: this list is not meant to represent all herpetofauna experts for the region.**

Major Data Sources Used: Herpetofauna

Department of Commerce, National Oceanic and Atmospheric Administration, National Ocean Service, Office for Coastal Management. Critical Habitat Designations in the United States as of January 2016; Plymouth Red-bellied Turtle. Vector digital data. Content available at <http://marinecadastre.gov/data/>.

Robert Kenney and Kathleen Vigness-Raposa, University of Rhode Island. 2010. Marine Mammals and Sea Turtles of Narragansett Bay, Block Island Sound, Rhode Island Sound, and Nearby Waters: An Analysis of Existing Data for the Rhode Island Ocean Special Area Management Plan. PDF document <http://seagrant.gso.uri.edu/oceansamp/pdf/appendix/10-Kenney-MM&T>; Database files; Expert knowledge.

Massachusetts Division of Fisheries and Wildlife, Natural Heritage Endangered Species Program. 2016. Sensitive coastal species: Bird, Fish, Invertebrate, Plant, and Reptile data. Unpublished. Vector digital data and expert knowledge.

Massachusetts Division of Fisheries and Wildlife. Massachusetts State Wildlife Action Plan 2015. Westborough, MA. Species profiles. Complete PDF document available at <http://www.mass.gov/eea/agencies/dfg/dfw/wildlife-habitat-conservation/state-wildlife-conservation-strategy.html>.

Debra Palka, National Oceanic and Atmospheric Administration, Northeast Fisheries Science Center. Atlantic Marine Assessment Program for Protected Species (AMAPPS) Northeast Aerial and Shipboard

Cruise Summer and Winter 2013. Vector digital data, Expert knowledge. Content available at <http://seamap.env.duke.edu>.

Rhode Island Chapter of The Nature Conservancy, Rhode Island Department of Environmental Management, University of Rhode Island, and the Rhode Island Natural History Survey. 2015 Rhode Island Wildlife Action Plan. Kingston, RI. Vector digital data and species profiles. Complete PDF document available at <http://www.dem.ri.gov/programs/fish-wildlife/wildlifehuntered/swap15.php>

Rhode Island Department of Environmental Management. 2016. Rhode Island Natural Heritage Areas. Providence, RI. Vector digital data and supplemental species list supplied by Paul Jordan of RI DEM. Content available at <http://www.rigis.org/>.

TERRESTRIAL MAMMALS

The terrestrial mammals depicted in this atlas are limited to the American water shrew (state special concern), eastern mole, meadow vole, New England cottontail (state special concern), northern myotis (state endangered, federally threatened), smoky shrew (state special concern), southern bog lemming (state special concern), and woodland jumping mouse. Of the above-mentioned species, only the New England cottontail and northern myotis are mapped in Massachusetts. All other species have either only been observed in areas out of the Massachusetts AOI, or are unique to Rhode Island in their rarity and vulnerability. Other terrestrial mammals are potentially occurring in the study area but were not mapped due to their relatively wide distribution, a lack of information regarding particular concentration areas, and/or the unlikelihood of impact during coastal and marine oil spills due to their use of more upland and inland habitats.

Terrestrial mammals were primarily mapped to key habitats upon which they depend in the geographic areas where they are most commonly found according to the species profiles in the 2015 RI WAP and 2015 MA SWAP (*see BIRDS for complete description of these datasets*). Species that mainly utilize upland habitats such as forest or grasslands were mapped to generalized land polygons and include the New England cottontail, northern myotis, woodland jumping mouse, and also a sub-species of meadow vole indigenous to New Shoreham (Block Island). The southern bog lemming occurs in freshwater emergent marsh mainly in the Great Swamp Management Area in South Kingstown, and the eastern mole is localized to sandy floodplains along the lower Pawcatuck River. The American water shrew was mapped to both forested swamps and to its specific areas of vulnerability as determined by the 2016 RI DEM Natural Heritage Areas dataset (*see BIRDS for complete description of this dataset*). The smoky shrew, which occurs in only a limited area of interior forest in Rhode Island, was mapped using the Natural Heritage data and assigned the mapping qualifier of "Vulnerable Occurrence". Distribution polygons for the American water shrew, eastern mole, and woodland jumping mouse were also informed by capture points provided by Charles Brown, RI DEM. Distribution polygons for the New England cottontail and northern myotis within the Cape Cod National Seashore were also supported by expert knowledge provided by Robert Cook, National Park Service. Rare terrestrial mammal species in Massachusetts were not included in their entirety in this atlas due to vulnerability of collection concerns by MA DFW NHESP. NHESP should be contacted directly for up-to-date information or review of specific locations (see contact information below).

Expert Contact for Massachusetts/Rhode Island terrestrial mammals*:

Name	Agency	City	Phone	Species
Charles Brown	RI DFW	West Kingston, RI	401-789-0281	Terrestrial Mammals

Brian Tefft	RI DFW	West Kingston, RI	401-789-0281	New England Cottontail
Tom French	MADFW, NHESP	Westborough, MA	508-389-6355	Terrestrial
Robert Cook	NPS, Cape Cod National Seashore	Wellfleet, MA	508-487-3262 x0503	Terrestrial Mammals

***Note: this list is not meant to represent all terrestrial mammal experts for the region.**

Major Data Sources Used: Terrestrial Mammals

Charles Brown, Rhode Island Department of Environmental Management Division of Fish and Wildlife. 2016. Capture points for American water shrew, Eastern mole, and Woodland jumping mouse. Unpublished. Vector digital data; Expert knowledge.

Massachusetts Division of Fisheries and Wildlife. Massachusetts State Wildlife Action Plan 2015. Westborough, MA. Species profiles. Complete PDF document available at <http://www.mass.gov/eea/agencies/dfg/dfw/wildlife-habitat-conservation/state-wildlife-conservation-strategy.html>.

Rhode Island Chapter of The Nature Conservancy, Rhode Island Department of Environmental Management, University of Rhode Island, and the Rhode Island Natural History Survey. 2015 Rhode Island Wildlife Action Plan. Kingston, RI. Vector digital data and species profiles. Complete PDF document available at <http://www.dem.ri.gov/programs/fish-wildlife/wildlifehuntered/swap15.php>

Rhode Island Department of Environmental Management. 2016. Rhode Island Natural Heritage Areas. Providence, RI. Vector digital data and supplemental species list supplied by Paul Jordan of RI DEM. Content available at <http://www.rigis.org/>.

FISH

The coastal waters of Massachusetts and Rhode Island support a high diversity of fish species due to the varying characteristics of the marine ecosystems located in the atlas area; waters north of Cape Cod are influenced by the colder Gulf of Maine currents, while waters to the south are influenced by the warmer waters of the Mid-Atlantic Bight. Nantucket Shoals also act as a thermal barrier reducing the warming effects of the Gulf Stream northward. Finfish depicted in this atlas include selected marine, estuarine, diadromous, and freshwater species, with an emphasis on species of conservation interest or commercial, recreational, and/or ecological importance. Fish distribution polygons were created based on survey information, digital data, and expert opinion provided primarily by local resource experts at MDMF, MADFW, RI DFW, and NROC. National Hydrography Dataset (NHD) stream line data was buffered into polygons and integrated with the ESI hydrographic layer where additional coverage was necessary to accurately portray species extent inland.

Freshwater - Freshwater fish species in Rhode Island were mapped using collection point data and expert input provided by Alan Libby of RI DFW. American brook lamprey are limited to the Blackstone River and a few of its tributaries and were assigned the mapping qualifier of "Vulnerable Occurrence". The species is currently listed as state threatened, but the status will likely change to endangered if current trends in habitat loss continue (Libby, 2015 RI WAP). Species in Massachusetts were mapped using the 2016 Coldwater Fisheries Resources (CFRs) data layer and accompanying species list provided by MADFW. As CFRs are important habitat for a number of cold water species that are typically more sensitive to alterations of stream flow, water quality, and temperature within their aquatic habitat, all

species mapped using this data were assigned the mapping qualifier of “Vulnerable Occurrence”. The CFRs sampling technique makes it difficult to predict exactly which species will be found in a given system, so all freshwater species were mapped to the full extent of freshwater areas in this dataset, except for the American brook lamprey. As of the 2015 MA SWAP, there were only twelve known populations of this threatened species in the state of Massachusetts; in this atlas it is mapped to select small streams with the mapping qualifier of “Spawning Area” to emphasize this important life history stage during mid-April to early May. Bridle shiner (state special concern) was mapped according to species profiles in the 2015 MA SWAP (see *BIRDS for complete description of this dataset*). Five additional freshwater fish species are found in CFRs in the AOI, but were not included in the atlas: northern pike (*Esox Lucius*), smallmouth bass (*Micropterus dolomieu*), tiger trout (*Salvelinus fontinalis* X *Salmo trutta*), walleye (*Stizostedion vitreum vitreum*), and yellow perch (*Perca flavescens*).

Diadromous – Diadromous fish species included in this atlas are alewife, American eel, American shad, Atlantic salmon, Atlantic sturgeon, blueback herring, brook trout (sea run), rainbow smelt, sea lamprey, and striped bass. Inland distribution throughout coastal streams was mapped primarily using data and input from local resource experts from RI DFW Freshwater and Diadromous Fisheries, MDMF, MADFW Fisheries, and the 2015 MA SWAP. Marine distribution was extracted from trawl and seine survey data provided by MDMF and RI DFW, and NROC’s 2016 habitat-based density models (see *Marine/Estuarine* section below for complete description of these datasets).

Atlantic salmon have been extirpated in Rhode Island primarily by the construction of dams that create barriers to upstream spawning habitat. Their presence now is the result of the state’s stocking efforts (fry and smolts) for restoration in the Pawcatuck River watershed. Distribution polygons for these areas of Atlantic salmon were assigned the mapping qualifier of “Harvest Area”. The stocked fish eventually migrate downstream to sea, and a few years later returning adults are trapped at the Potter Hill fishway and taken to a hatchery, where they are held until fall for spawning (Libby, 2015 RI WAP). There has been limited success restoring Atlantic salmon in Massachusetts and populations may be occurring in the Merrimack and nearby river systems. Distribution in these areas was mapped using CFRs data and assigned the mapping qualifier of “Spawning Area”. General distribution of Atlantic sturgeon (federally threatened) in Rhode Island was mapped in Narragansett Bay and offshore waters. Data for state and federally-listed sturgeon species in Massachusetts was provided by MADFW NHESP and is included in the atlas as “rare sturgeon” with the mapping qualifier of “Vulnerable Occurrence”, though it should be noted that these are areas of spawning as well. Spawning areas for striped bass were mapped using information from USFWS species profiles. Sea lamprey populations are declining in Massachusetts due to loss of spawning and rearing habitat; this species was mapped using CFRs data and assigned the mapping qualifier of “Vulnerable Occurrence”. Three additional diadromous fish species are found in CFRs in the AOI, but were not included in the atlas: brown trout (*Salmo trutta*), ninespine stickleback (*Pungitius pungitius*), and rainbow trout (*Oncorhynchus mykiss*).

Known and potential spawning areas and migratory routes for American shad and river herring in Rhode Island were provided by diadromous fish experts at RI DFW. River herring collectively refers to alewife and blueback herring, two species similar in appearance. It should be noted that is difficult to differentiate inshore water habitat for these species between migration and spawning, as much of it is potentially used for both. For example, impoundments at fishway sites are often used as spawning habitat, but many fish may also use them as passage to the waters upstream (McGee, personal communication). RI DFW also provided a fish passage guide indicating fishway site locations (including eel ramps) throughout Rhode Island. Spawning areas for American shad, river herring, and rainbow smelt were mapped in Massachusetts primarily using point data from the 2011 *Diadromous Fish Habitat Restoration Priority List*

(under revision) and expert input provided by Brad Chase, MDMF. A decline in population of these commercially important diadromous fish is being addressed in part by fish run restoration; both fishway site datasets are also available in HUMAN USE as the type “Fish Passage” in RESOURCE_PT. Migration areas for the American eel were also mapped using fish passage data and supplemented by species profiles in the 2015 MA SWAP. This catadromous species migrates from freshwater habitat downstream into the Atlantic Ocean to eventually spawn in the Sargasso Sea. Overfishing and habitat degradation have resulted in a decline in abundance, and eel ramps are one measure put in place to attempt to rebuild stocks (Libby, 2015 RI WAP). Brook trout (sea run) have recently been discovered in some Rhode Island coastal streams. Experts at RI DFW note that the inland distribution maps for this species primarily illustrate potential areas where it may be found when environmental conditions are suitable (e.g. water temperature). Brook trout (sea run) may coexist in the same river systems as resident brook trout, but spawning and migratory areas have not yet been specifically identified (Libby, personal communication).

Marine/Estuarine – Distribution, abundance, and seasonality of fish species was based primarily on data and expert input provided by RI DFW Marine Fisheries, URI Graduate School of Oceanography (GSO), MDMF, and NROC. Rhode Island coverages were created based on datasets from the following three fishery independent surveys conducted by RI DFW Marine Fisheries: 1) RI Coastal Fishery Resource Assessment Trawl Survey – This survey employs a stratified random design and has been monitoring finfish stocks in Narragansett Bay, Rhode Island Sound, and Block Island Sound since 1979; samples taken in the spring and fall are an accurate indicator of relative species abundance based on biology and life history; 2) RI Narragansett Bay Juvenile Finfish Beach Seine Survey - Monthly samples (June – October) have been collected since 1986 at fixed stations throughout Narragansett Bay; and 3) RI Coastal Pond Juvenile Finfish Beach Seine Survey - Monthly samples (May – October) have been collected since 1991 at fixed stations throughout Rhode Island’s coastal ponds. Data collected by the URI GSO Fish Trawl Survey from 2006-2015 was also used to support bottom fish presence in Narragansett Bay. This survey consists of two stations (mid-bay near Fox Island and lower-bay near Whale Rock) and was developed to quantify the seasonal occurrences of migratory fish populations. Inshore coverages in Massachusetts were created using datasets from two surveys conducted by MDMF Resource Assessment Project: 1) Bottom Trawl Survey - Monitoring benthic fishes and some invertebrates throughout state coastal waters since 1978; samples are taken in May and September to coincide with seasons when either adults or juveniles are available inshore; and 2) Seine Survey – Conducted annually since 2004 to monitor spawning success of winter flounder in six estuaries on southern Cape Cod (Great Pond, Cotuit Bay, Lewis Bay, Bass River, and Stage Harbor); data for summer flounder and a few species of small fish collected as well. A subset of the MDMF trawl dataset from 2000 through 2015 was used, and all other survey datasets were used in their entirety through 2015. Offshore coverages in Massachusetts were created using NROC’s 2016 habitat-based density models that characterize the predicted distribution and abundance of fish species. The digital maps sourced from fall bottom trawl surveys performed by NEFSC (1970-2014) were used as a guide to map species presence in federal waters.

The majority of estuarine and marine fish species in Rhode Island were mapped to one of the following three spatial coverages: 1) Little Narragansett Bay, Narrow River, coastal ponds including Great Salt Pond (Block Island), and tidal waters in Narragansett Bay north of the COLREGS line; 2) all of the aforementioned areas in addition to a one n.m. extension seaward from the coastal feature; or 3) all coastal waters. A few estuarine species, for example white perch, are mapped in coastal streams and nearshore waters of Narragansett Bay. Atlantic cod adults are present year-round in offshore waters only and were not mapped in waters shallower than 30’; larvae and juveniles, however, are present in all coastal waters January through May. The species group killifish (*Fundulus spp.*) mapped in Rhode Island includes rainwater killifish (*Lucania parva*), striped killifish (*Fundulus majalis*), and spotfin killifish (*Fundulus luciae*). Killifish

were mapped to coastal ponds and Narragansett Bay, but rainwater killifish can also be found in coastal streams. The sand tiger, mapped to all coastal waters, is in need of special protective management measures due to its reduced ability to sustain fishing pressure; this species only produces two pups per litter and as a result has severely declining annual rates of population increase. The lined sea horse (*Hippocampus erectus*) was not included in this atlas but is also present in all coastal waters. This species is declining in numbers as well and has an IUCN (International Union for Conservation of Nature and Natural Resources) Rank of “Vulnerable” (2015 RI WAP).

The majority of estuarine and marine fish species in Massachusetts were mapped using broad distributions with a clearly defined boundary between state and federal coastal waters. Relative abundance values within state waters for species identified as Important Fish Resources by the 2015 Massachusetts Ocean Management Plan were calculated using MDMF trawl survey counts/weights and assigned a concentration value of “Abundant”, “Common”, or “Rare”. Seven of these species (Atlantic cod, black sea bass, haddock, red hake, silver hake, spiny dogfish, and winter skate) have distinct fall and spring concentrations in varying locations such as Cape Cod Bay, Nantucket Sound, and Buzzards Bay. All other species have similar seasonal concentration and distribution year-round: little skate, scup, summer flounder, tautog, windowpane, winter flounder, witch flounder, and yellowtail flounder. Several estuarine fish including the threespine stickleback (state threatened) were mapped solely to bays, estuaries, and tidal rivers, a few species of which were also mapped to coastal streams using CFRs data. The species group “tunas” was mapped to all coastal waters in Massachusetts using NROC’s 2015 *Highly Migratory Essential Fish Habitat (EFH) Overlay* data layer and includes bluefin tuna (*Thunnus thynnus*) and yellowfin tuna (*Thunnus albacares*), though the latter is only present in offshore waters south of Cape Cod. The Atlantic wolfish (*Anarhichas lupus*) was mapped to all coastal waters but should be noted for its species of concern status in the Gulf of Maine as designated by NOAA’s NMFS. The species group “searobins” (*Prionotus spp.*) was mapped to all coastal waters in both Massachusetts and Rhode Island and includes striped searobin (*Prionotus evolans*) and northern searobin (*Prionotus carolinus*).

Two estuarine and marine fish species of importance in Massachusetts and Rhode Island coastal waters not included in the atlas are Atlantic menhaden (*Brevoortia tyrannus*) and butterfish (*Peprilus triacanthus*). American sand lance was not mapped in Massachusetts, but is a critical prey species for the roseate tern. Additional species present in the AOI but not included in the atlas are cunner (*Tautoglabrus adspersus*), fourspot flounder (*Paralichthys oblongus*), grubby (*Myoxocephalus aeneus*), Gulfstream flounder (*Citharichthys arctifrons*), northern pipefish (*Syngnathus fuscus*), northern sand lance (*Ammodytes dubius*), sea raven (*Hemitripterus americanus*), smallmouth flounder (*Etropus microstomus*), smooth dogfish (*Mustelus canis*), and spotted hake (*Urophycis regia*).

Expert contacts for Massachusetts/Rhode fish*:

Name	Agency	City	Phone	Species
Brad Chase	MDMF, New Bedford Office	New Bedford, MA	508-990-2860 x118	Diadromous, Fish Passages
Phillip Edwards	RI DFW, Freshwater and Diadromous Fisheries	West Kingston, RI	401-789-0281x13	Diadromous, Fish Passages

Patrick McGee	RI DFW, Freshwater and Diadromous Fisheries	West Kingston, RI	401-789-0281	Diadromous, American Eel
Stephen Hurley	MADWF Southeast District Office	Buzzards Bay, MA	508-759-3406	Freshwater
Caleb Slater	MADWF, Fisheries	Westborough, MA	508-389-6331	Anadromous, Freshwater
Alan Libby	RI DFW, Freshwater and Diadromous Fisheries	West Kingston, RI	401-789-0281x19	Freshwater, Ponds and Streams
Corey Pelletier	RI DFW, Freshwater and Diadromous Fisheries	West Kingston, RI	401-789-0281	Freshwater, Ponds and Streams, Brook Trout
Jeremy Collie	URI, Graduate School of Oceanography	Kingston, RI	401-874-6859	Marine/Estuarine
John Lake	RI DFW, Marine Fisheries	Jamestown, RI	401-423-1942	Marine/Estuarine, Coastal Ponds
Eric Schneider	RI DFW, Marine Fisheries	Jamestown, RI	401-423-1933	Marine/Estuarine
Matt Camisa	MDMF, New Bedford Office	New Bedford, MA	508-990-2860 x139	Groundfish
Vincent Manfredi	MDMF, New Bedford Office	New Bedford, MA	508-990-2860 x110	Small Fish
Russel Brown	NOAA, NEFSC	Woods Hole, MA	508-495-2000	Marine
Vincent Guida	NOAA, NEFSC	Woods Hole, MA	508-495-2000	Marine

***Note: this list is not meant to represent all fish experts for the region.**

Major Data Sources Used: Fish

Matthew Camisa and Mark Szymanski, Massachusetts Division of Marine Fisheries. MDMF Resource Assessment Survey Project: Bottom Trawl Survey Data, Spring and Fall, 2000-2015. Unpublished. Spreadsheet; Expert knowledge. Project information available at <http://www.mass.gov/eea/agencies/dfg/dmf/programs-and-projects/resource-assessment-surveys-project.html>.

Brad Chase, Massachusetts Division of Marine Fisheries. 2011 Diadromous Fish Habitat Restoration Priority List (Under Revision). Unpublished. Spreadsheet; Expert knowledge.

Jeremy Collie and Joe Langan, University of Rhode Island Graduate School of Oceanography. University of Rhode Island's Graduate School of Oceanography's (GSO) Narragansett Bay Fish Trawl Survey, 2006-2015. Survey information available at <http://www.gso.uri.edu/fishtrawl>

Phillip Edwards and Patrick McGee, Rhode Island Division of Fish and Wildlife, Freshwater and Diadromous Fisheries. 2016. Fish Passage Guide: Anadromous Fish Runs and Eel Ramps. Unpublished. Spreadsheet; Expert knowledge.

Michael Fogarty and Charles Perretti. 2016. Distribution and biomass data for fish species along the US east coast from about Cape Hatteras north to Canadian waters. Created by the Northeast Fisheries Science Center for the Northeast Regional Ocean Council. Digital maps. Available at <http://northeastoceandata.org>.

John Lake, Jason McNamee, Scott Olszewski, and Eric Schneider, Rhode Island Division of Fish and Wildlife, Marine Fisheries. RI Coastal Pond Juvenile Finfish Beach Seine Survey, RI Narragansett Bay Juvenile Finfish Beach Seine Survey, RI Coastal Fishery Resource Assessment Trawl Survey; 1979-2015. Unpublished. Spreadsheet; Expert knowledge.

Alan Libby, Rhode Island Division of Fish and Wildlife. 2016. Freshwater and Anadromous Fish. Unpublished. Spreadsheet; PDF documents; Expert Knowledge.

Vincent Manfredi, Massachusetts Division of Marine Fisheries. MDMF Resource Assessment Surveys Project: Seine Survey Data, 2004-2015. Unpublished. Spreadsheet; Expert knowledge. Project information available at <http://www.mass.gov/eea/agencies/dfg/dmf/programs-and-projects/resource-assessment-surveys-project.html>.

Massachusetts Division of Fisheries and Wildlife. Massachusetts State Wildlife Action Plan 2015. Westborough, MA. Species profiles. Complete PDF document available at <http://www.mass.gov/eea/agencies/dfg/dfw/wildlife-habitat-conservation/state-wildlife-conservation-strategy.html>.

David Szczebak, Massachusetts Division of Fisheries and Wildlife. 2016. MADFW Coldwater Fisheries Resources. Unpublished. Vector digital data; Supplemental species list; Expert knowledge.

INVERTEBRATES

Invertebrates depicted in this atlas include selected marine and estuarine species of commercial, recreational, ecological and/or conservation interest. Distribution polygons were created based on survey information, digital data, and expert opinion provided primarily by local resource experts at MDMF, MADFW, NEFSC, and RI DFW. National Hydrography Dataset (NHD) stream line data was buffered into polygons and integrated with the ESI hydrographic layer where additional coverage was necessary to accurately portray species extent inland.

Marine/Estuarine Invertebrates – Distribution, abundance, and seasonality of estuarine and marine invertebrate species in Rhode Island was primarily based on expert input and review from RI DFW Marine Fisheries. General distribution polygons were developed using a draft document summarizing the presence or absence of common shellfish species in vulnerable coastal waters and supported by invertebrate data collected between 1979 and 2015 during three fishery independent surveys conducted by RI DFW Marine Fisheries: Coastal Fishery Resource Assessment Trawl Survey, Narragansett Bay Juvenile Finfish Beach Seine Survey, and Coastal Pond Juvenile Finfish Beach Seine Survey. Data from the URI GSO Fish Trawl Survey was also used to support invertebrate presence in Narragansett Bay (*see Marine/Estuarine section of Fish for complete description of these datasets*). The majority of species were mapped by RI DFW invertebrate specialists to one of the following three spatial coverages: 1) Little Narragansett Bay, Narrow River, coastal ponds including Great Salt Pond (Block Island), and tidal waters in Narragansett Bay north

of the COLREGS line; 2) all of the aforementioned areas in addition to a one n. m. extension seaward from the coastal feature; or 3) all coastal waters. Known spawning sites for horseshoe crab were mapped in Narragansett Bay and along the southern shore. Two invertebrate species of high importance in Rhode Island coastal waters are the longfin squid and American lobster, the latter of which is overfished and considered in depleted, poor condition.

Distribution, abundance, and seasonality of estuarine and marine invertebrate species in Massachusetts waters varies greatly north and south of Cape Cod due to the varying conditions of the coastal ecosystems. Inshore coverages were created primarily using expert input and data from MDMF that includes the Resource Assessment Project Bottom Trawl and Seine Surveys (see *Marine/Estuarine section of Fish for complete description of these datasets*) and Lobster Ventless Trap Survey. The latter dataset is a random stratified fishery-independent survey that has been conducted since 2006 and hauls traps twice per month, June through September. The Ventless Trap Survey is capable of sampling on all bottom types with no exclusions and thus is a good tool for characterizing spatial distribution of lobsters and other invertebrates (Pugh, personal communication). Offshore coverages were developed using data and expert input from NEFSC that includes distribution maps indicating location and abundance (raw catch numbers) of select marine invertebrates collected during spring and fall bottom trawl surveys from 2006 through 2016. The boundary between state and federal waters in Massachusetts is clearly defined in the atlas.

Six invertebrate species identified as Important Fish Resources by the 2015 Massachusetts Ocean Management Plan were mapped using a subset of the MDMF Trawl Survey data. Concentration areas for the migratory longfin squid, present in high numbers throughout all coastal waters April through November, were calculated using relative abundance of counts from 2000 through 2015 and assigned a value of “Common”. Kernel density maps were created for channeled and knobbed whelk, horseshoe crab, Jonah crab, and sea scallop using spring and fall biomass from 1978 through 2012. The resulting polygons of graded density were mapped as “Concentration Areas” and assigned values ranging from “High” to “Low”. The seasonality assigned to these areas generally reflects the species abundance and breeding activity captured by the spring and fall trawl survey months, though it should be noted that there is a year-round presence of these species in these areas as well. All six of the aforementioned species were mapped as general distribution polygons outside of these concentration areas except for channeled and knobbed whelk. Whelks are present, however, in all state waters south of Cape Cod with the exception of deeper areas, and also have limited distribution north of the Cape. They bury in the mud December through February (Schneider, personal communication). Spawning sites for horseshoe crabs were mapped to sandy beaches and nursery areas mapped to marsh habitat and protected embayments where juveniles can remain for the first few years of their lives. Other areas of importance for adults of this species are troughs and channels, which are used for staging and overwintering (Perry, personal communication). Nursery areas were also mapped for blue crabs, which have a highly estuarine dependent life history and distribution. As with a few other invertebrate species, such as northern shrimp, an offshore depth contour between 20’ and 40’ was used to define the extent of species distribution.

Lobster is one of the most important commercial resources found within the waters of the Commonwealth and supports a multi-million dollar industry. Concentration areas for this species were created using relative abundance of lobster catch per trap haul data from the Ventless Trap Survey between 2010 and 2015 (except for 2013), and assigned values of “High” or “Medium”. Seasonality of these areas reflects the months of the survey season, but concentrations can persist year-round. Data from earlier seasons was not included as the more recent years more accurately represent current conditions regarding increasing water temperatures and resulting species distribution. Lobster populations as a whole are much larger north of Cape Cod; Boston Harbor and Salem Sound are major areas of both juvenile and adult lobster

concentrations and should be considered critical lobster habitat. All lobster data and information was provided by Tracy Pugh, MDMF.

Nine species of shellfish were mapped in Massachusetts as general distribution polygons with a value of “Potential” using MDMF’s 2011 *Shellfish Suitability Areas* data layer. These polygons represent habitats suitable for shellfish species and include sites where shellfish have been observed since the mid-1970’s, but may not currently support any shellfish. MDMF approved use of these data for this atlas, but should be contacted directly for up-to-date information or site specific assessments for impact or mitigation (see contact information below). Mussels found in coastal rocky habitats are an important food resource for seabirds. Mussel beds were mapped as points in Massachusetts using three data layers developed by Mass CZM for the 2015 Massachusetts Ocean Management Plan: *Attached Mussel Beds*, *Mussel Reefs*, and *Soft Sediment Mussel Beds*. These datasets indicate locations where mussel beds were observed in analyzed seafloor photographs from 2013, and biological information was classified according to a modified version of the Coastal and Marine Ecological Classification Standard (CMECS), Version 4.0, Benthic Biotic Component (Federal Geographic Data Committee, January 2012). Mussel beds, as well as ampelisca (amphipods) and crepidula (commonly known as slipper shells) beds, were mapped as polygons in Narragansett Bay using data from NBEP and expert input from RI DEM. Additional estuarine and marine invertebrate species present in the AOI but not included in the atlas due to either limited commercial importance or paucity of data include the green urchin (*Strongylocentrotus droebachiensis*), green crab (*Carcinus maenas*), lady crab (*Ovalipes ocellatus*), and a few species of spider crab.

Rare and endangered invertebrates - General distribution polygons for rare freshwater bivalves in Massachusetts and Rhode Island were mapped as “rare freshwater mussels” according to the geographic areas highlighted in species profiles of the 2015 RI WAP and 2015 MA SWAP (see *BIRDS for complete description of these datasets*). All species are either state special concern or of particular conservation interest and include alewife floater (*Anodonta imbecilis*), eastern lampmussel (*Lampsilis radiata*), eastern pondmussel (*Ligumia nasuta*), squawfoot (*Strophitus undulatus*), and tidewater mucket (*Leptodea ochracea*). The eastern pearlshell (state endangered) is mapped only in Rhode Island and can be found in the Pawcatuk River basin, which supports several species of freshwater mollusks (2015 RI WAP). MADFW NHESP provided data for “rare snail” in Massachusetts; these gastropods inhabit fresh or brackish marshes and are mapped as “Vulnerable Occurrence”.

Rare insects in Rhode Island were mapped as polygons clipped from marine waters and assigned the mapping qualifier of “Vulnerable Occurrence” using 2016 RI DEM Natural Heritage Areas data (see *BIRDS for complete description of this datasets*). Additional information for beetles was provided by Chris Raithel, RI DEM. The American burying beetle (state and federally endangered) is most commonly found in field habitats on Block Island only, and may be secondarily affected by an oil spill if the carrion it is attracted to has suffered trauma (Raithel, personal communication). Risks to other rare beetles that inhabit sandy beaches include injury during oil spill response due to vehicular traffic. The ringed boghaunter (state endangered) can be found in fens and bogs located in coastal plain peatlands and have a brief flight season extending from late April to early June only (2015 RI WAP). All other insect species included in the Natural Heritage data located in the Rhode Island AOI were assigned to one of two species groups in the atlas: “threatened insect” or “rare insect” (special concern, or of particular conservation interest). See below for complete list of species included in each category.

Rare insect species in Massachusetts were mapped as “rare insect” in this atlas using a single dataset provided by MADFW NHESP and were assigned the mapping qualifier of “Vulnerable Occurrence”. Due to high recreational use in Westport, MA, rare insect populations in this area were assigned the

concentration of “Potential” (von Oettingen, personal communication). Rare invertebrate species in Massachusetts (insects, as well as bivalves and crustaceans) were not included in their entirety in this atlas due to vulnerability of collection concerns by NHESP. NHESP should be contacted directly for up-to-date information or review of specific locations (see contact information below).

Threatened Insect

Brook snaketail	<i>Ophiogomphus asperses</i>	Southern sprite	<i>Nehalennia integricolis</i>
Dark-bellied tiger beetle	<i>Cicindela tranquebarica</i>	Zebra clubtail	<i>Stylurus scudderii</i>

Rare Insect

Arrow clubtail	<i>Stylurus spiniceps</i>	Hairy-necked tiger beetle	<i>Cicindela hirticollis</i>
Arrowhead spiketail	<i>Cordulegaster obliqua</i>	Henry's elfin	<i>Callophrys henrici</i>
Big sand tiger beetle	<i>Cicindela formosa</i>	Hessel's hairstreak	<i>Callophrys hesseli</i>
Bog copper	<i>Lycaena epixanthe</i>	Hoary elfin	<i>Callophrys polios</i>
Broad winged skipper	<i>Poanes viator zizaniae</i>	Lyre-tipped spreadwing	<i>Lestes unguiculatus</i>
Claybanks tiger beetle	<i>Cicindela limbalis</i>	Nine-spotted ladybug	<i>Coccinella novemnotata</i>
Coastal barrens buckmoth	<i>Hemileuca maia</i>	Northern hairstreak	<i>Fixsenia favonius ontario</i>
Coastal swamp metarranthis	<i>Metarranthis pilosaria</i>	Pale green pinion moth	<i>Lithophane viridipallens</i>
Comet darner	<i>Anax longipes</i>	Pine Barrens bluet	<i>Enallagma recurvatum</i>
Common sanddragon	<i>Progomphus obscurus</i>	Pitcher plant borer moth	<i>Papaipema appassioanata</i>
Coppery emerald	<i>Somatochlora georgiana</i>	Saltmarsh tiger beetle	<i>Cicindela marginata</i>
Cow path tiger beetle	<i>Cicindela purpurea</i>	Scarlet bluet	<i>Enallagma pictum</i>
Dusted skipper	<i>Atrytonopsis hianna</i>	Sleepy duskywing	<i>Erynnis brizo</i>
Eastern red-bellied tiger beetle	<i>Cicindela rufiventris</i>	Spartina borer moth	<i>Spartiniphaga inops</i>
Frosted elfin	<i>Callophrys irus</i>	Spatterdock darner	<i>Aeshna mutata</i>
		White m hairstreak	<i>Parrhasius m-album</i>

Expert Contacts for Massachusetts/Rhode invertebrates*:

Name	Agency	City	Phone	Species
Chris Raithel	RI DFW	West Kingston, RI	401-789-0281	Beetles
Susi von Oettingen	USFWS, New England Field Office	Concord, NH	603-223-2541 x6418	Rare insects
Michael Nelson	MDFW NHESP	Westborough, MA	508-389-6374	Rare and Terrestrial Invertebrates
Peter Hazelton	MDFW NHESP	Westborough, MA	508-389-6389	Aquatic Invertebrates
Scott Olszewski	RI DFW, Marine Fisheries	Jamestown, RI	401-423-1934	Horseshoe Crabs
Derek Perry	MDMF, New Bedford Office	New Bedford, MA	508-990-2860 x148	Horseshoe Crab, Crabs

Name	Agency	City	Phone	Species
Peter Chase	NOAA, NEFSC/ ASMFC Northern Shrimp Survey	Woods Hole, MA	508-495-2348	Northern Shrimp, Crangon
Kelly Whitmore	MDMF, Annisquam River Station	Gloucester, MA	978-282-0308 x102	Northern Shrimp, Green Crab
Dennis Erkan	RI DFW, Marine Fisheries	Jamestown, RI	401-423-1932	Shellfish
Tracy Pugh	MDMF, New Bedford Office	New Bedford, MA	978-282-0308 x138	Lobster
Mark Rousseau	MDMF, Annisquam River Station	Gloucester, MA	978-282-0308 x162	Shellfish
Eric Schneider	RI DFW, Marine Fisheries	Jamestown, RI	401-423-1933	Marine Invertebrates, Whelks
Vincent Guida	NOAA, NEFSC	Woods Hole, MA	508-495-2000	Marine Invertebrates
Russel Brown	NOAA, NEFSC	Woods Hole, MA	508-495-2000	Marine Invertebrates

***Note: this list is not meant to represent all invertebrate experts for the region.**

Major Data Sources Used: Invertebrates

Matthew Camisa and Mark Szymanski, Massachusetts Division of Marine Fisheries. MDMF Resource Assessment Survey Project: Bottom Trawl Survey Data, Spring and Fall, 2000-2015. Unpublished. Spreadsheet; Expert knowledge. Project information available at <http://www.mass.gov/eea/agencies/dfg/dmf/programs-and-projects/resource-assessment-surveys-project.html>.

Dennis Erkan, Rhode Division of Fish and Wildlife, Marine Fisheries. 2016. Coastal Estuaries, Ponds, and Rivers with Greatest Protection Concerns for Invertebrates and Fish. Unpublished. Word document; Expert knowledge.

Kathryn Ford, Massachusetts Division of Marine Fisheries. Important Fish Resources, 2015 Massachusetts Ocean Management Plan – Individual Fish and Invertebrate Species Data, 1978-2012. Unpublished. Vector digital data. Project information available at <http://www.mass.gov/eea/waste-mgmt-recycling/coasts-and-oceans/mass-ocean-plan/2015-final-ocean-plan.html>

Vincent Guida, National Oceanic and Atmospheric Administration (NOAA), Northeast Fisheries Science Center (NEFSC). NEFSC Bottom Trawl Surveys, Spring and Fall 2006-2016 – Invertebrate Species. Unpublished. PDF document; Expert knowledge.

John Lake, Jason McNamee, Scott Olszewski, and Eric Schneider, Rhode Island Division of Fish and Wildlife, Marine Fisheries. RI Coastal Pond Juvenile Finfish Beach Seine Survey, RI Narragansett Bay Juvenile Finfish Beach Seine Survey, RI Coastal Fishery Resource Assessment Trawl Survey; 1979-2015. Unpublished. Spreadsheet; Expert knowledge.

Vincent Manfredi, Massachusetts Division of Marine Fisheries. MDMF Resource Assessment Surveys Project: Seine Survey Data, 2004-2015. Unpublished. Spreadsheet; Expert knowledge. Project information available at <http://www.mass.gov/eea/agencies/dfg/dmf/programs-and-projects/resource-assessment-surveys-project.html>.

Massachusetts Division of Fisheries and Wildlife. Massachusetts State Wildlife Action Plan 2015. Westborough, MA. Species profiles. Complete PDF document available at <http://www.mass.gov/eea/agencies/dfg/dfw/wildlife-habitat-conservation/state-wildlife-conservation-strategy.html>.

Massachusetts Division of Fisheries and Wildlife, Natural Heritage Endangered Species Program. 2016. Sensitive coastal species: Bird, Fish, Invertebrate, Plant, and Reptile data. Unpublished. Vector digital data; Expert knowledge.

Tracy Pugh, Massachusetts Division of Marine Fisheries. Lobster Ventless Trap Survey Data, 2010-2015. Unpublished. Vector digital data; Expert knowledge.

Rhode Island Chapter of The Nature Conservancy, Rhode Island Department of Environmental Management, University of Rhode Island, and the Rhode Island Natural History Survey. 2015 Rhode Island Wildlife Action Plan. Kingston, RI. Vector digital data and species profiles. Complete PDF document available at <http://www.dem.ri.gov/programs/fish-wildlife/wildlifehuntered/swap15.php>

Rhode Island Department of Environmental Management. 2016. Rhode Island Natural Heritage Areas. Providence, RI. Vector digital data and supplemental species list supplied by Paul Jordan of RI DEM. Content available at <http://www.rigis.org/>

Mark Rousseau, Massachusetts Division of Marine Fisheries. 2011. Shellfish Suitability Areas. Boston, MA. Vector digital data. Content available at Massachusetts Geographic Information System (MassGIS).

BENTHIC HABITATS

Benthic habitats mapped in this atlas include a few different species of submerged aquatic vegetation (SAV) and macroalgae.

The most common SAV species in Massachusetts and Rhode Island is eelgrass (*Zostera marina*), but widgeon grass (*Ruppia maritima*) can be found as well in areas of less salinity. These plants form an important marine and estuarine aquatic habitat that is integral to the health of shallow coastal areas. They are the base of food production in the sea and provide shelter and a place of attachment for a wide range of fish, invertebrates, and herpetofauna during some stage in their life cycle. Eelgrass beds filter excess nutrients out of the water, and in certain locations help to stabilize unconsolidated sediments and shorelines. All SAV were assigned the mapping qualifier of “High Ecological Value”. Polygons depicting SAV in Rhode Island were primarily based on the 2012 dataset developed by the Rhode Island Eelgrass Mapping Task Force that utilized aerial survey and ground truthing as production methods. These areas of SAV were mapped with a concentration value of “Present”. Two SAV datasets produced by the URI Environmental Data Center in 2006 and 2009 were also used where they did not overlap the 2012 data, and these polygons were mapped with a concentration value of “Potential” based on local resource expert input. Jim Turenne, USDA-NRCS, provided input for additional widgeon grass coverage in coastal ponds in Little Compton and Sachem Pond on Block Island.

Polygons depicting SAV in Massachusetts were based on datasets developed by the MassDEP Wetlands Conservancy Program Eelgrass Mapping Project in 2010, 2012, and 2013; together the three layers cover the entire Massachusetts coastline. MassDEP has been surveying since 1995 and relies on remote sensing of aerial imagery supplemented by underwater video data to acquire SAV extents. Additional eelgrass coverage for the Town of Sandwich was provided by Kathryn Ford, MDMF, and for Boston Harbor and Salem Sound by Todd Callaghan, Mass CZM. All of these areas of SAV were mapped with a concentration value of either “Present”, “Patchy”, or “Dense”. Mass CZM produced a dataset for the 2015 Massachusetts Ocean Management Plan that augmented the MassDEP data with eelgrass patches noted by state and federal divers and historic and buffer data that included areas of potential eelgrass growth. Where these latter data did not overlap existing eelgrass polygons, they were mapped with a concentration of “Potential”.

Two rare freshwater plants species, cutleaf watermilfoil (*Myriophyllum pinnatum*)(state threatened) and hornleaf riverweed (*Podostemum ceratophyllum*)(state special concern) were also mapped as SAV in Rhode Island with a mapping qualifier of “Vulnerable Occurrence” and a concentration of “Present” using the 2016 RI DEM Natural Heritage Areas data (*see BIRDS for complete description of this dataset*). MADFW NHESP provided a single dataset for ten coastal and estuarine plant species that depend on the dynamic interface of land and water. The areas of these data located in water were mapped as “rare aquatic/wetland plant” (SAV) with the mapping qualifier “High Ecological Value” and a concentration of “Present”.

Macroalgae mapped for Rhode Island includes both red (Rhodophyta) and green (Chlorophyta). Both species have a year-round presence, but green algae have a strong seasonal component and are only present in large abundances in the summer and fall (Green and Deacutis, personal communication). Distribution polygons in Narragansett Bay were based on data from summer and fall aerial surveys conducted by RI DFW between 2007 and 2012 and along coastal ponds and rocky shores by expert input from Lindsay Green and Carol Thornber, URI. Only high density accumulations were mapped with a concentration value of either 41-70% or 71-100% of total cover. Macroalgae depicted in Massachusetts consist of aquatic vegetation beds mapped as points using three data layers developed by Mass CZM for the 2015 Massachusetts Ocean Management Plan: *Attached Mussel Beds*, *Canopy-forming Algal Beds (Kelps)*, and *Soft Corals*. These datasets indicate locations where benthic biota was observed in analyzed seafloor photographs from 2013, and the biological information was classified according to a modified version of the Coastal and Marine Ecological Classification Standard (CMECS), Version 4.0, Benthic Biotic Component (Federal Geographic Data Committee, January 2012). The biotic subclass of macroalgae were extracted from these data and mapped with a concentration value of “Medium” based on density of cover.

Expert contacts for Massachusetts/Rhode Island benthic habitats*:

Name	Agency	City	Phone	Species
Michael Bradley	URI EDC	Kingston, RI	401-874-5054	Eelgrass
Todd Callaghan	Mass CZM	Boston, MA	617.626.1233	Eelgrass, Macroalgae
Phil Colarusso	US EPA Region 1	Boston, MA	617.918.1506	Eelgrass
Charles Costello	MassDEP	Boston, MA	617.292.5907	Eelgrass
Kenny Raposa	NBNERR	Prudence Island, RI	401-683-7849	SAV, Coastal Habitat
Jim Turenne	USDA NRCS	Warwick, RI	401-822-8830	Benthic Habitat, Eelgrass

Christopher Deacutis	RI DFW, Marine Fisheries	Jamestown, RI	401-423-1939	Macroalgae
Carol Thornber	URI	Kingston, RI	401-874-4495	Macroalgae
Tanner Steeves	RI DFW	West Kingston, RI	401-789-0281	Habitat
Robert Wernerehl	MADFW, NHESP	Westborough, MA	508-389-7818	Terrestrial and Aquatic Plants, Natural Communities

***Note: this list is not meant to represent all benthic experts for the region.**

Major Data Sources Used: Benthic Habitats

Chris Deacutis, Rhode Island Division of Fish and Wildlife, Marine Fisheries. 2016. Narragansett Bay Macroalgae Fall and Summer High Density 2007-2012. Unpublished. PDF document; Expert knowledge.

Lindsay Green and Carol Thornber, University of Rhode Island, Biological Sciences. 2016. Macroalgae Locations in Rhode Island. Unpublished. Expert knowledge.

Massachusetts Department of Environmental Protection Wetlands Conservancy Program, Eelgrass Mapping Project. 2014, 2013. MassDEP 2013, 2012, 2010 Eelgrass Mapping. Boston, MA. Vector digital data. Content available at Massachusetts Geographic Information System (MassGIS).

Massachusetts Division of Fisheries and Wildlife, Natural Heritage Endangered Species Program. 2016. Sensitive coastal species: Bird, Fish, Invertebrate, Plant, and Reptile data. Unpublished. Vector digital data; Expert knowledge.

Massachusetts Office of Coastal Zone Management. 2015. Attached Mussel Beds; Canopy-forming Algal Beds (Kelps); Soft Corals. 2015 Massachusetts Ocean Management Plan. Boston, MA. Vector digital data. Content available at Massachusetts Geographic Information System (MassGIS).

Massachusetts Office of Coastal Zone Management. 2015. Eelgrass, 2015 Massachusetts Ocean Management Plan. Boston, MA. Vector digital data. Content available at Massachusetts Geographic Information System (MassGIS).

Rhode Island Department of Environmental Management. 2016. Rhode Island Natural Heritage Areas. Providence, RI. Vector digital data and supplemental species list supplied by Paul Jordan of RI DEM. Content available at <http://www.rigis.org/>.

Rhode Island Eelgrass Mapping Task Force. 2013. Submerged Aquatic Vegetation (SAV) in Rhode Island Coastal Waters (2012). Kingston, RI. Vector digital data. Content available at <http://www.rigis.org/>

University of Rhode Island Environmental Data Center. 2013. Submerged Aquatic Vegetation (SAV) in Rhode Island Coastal Waters (2006) and (2009). Kingston, RI. Vector digital data. Content available at <http://www.rigis.org/>

HABITATS

Habitat features depicted in this atlas include threatened, endangered, and rare plants, and vernal pools.

Plants in Rhode Island were mapped as polygons using 2016 RI DEM Natural Heritage Areas data (*see BIRDS for complete description of this dataset*). All features were clipped to land and assigned the mapping qualifier of “Vulnerable Occurrence.” The Natural Heritage data includes 147 state-listed rare, endangered, and threatened species that are located in the Rhode Island AOI. All were assigned to one of four species groups in the atlas: “endangered plant”, “threatened plant”, “rare plant” (special concern) or “rare wetland/aquatic plant” (special concern) (includes FAV), except for the seaside sandplant (*Honckenya peploides*), which was mapped individually with additional expert input provided by Nick Ernst, USFWS, Rhode Island NWR Complex. See below for complete list of species included in each category.

Plants in Massachusetts were mapped using a single dataset provided by MADFW NHESP consisting of ten coastal and estuarine plant species that depend on the dynamic interface of land and water. The areas of these data located on land were mapped as “rare plant” with the mapping qualifier “Vulnerable Occurrence”. Rare plant species and communities in Massachusetts were not included in their entirety in this atlas due to vulnerability of collection concerns by NHESP. NHESP should be contacted directly for up-to-date information or review of specific locations (see contact information below).

Vernal pools are small, shallow ponds characterized by lack of fish and periods of dryness. Vernal pool habitat is extremely important to a variety of wildlife species and is utilized for breeding, feeding, and other important functions. This includes certain protected species such as the eastern spadefoot that breed exclusively in vernal pools and other organisms such as fairy shrimp that spend their entire life cycles confined to vernal pool habitat. Vernal pools were mapped as points in Massachusetts with the mapping qualifier “Vulnerable Occurrence” using the 2016 MADFW NHESP *Certified Vernal Pools* dataset. This data layer contains points for all vernal pools that have been certified by NHESP and is continually updated (see contact information below). Data for vernal pools in Rhode Island is not currently available. RI DFW should be contacted directly for up-to-date information and specific locations (see contact information below).

Endangered Plant

American ginseng	<i>Panax quinquefolius</i>	Little lady's tresses	<i>Spiranthes tuberosa</i>
Arrowhead rattlesbox	<i>Crotalaria sagittalis</i>	Lizard's tail	<i>Saururus cernuus</i>
Awed flatsedge	<i>Cyperus squarrosus</i>	Longbeak beaksedge	<i>Rhynchospora scirpoides</i>
Bicknell's cranesbill	<i>Geranium bicknellii</i>	Long's bulrush	<i>Scirpus longii</i>
Bigseed alfalfa dodder	<i>Cuscuta indecora</i>	Maryland goldenaster	<i>Chrysopsis mariana</i>
Black-fruited spikerush	<i>Eleocharis melanocarpa</i>	Narrowfruit horned beaksedge	<i>Rhynchospora inundata</i>
Bluntlobe grapefern	<i>Botrychium oneidense</i>	Northern adderstongue	<i>Ophioglossum pusillum</i>
Canby's bulrush	<i>Schoenoplectus etuberculatus</i>	Plymouth rose gentian	<i>Sabatia kennedyana</i>
Devil's-tongue	<i>Opuntia humifusa</i>	Purple cliffbrake	<i>Pellaea atropurpurea</i>
Dwarf umbrella-sedge	<i>Fuirena pumila</i>	Rannoch-rush	<i>Scheuchzeria palustris</i>
Early blue violet	<i>Viola subsinuata</i>	Red trillium	<i>Trillium erectum</i>
Foxtail clubmoss	<i>Lycopodiella alopecuroides</i>	Rock buttercup	<i>Ranunculus micranthus</i>
Globefruit primrose-willow	<i>Ludwigia sphaerocarpa</i>	Roundleaf yellow violet	<i>Viola rotundifolia</i>
Goldenclub	<i>Orontium aquaticum</i>	Little lady's tresses	<i>Spiranthes tuberosa</i>
Greater fringed gentian	<i>Gentianopsis crinita</i>	Lizard's tail	<i>Saururus cernuus</i>
Green adder's-mouth orchid	<i>Malaxis unifolia</i>	Longbeak beaksedge	<i>Rhynchospora scirpoides</i>
Large yellow lady's-slipper	<i>Cypripedium parviflorum</i>	Sandplain gerardia*	<i>Agalinis acuta</i> *Federally endangered
Slender arrowhead	<i>Sagittaria teres</i>	Waxyleaf meadow-rue	<i>Thalictrum revolutum</i>

Swamp cottonwood	<i>Populus heterophylla</i>	Western blue virginsbower	<i>Clematis occidentalis</i>
Torrey's beaksedge	<i>Rhynchospora torreyana</i>	Yellow fringed orchid	<i>Platanthera ciliaris</i>
Violet woodsorrel	<i>Oxalis violacea</i>	Yellow widelip orchid	<i>Liparis loeselii</i>
Walking fern	<i>Asplenium rhizophyllum</i>	Slender arrowhead	<i>Sagittaria teres</i>
Walter's sedge	<i>Carex striata</i>	Swamp cottonwood	<i>Populus heterophylla</i>

Threatened Plant

Appalachian stitchwort	<i>Minuartia glabra</i>	Netted nutrush	<i>Scleria reticularis</i>
Autumn coralroot	<i>Corallorhiza odontorhiza</i>	Palegreen orchid	<i>Platanthera flava</i>
Blue cohosh	<i>Caulophyllum thalictroides</i>	Pine barren goldenheather	<i>Hudsonia ericoides</i>
Blunt-lobed hepatica	<i>Anemone americana</i>	Red baneberry	<i>Actaea rubra</i>
Canada lily	<i>Lilium canadense</i>	Rose of Plymouth	<i>Sabatia stellaris</i>
Carolina redroot	<i>Lachnanthes caroliniana</i>	Seacoast angelica	<i>Angelica lucida</i>
Carpenter's square	<i>Scrophularia marilandica</i>	Seaside knotweed	<i>Polygonum glaucum</i>
Creeping St. Johnswort	<i>Hypericum adpressum</i>	Sessileleaf ticktrefoil	<i>Desmodium sessilifolium</i>
Fewflower nutrush	<i>Scleria pauciflora</i>	Smith's bulrush	<i>Schoenoplectus smithii</i>
Fourleaf milkweed	<i>Asclepias quadrifolia</i>	Stiff yellow flax	<i>Linum medium</i>
Foxglove beardtongue	<i>Penstemon digitalis</i>	Swaying bulrush	<i>Schoenoplectus subterminalis</i>
Hairy small-leaf ticktrefoil	<i>Desmodium ciliare</i>	Whip nutrush	<i>Scleria triglomerata</i>
Hyssopleaf hedgenettle	<i>Stachys hyssopifolia</i>	White fringed orchid	<i>Platanthera blephariglottis</i>
Long-bracted green orchid	<i>Coeloglossum viride</i>	Yellow thistle	<i>Cirsium horridulum</i>
Longstyle sweetroot	<i>Osmorhiza longistylis</i>	Zigzag goldenrod	<i>Solidago flexicaulis</i>
Lowland rotala	<i>Rotala ramosior</i>	Netted nutrush	<i>Scleria reticularis</i>

Rare Plant

Allegheny Mountain buttercup	<i>Ranunculus allegheniensis</i>	Drumheads	<i>Polygala cruciata</i>
American cancer-root	<i>Conopholis americana</i>	Drummond's rockcress	<i>Boechera stricta</i>
American false pennyroyal	<i>Hedeoma pulegioides</i>	Dwarf chinquapin oak	<i>Quercus prinoides</i>
American spikenard	<i>Aralia racemosa</i>	Dwarf huckleberry	<i>Gaylussacia bigeloviana</i>
Annual wildrice	<i>Zizania aquatica</i>	Early saxifrage	<i>Micranthes virginianensis</i>
Beaked spikerush	<i>Eleocharis rostellata</i>	Eastern swamp saxifrage	<i>Micranthes pensylvanica</i>
Big cordgrass	<i>Spartina cynosuroides</i>	Feverwort	<i>Triosteum perfoliatum</i>
Bigleaf aster	<i>Eurybia macrophylla</i>	Field sagewort	<i>Artemisia campestris</i>
Black ash	<i>Fraxinus nigra</i>	Greater poverty rush	<i>Juncus antheratus</i>
Bloodroot	<i>Sanguinaria canadensis</i>	Hairystem gooseberry	<i>Ribes hirtellum</i>
Broadwing sedge	<i>Carex alata</i>	Herbwilliam	<i>Ptilimnium capillaceum</i>
Butterfly milkweed	<i>Asclepias tuberosa</i>	Hobblebush	<i>Viburnum lantanoides</i>
Canadian honewort	<i>Cryptotaenia canadensis</i>	Indiangrass	<i>Sorghastrum nutans</i>
Candle anemone	<i>Anemone cylindrica</i>	Jointed spikesedge	<i>Eleocharis equisetoides</i>
Clasping milkweed	<i>Asclepias amplexicaulis</i>	Lanceleaf figwort	<i>Scrophularia lanceolata</i>
Daisy-leaf grape fern	<i>Botrychium matricariifolium</i>	Lesser purple fringed orchid	<i>Platanthera psycodes</i>
Ditch stonecrop	<i>Penthorum sedoides</i>	Drumheads	<i>Polygala cruciata</i>
Downy yellow violet	<i>Viola pubescens</i>	Drummond's rockcress	<i>Boechera stricta</i>

Long beechfern	<i>Phegopteris connectilis</i>	Slender seapurslane	<i>Sesuvium maritimum</i>
Maidenhair spleenwort	<i>Asplenium trichomanes</i>	Slenderleaf false foxglove	<i>Agalinis tenuifolia</i>
Orangefruit horse-gentian	<i>Triosteum aurantiacum</i>	Slimspike threeawn	<i>Aristida longespica</i>
Ostrich fern	<i>Matteuccia struthiopteris</i>	Spring lady's tresses	<i>Spiranthes vernalis</i>
Pink corydalis	<i>Capnoides sempervirens</i>	Striped maple	<i>Acer pensylvanicum</i>
Pink tickseed	<i>Coreopsis rosea</i>	Summer coralroot	<i>Corallorhiza maculata</i>
Poke milkweed	<i>Asclepias exaltata</i>	Sundial lupine	<i>Lupinus perennis</i>
Purplestem beggarticks	<i>Bidens connata</i>	Tall horned beaksedge	<i>Rhynchospora macrostachya</i>
Pursh seepweed	<i>Suaeda calceoliformis</i>	Trumpet honeysuckle	<i>Lonicera sempervirens</i>
Ramp	<i>Allium tricoccum</i>	Tuberous grasspink	<i>Calopogon tuberosus</i>
Robert geranium	<i>Geranium robertianum</i>	Twining screwstem	<i>Bartonia paniculata</i>
Round-leaved dogwood	<i>Swida rugosa</i>	Virginia stickseed	<i>Hackelia virginiana</i>
Rue anemone	<i>Thalictrum thalictroides</i>	Virginia tephrosia	<i>Tephrosia virginiana</i>
Scotch wild lovage	<i>Ligusticum scoticum</i>	White colicroot	<i>Aletris farinosa</i>
Shore quillwort	<i>Isoetes riparia</i>	Wild bergamot	<i>Monarda fistulosa</i>
Sickleleaf silkgrass	<i>Pityopsis falcata</i>	Yellow coralroot	<i>Corallorhiza trifida</i>

Rare wetland/aquatic plant

Eastern gamagrass	<i>Tripsacum dactyloides</i>	North wind bog-orchid	<i>Platanthera aquilonis</i>
American featherfoil	<i>Hottonia inflata</i>	Whorled milkwort	<i>Polygala verticillata</i>
Humped bladderwort	<i>Utricularia gibba</i>	Zigzag bladderwort	<i>Utricularia subulata</i>
Resupinate bladderwort	<i>Utricularia resupinata</i>		

Expert contacts for Massachusetts/Rhode Island habitats and rare plants*:

Name	Agency	City	Phone	Species
Tanner Steeves	RI DEM DFW	West Kingston, RI	401-789-0281	Plants and Natural Communities; Vernal Pools
Robert Wernerehl	MADFW, NHESP	Westborough, MA	508-389-7818	Terrestrial Plants and Natural Communities
Jacob Kubel	MADFW, NHESP	Westborough, MA	508-389-6373	Vernal Pools

***Note: this list is not meant to represent all habitat and rare plant experts for the region.**

Major Data Sources Used: Habitats

Massachusetts Division of Fisheries and Wildlife, Natural Heritage Endangered Species Program. 2016. NHESP Certified Vernal Pools. Boston, MA. Vector digital data. Content available at Massachusetts Geographic Information System (MassGIS).

Massachusetts Division of Fisheries and Wildlife, Natural Heritage Endangered Species Program. 2016. Sensitive coastal species: Bird, Fish, Invertebrate, Plant, and Reptile data. Unpublished. Vector digital data; Expert knowledge.

Rhode Island Department of Environmental Management. 2016. Rhode Island Natural Heritage Areas. Providence, RI. Vector digital data and supplemental species list supplied by Paul Jordan of RI DEM. Content available at <http://www.rigis.org/> . Full listing of rare plants in Rhode Island with status information available at <http://rinhs.org/biodiversity-data/info-on-rare-species-in-ri/> .

INVASIVE SPECIES

The spread of invasive or non-native species can degrade habitat, increase the potential for crop damage and diseases in humans, livestock and natural resources, reduce biodiversity through competition and limit recreational opportunities. Invasive species often opportunistically spread after disturbance events alter the natural landscape. Oil spill response and clean up often alters the landscape in a manner conducive to the spread of invasive species as crews often mobilize from all over the U.S. in response to large scale spill events. Boats, trailers, waders and clean up equipment can spread invasive species from waterbody to waterbody unless properly cleaned after use. Invasive species that were mapped are shown on the HUMAN-USE RESOURCE maps.

Expert contacts for Massachusetts/Rhode Island invasive species:

Name	Agency	City	Phone
David W. Gregg	Rhode Island Natural History Survey, Invasive Plants	Kingston, RI	401-874-5800
Karro Frost	MA DFW, NHESP, Invasive Plants	Westborough, MA	508-389-6390
Adrienne Pappal	Mass CZM, Aquatic Invasive Species Program Manager	Boston, MA	617-626-1218
Kelly Whitmore	MDMF, Invasive Crabs	Gloucester, MA	978-282-0308 x102

WILDLIFE REHABILITATION

The following contact provides veterinary care and/or retrieval of wildlife adversely affected by an event:



Tri-State Bird Rescue & Research. 170 Possum Hollow Road, Newark, DE 19711. (302)-737-9543

HUMAN-USE RESOURCES

The human-use resources shown in this atlas were extracted from the ESI GIS data compiled for this region. The extracted features were mapped at scale of 1:100,000 and appear on the maps referenced by a number. For example, Map 1 will show the human-use features in conjunction with the ESI shoreline.

Management areas such as wildlife refuges and state parks are mapped as polygons. Where the feature is a known point location (e.g., marinas, airports, water intakes), the specific location is displayed.

Map IDs can be found in the accompanying data tables for point and polygon features mapped. The Map ID may provide more information (i.e., name, contact) for that particular resource. The types of human use resources mapped in this atlas are depicted below.

	Access		Historical Site
	Airport		Lock and Dam
	Anchorage		Management Area
	Aquaculture		Marina
	Artificial Reef		Marine Sanctuary
	Archaeological Sites		Military
	Beach		National Park
	Boat Ramp		Nature Conservancy
	Campground		Park
	Commercial Fishing		Port
	Critical Habitat		Recreational Fishing
	Diving Site		Repeated Measurement Site
	EPA Facility		State Protected Area
	Ferry		Tribal Land
	Historic Wreck		Wildlife Refuge

Access: Locations where it is possible to gain access to the shoreline were mapped from data provided by the Rhode Island Department of Environmental Management (DEM) and the Massachusetts Department of Fish and Game (DFG).

Airport: Locations of airports, airfields, landing strips, etc. was collected from the Rhode Island Department of Transportation (RIDOT) and the Massachusetts Department of Transportation (MASSDOT).

Anchorage: Locations where commercial vessels can be anchored offshore were provided by NOAA's National Ocean Service (NOS), Office for Coastal Management (OCM).

Aquaculture: Locations where farmed or managed aquaculture/mariculture occurs were obtained from the Rhode Island Coastal Resources Management Council (CRMC) and Massachusetts Division of Marine Fisheries (MDMF).

Archaeological Site: Rhode Island statute governing archaeology, or the Antiquities Act of Rhode Island, is contained in the 2016 Rhode Island General Laws, Title 42 – State Affairs and Government, Chapter 42-45.1. Under Massachusetts General Law Chapter 6, sections 179-180, and Chapter 91, section 63, the Board of Underwater Archaeological Resources (BUAR) is charged with the responsibility of encouraging the discovery and reporting, as well as the preservation and protection, of underwater archaeological resources. For statutes governing archaeology above the tidal zone in Massachusetts, see Massachusetts General Laws Chapter 9 sections 26-27C and 950 CMR 70: Massachusetts Historical Commission. Both Massachusetts and Rhode Island preferred to protect the location of archaeological sites. In the event of an oil spill or clean up activity please contact the State Archaeologists who can provide precise locational information of all sites.

Charlotte Taylor, State Archaeologist
Rhode Island Historical Preservation & Heritage Commission
Old State House, 150 Benefit Street
Providence, RI 02930-1209
Phone: 401-222-4140

Timothy Ives, State Archaeologist
Rhode Island Historical Preservation & Heritage Commission
Old State House, 150 Benefit Street
Providence, RI 02930-1209
Phone: 401-222-4139

Victor Mastone, Director
Board of Underwater Archaeological Resources
251 Causeway Street, Suite 800
Boston, MA 02114-2199
Phone: 617-626-1141

Jonathan K. Patton, Archaeologist/Preservation Planner
Massachusetts Historical Commission
220 Morrissey Boulevard
Boston, MA 02125-3314
Phone: 617-727-8470

Army Corps of Engineers: U.S. Army Corps of Engineers (ACE) districts and divisions data were downloaded from the U.S. Geological Survey (USGS) which originated from the U.S. Army Engineer Corps of Engineers.

Artificial Reef: Locations of reefs made out of human-made materials or natural materials was provided by the Massachusetts Division of Marine Fisheries (MDMF) and downloaded from NOAA's National Ocean Service (NOS), Office for Coastal Management (OCM).

Beach: Locations of recreational beaches used for activities such as swimming, sun-bathing, surf fishing, etc. were provided by the Massachusetts Department of Public Health (MDPH), Rhode Island Department of Environmental Management (DEM), and Rhode Island Coastal Resources Management Council (CRMC).

Boat Ramp: Boat ramp location data were provided by the Rhode Island Department of Environmental Management (DEM), University of Rhode Island Coastal Resources Center (CRC) and Environmental Data Center (EDC), Massachusetts Department of Fish and Game (DFG), and Massachusetts Office of Coastal Zone Management (CZM).

Campground: Locations of campgrounds were obtained from the Rhode Island Department of Environmental Management (DEM).

City: Cities data were obtained from the Massachusetts Emergency Management Agency (MEMA) and the Rhode Island Department of Economic Development.

Coast Guard: U.S. Coast Guard (USCG) stations, districts, and sectors were provided by the USCG.

Commercial Fishing: Locations for important, high use sites fished by commercial fishers on a regular basis were provide by the Rhode Island Department of Environmental Management (DEM), University of Rhode Island Environmental Data Center (EDC), University of Rhode Island Fisheries Center, University of Rhode Island Department of Fisheries, Rhode Island Coastal Resources Management Council (RI CRMC), Massachusetts Division of Marine Fisheries (MDMF), and the National Marine Fisheries Service (NMFS), National Geospatial-Intelligence Agency (NGA), and USHarbors.com.

County: Boundaries for counties were obtained from the University of Rhode Island Environmental Data Center (EDC) and the Massachusetts Geographic Information System (MASSGIS).

Critical Habitat: Designated Critical Habitat was mapped for the Atlantic sturgeon, North Atlantic right whale, and Plymouth red-bellied turtle. Data were provided by the USFWS and NOAA's NMFS.

Diving: Popular recreational diving and snorkeling sites were obtained from the Northeast Regional Ocean Council (NROC) and Massachusetts Office of Coastal Zone Management (CZM).

Environmental Protection Agency Facility: EPA facility locations represent the following facilities: those that maintain risk management plans describing their hazards and prevention activities as required by the EPA Risk Management Plan (RMP); facilities that manufacture, process, or use certain chemicals in amounts above established levels regulated by the EPA Toxic Release Inventory System (TRIS) program;

facilities with permits from the National Pollutant Discharge Elimination System (NPDES); and facilities that the EPA has identified and monitors for storing certain quantities of oil (OIL). The data comes from U.S. Environmental Protection Agency (EPA) Region 1.

Environmental Protection Agency Region: Jurisdictional region boundaries were provided by the U.S. Environmental Protection Agency (EPA).

Essential Habitat: Certified vernal pools are classified by the presence of fairy shrimp and/or breeding evidence of obligate amphibian species, such as blue-spotted salamanders and wood frogs, or facultative amphibian species, such as Fowler's toads and spring peepers. These data were provided by the Massachusetts Division of Fisheries and Wildlife Natural Heritage Endangered Species Program (NHESP). Essential Fish Habitat (EFH) are necessary to support the key life stages of American plaice, Atlantic cod, Atlantic halibut, Atlantic herring, Atlantic scallop, Atlantic wolfish, haddock, little skate, monkfish, ocean pout, pollock, red hake, silver hake, white hake, windowpane, winter flounder, winter skate, witch flounder, and yellowtail flounder. Data for EFH in Massachusetts and Rhode Island is located in BIOLOGY-FISH and INVERT as individual species distribution polygons.

Facility: Commercial facilities were obtained from the Massachusetts Department of Public Health (MDPH).

Federal Emergency Management Agency Region: Jurisdictional region boundaries were provided by the Federal Emergency Management Agency (FEMA) Mapping and Analysis Center.

Ferry: State and local ferry terminal locations, including Boston Harbor water taxi stops, were obtained from the Massachusetts Department of Transportation (MASSDOT) and University of Rhode Island Coastal Resources Center (CRC) and Environmental Data Center (EDC).

Ferry Route: Ferry routes were obtained from the Massachusetts Department of Transportation (MASSDOT) and Rhode Island Department of Administration.

Fish Passage: Locations of structures that facilitate the passage of anadromous fish and eels during migration, such as ladders, fish steps, fish elevators, rock ramps, culverts, denils, steepass, and pool & weirs, were provided by the Rhode Island Division of Fish & Wildlife (DFW), Freshwater and Diadromous Fisheries, and Massachusetts Division of Marine Fisheries (MDMF). Data provided by the MDMF dates to 2011 and is currently under revision; MDMF should be contacted for up-to-date information and review of specific site locations.

Brad Chase, Senior Marine Fisheries Biologist
MDMF, New Bedford Office
New Bedford, MA
508-990-2860x118

Fishery Area: Fishery area locations include Shellfish Management Areas provided by the Rhode Island Division of Fish & Wildlife (DFW), Marine Fisheries. These are areas with more restrictive possession or harvesting restrictions that may include areas where harvest is prohibited to protect brood stock and enhancement activities (e.g. shellfish spawner sanctuaries, oyster reserves, and restoration areas). Data for *Coldwater Fisheries Resources* (CFRs) were provided by the Massachusetts Division of Fisheries and Wildlife (DFW). This data layer is based on the National Hydrography Dataset (NHD) and represents important

habitat for cold water fish species in Massachusetts; see BIOLOGY-FISH narrative (above) for complete list of species included.

Historic Wreck: Data on locations of historic wrecks comes from the U.S. Department of Commerce (DOC) and NOAA's Nation Ocean Service (NOS) and Coastal Service Center (CSC).

Historical Site: Massachusetts and Rhode Island historical sites were provided by the National Park Service's (NPS) National Register of Historic Places (2014). Additional sites were provided by the Massachusetts Historical Commission (MHC) and Massachusetts Executive Office of Energy and Environmental Affairs (EOEEA) as part of their *Protected and Recreational Open Space* database, Rhode Island Department of Environmental Management (DEM) as part of their *Municipal and Non-governmental Organization Conservation Lands* database, and Rhode Island Advisory Commission on Historical Cemeteries. In the event of an oil spill or clean up activity, please contact Jonathan K. Patton at the Massachusetts Historical Commission (see contact info above in Archaeological Site) or the Rhode Island Historical Preservation & Heritage Commission (see contact below) who can provide up-to-date and precise location information.

Jeffrey D. Emidy, Deputy Director
Rhode Island Historical Preservation & Heritage Commission
Old State House, 150 Benefit Street
Providence, RI 02930-1209
Phone: 401-222-4134

Landfill: Permanent waste and debris disposal locations were mapped with data obtained from the Massachusetts Department of Environmental Protection (MassDEP) and Rhode Island Department of Administration.

Lock and Dam: Dams mapped within the area of interest were obtained from the Massachusetts Office of Dam Safety (ODS) and Rhode Island Department of Environmental Management (DEM).

Management Area: Management areas in this ESI atlas include state designated conservation lands and wildlife management areas obtained from the Rhode Island Department of Environmental Management (DEM) as part of their *State Conservation Lands* and *Municipal and Non-governmental Organization Conservation Lands* databases, and Massachusetts Executive Office of Energy and Environmental Affairs (EOEEA) as part of their *Protected and Recreational Open Space* database. Data for barrier islands, bay barriers, and spits that are regulated for development under the RI Coastal Resources Management Program was obtained from the Rhode Island Coastal Resources Management Council (CRMC). Managed areas for shellfish and lobster for the purpose of conserving or enhancing resources, including Designated Shellfish Growing Areas (DSGA), were provided by the Massachusetts Division of Marine Fisheries (MDMF), Rhode Island Division of Fish & Wildlife (DFW), and NOAA's Greater Atlantic Regional Fisheries Office (GARFO). Additional management areas included are NOAA's NMFS Seasonal Management Areas (SMAs) for North Atlantic Right Whales and U.S. Marine Protected Areas Boundaries, which include restricted and closure areas.

Also included are Priority Habitats of Rare Species, provided by the Massachusetts Division of Fisheries and Wildlife Natural Heritage Endangered Species Program (NHESP). These are identified areas of state-listed rare species habitat in Massachusetts in which projects must be reviewed; in the event of an oil spill or clean up activity contact the NHESP Regulatory Review or Emily Holt, Senior Endangered Species Review Assistant, NHESP, at 508-389-6385 for up-to-date information and review of specific site locations.

Marina: Marina locations were obtained from the Massachusetts Office of Coastal Zone Management (CZM), University of Rhode Island Coastal Resources Center (CRC) and Environmental Data Center (EDC), and Rhode Island Geographic Information System (RIGIS).

Marine Sanctuary: Boundaries for the Studds/Stellwagen Bank National Marine Sanctuary were provided by NOAA's National Ocean Service (NOS).

Military: Point data for the U.S. Navy Newport Station were provided by the Rhode Island Department of Administration.

Mine Site: Mine site locations were provided by the U.S. Geological Survey (USGS).

National Park: National park boundaries were obtained from the National Parks Service (NPS).

Natural Hazards: Natural hazard areas include 2015 Storm Surge Inundation data obtained from NOAA's National Hurricane Center, Storm Surge Unit.

Nature Conservancy: Boundaries of The Nature Conservancy (TNC) properties in Massachusetts and Rhode Island were obtained from the Rhode Island Department of Environmental Management (DEM) as part of their *State Conservation Lands* and *Municipal and Non-governmental Organization Conservation Lands* databases, and from the Massachusetts Executive Office of Energy and Environmental Affairs (EOEEA) as part of their *Protected and Recreational Open Space* database.

NOAA Facility: Locations of NOAA facilities were digitized as points from address matching and verified with Google Earth imagery.

Pipeline: Pipelines were obtained from the Massachusetts Department of Public Health (MDPH) and Applied Science Associates, Department of Commerce (DOC), and NOAA.

Port: Port location data were compiled from the Massachusetts Department of Transportation (MASSDOT), NOAA's National Ocean Service (NOS), Office for Coastal Management (OCM), and University of Rhode Island Coastal Resources Center (CRC) and Environmental Data Center (EDC).

Rail Route: Locations of railways were obtained from the Rhode Island Department of Transportation (RIDOT) and National Grid, and the Massachusetts Geographic Information System (MASSGIS).

Recreational Fishing: Locations of recreational fishing in Rhode Island were provided by the University of Rhode Island Environmental Data Center (EDC) and University of Rhode Island Fisheries Center. Data were not included for Massachusetts since they are common throughout the study area in this state. In the event of an oil spill or clean up activity please contact nearby marinas or boat ramp locations.

Regional or State Park: Regional and state park boundaries, natural preserves, and recreation areas were obtained from the Rhode Island Department of Environmental Management (DEM) as part of their *State Conservation Lands* and *Municipal and Non-governmental Organization Conservation Lands* databases, and from the Massachusetts Executive Office of Energy and Environmental Affairs (EOEEA) as part of their *Protected and Recreational Open Space* database.

Renewable Energy: Renewable energy locations include wind turbine and energy areas, and were obtained from the University of Rhode Island Environmental Data Center (EDC), Massachusetts Office of Coastal Zone Management (CZM), and NOAA's National Ocean Service (NOS), Office for Coastal Management (OCM).

Repeated Measurement Site: Repeated measurement sites include locations for invasive species monitoring, national data buoy stations, and tide gauges. Data were obtained from the Massachusetts Office of Coastal Zone Management (CZM).

Shipping Lane: Shipping lanes in Massachusetts and Rhode Island waters were obtained from NOAA's National Ocean Service (NOS), Office for Coastal Management (OCM).

State Border: State borders for Massachusetts and Rhode Island were downloaded from Digital Offshore Cadastre (DOC).

State Protected Area: State protected areas presented in this ESI Map represent state forests and were obtained from the Rhode Island Department of Environmental Management (DEM) and Massachusetts Executive Office of Energy and Environmental Affairs (EOEEA) as part of their *Protected and Recreational Open Space* database.

State Waters: The Massachusetts and Rhode Island state waters boundary was obtained from the Bureau of Ocean Energy Management (BOEM).

Tribal Lands: Tribal lands in Massachusetts and Rhode Island include the Narragansett Reservation and Wampanoag Tribe of Gay Head. Data were downloaded from NOAA's National Ocean Service (NOS), Office for Coastal Management (OCM).

Tunnel: Nautical tunnels derived from NOAA Chart Major Linework were obtained from the Massachusetts Office of Coastal Zone Management (CZM).

Wildlife Refuge: National Wildlife Refuges (NWR) boundaries were provided by the USFWS. NERRS Reserve Boundaries for Waquoit Bay, MA and Narragansett Bay, RI, were provided by the Narragansett Bay National Estuarine Research Reserve (NBNERR). Additional state wildlife refuge areas, preserves, and sanctuaries data were obtained from the Massachusetts Audubon Society, the Rhode Island Department of Environmental Management (DEM) as part of their *State Conservation Lands* and *Municipal and Non-governmental Organization Conservation Lands* databases, and from the Massachusetts Executive Office of Energy and Environmental Affairs (EOEEA) as part of their *Protected and Recreational Open Space* database.

GEOGRAPHIC INFORMATION SYSTEM

The entire atlas product is stored in digital form in a Geographic Information System (GIS) as spatial data layers and associated databases. The format for the data varies depending on the type of information or features for which the data are being stored.

Under separate cover is a metadata document that details the data dictionary, processing techniques, data lineage, and other descriptive information for the digital datasets and maps that were used to create this atlas. Below is a brief synopsis of the information contained in the digital version. Refer to the metadata file for a full explanation of the data and its structure.

MAJOR ROADS

The major roads polyline layer represents major thoroughfares within the United States (ArcGIS Content Team (ESRI) and Tele Atlas North America Inc., U.S. Major Roads, ed. 10, published June 30, 2010, ESRI® Data & Maps series, Redlands, CA, USA). These roads are shown on the maps, but are not part of the underlying ESI GIS data.

SHORELINE CLASSIFICATIONS

The ESI shoreline habitat classification is stored as lines and polygons with associated attributes. In many cases, a shoreline may have two or three different classifications or colored lines on the shoreline. These multiple classifications are represented in the database by ESI#1/ESI#2, where ESI#1 is the landward-most classification and ESI#2 is the seaward-most classification. In addition to the line features, marshes (ESI=10A, ESI=10B), swamps (ESI=10C), and scrub-shrub wetlands (ESI=10D) are also stored as polygons.

SENSITIVE BIOLOGICAL RESOURCES

Biological resources are stored as points and polygons. Associated with each feature is a unique identification number that is linked to a series of data tables that further identify the resources. The main biological resource table consists of a list of species identification numbers for each site, the concentration of each species at each site, a mapping qualifier, and identification codes for seasonality and source information. This data table is linked to other tables that describe the seasonality and life-history time periods for each species (at month resolution) for the specified map feature. Other data tables linked to the first table include: the species identification table, which includes common and scientific names; the species status table, which gives information for state and/or federal threatened or endangered listings; and the source database, which provides source metadata at the feature-species level (specific sources are listed for each species occurring at each mapped feature in the biology feature classes).

HUMAN-USE FEATURES

Human-use features are represented as polygons, points or lines. Management areas such as wildlife refuges, national parks and state parks are mapped as polygons. Known locations such as marinas, high use beaches, airports and water intakes are displayed as points. Railroads and state boundaries are mapped as line features.

ACKNOWLEDGMENTS

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Information presented in this atlas was collected, compiled, and reviewed with the assistance of biologists and resource managers from many agencies including Massachusetts Department of Environmental Protection, Massachusetts Office of Coastal Zone Management, Rhode Island Department of Environmental Management, Rhode Island Coastal Resources Management Council, Rhode Island Natural History Survey, Audubon Society of Rhode Island, University of Rhode Island (including the Coastal Institute, Environmental Data Center, and Graduate School of Oceanography), Narragansett Bay National Estuarine Research Reserve, Save the Bay, Manomet, Woods Hole Oceanographic Institute, National Park

Service, NOAA's Office for Coastal Management, NOAA's Greater Atlantic Regional Fisheries Office, Northeast Regional Ocean Council, U.S. EPA, USDA-Natural Resources Conservation Science, and U.S. Fish and Wildlife Service. Photo provided by Erik Danielson.

Staff at the Rhode Island Division of Fish & Wildlife, The Nature Conservancy, Massachusetts Division of Fisheries and Wildlife, Massachusetts Division of Marine Fisheries, Massachusetts Audubon Society, New England Aquarium, and Robert Kenney of the University of Rhode Island Coastal Institute contributed a vast amount of information to this effort, including first-hand expertise, publications, maps, and digital data. Additional thanks to staff at Massachusetts Division of Fish and Wildlife's Natural Heritage Endangered Species Program and Northeast Fisheries Science Center for contributing their time, data, and expert input. This work was profoundly enhanced by the collaboration and guidance offered by individuals at all of these agencies. Coordination credit and resource expertise should go to Stephen Lehmann of NOAA's Office of Response and Restoration, Paul Jordan and James Ball of Rhode Island Department of Environmental Management, Brian Brodeur of Massachusetts Department of Environmental Protection, Daniel Koch of Massachusetts Department of Fish and Game, Eric Schneider of Rhode Island Division of Fish & Wildlife, Kathryn Ford of Massachusetts Division of Marine Fisheries, and Drew Major of U.S. Fish and Wildlife Service.

Data provided by NHESP was selective as species- and site-specific information contained in the NHESP database are exempt from public disclosure in order to protect vulnerable species (listed under the Massachusetts Endangered Species Act) from harm. NHESP updates their files daily and has offered continued assistance in future ESI mapping updates.

APPROPRIATE USE OF ATLAS AND DATA

This atlas and the associated database were developed to provide summary information on sensitive natural and human-use resources for the purposes of oil and chemical spill planning and response. Although the atlas and database should be very useful for other environmental and natural resource planning purposes, it should not be used in place of data held by the Massachusetts Department of Environmental Protection, Rhode Island Department of Environmental Management, Massachusetts Audubon Society, Audubon Society of Rhode Island, University of Rhode Island, Rhode Island Division of Fish & Wildlife, Massachusetts Division of Marine Fisheries, Massachusetts Division of Fisheries and Wildlife including the Natural Heritage Endangered Species Program, Rhode Island Natural History Survey, the U.S. Fish and Wildlife Service, or other agencies. Likewise, information contained in the atlas and database cannot be used in place of consultations with natural and cultural resource agencies, or in place of field surveys. This atlas should not be used for navigation.

SPECIES LIST

Common Name	Scientific Name	Common Name	Scientific Name
BENTHIC		BIRDS, cont.	
ALGAE		<u>Grasshopper sparrow</u>	<u>Ammodramus</u> <u>savannarum</u>
Green macroalgae	<i>Chlorophyta</i>	<u>Marsh passerines</u>	-
Red macroalgae	<i>Rhodophyta</i>	<u>Marsh wren</u>	<u>Cistothorus palustris</u>
Macroalgae	-	Nashville warbler	<u>Oreothlypis ruficapilla</u>
SAV		<u>Northern parula</u>	<u>Setophaga americana</u>
<u>Cutleaf watermilfoil</u>	<u>Myriophyllum</u> <u>pinnatum</u>	Northern waterthrush	<u>Seiurus noveboracensis</u>
Eelgrass	<i>Zostera marina</i>	<u>Passerine birds</u>	-
<u>Hornleaf riverweed</u>	<u>Podostemum</u> <u>ceratophyllum</u>	<u>Prothonotary warbler</u>	<u>Protonotaria citrea</u>
Rare aquatic/wetland plant	-	<u>Saltmarsh sparrow</u>	<u>Ammodramus</u> <u>caudacutus</u>
Seagrass	-	Seaside sparrow	<u>Ammodramus</u> <u>maritimus</u>
Widgeon grass	<i>Ruppia maritima</i>	<u>Sedge wren</u>	<u>Cistothorus platensis</u>
BIRDS		Tree swallow	<u>Tachycineta bicolor</u>
ALCID		<u>Vesper sparrow</u>	<u>Poocetes gramineus</u>
Atlantic puffin	<i>Fratercula arctica</i>	White-throated sparrow	<u>Zonotrichia albicollis</u>
Razorbill	<i>Alca torda</i>	Winter wren	<u>Troglodytes troglodytes</u>
DIVING		<u>Yellow-billed cuckoo</u>	<u>Coccyzus americanus</u>
Double-crested cormorant	<i>Phalacrocorax auritus</i>	<u>Yellow-breasted chat</u>	<u>Icteria virens</u>
Great cormorant	<i>Phalacrocorax carbo</i>	PELAGIC	
Horned grebe	<i>Podiceps auritus</i>	<u>Leach's storm-petrel</u>	<u>Oceanodroma leucorhoa</u>
<u>Loons</u>	<u>Gavia spp.</u>	Northern gannet	<u>Morus bassanus</u>
<u>Pied-billed grebe</u>	<u>Podilymbus podiceps</u>	Shearwaters	-
GULL/TERN		RAPTOR	
Black skimmer	<i>Rynchops niger</i>	<u>Bald eagle</u>	<u>Haliaeetus leucocephalus</u>
<u>Common tern</u>	<u>Sterna hirundo</u>	<u>Barn owl</u>	<u>Tyto alba</u>
Great black-backed gull	<i>Larus marinus</i>	<u>Northern harrier</u>	<u>Circus cyaneus</u>
Gulls	-	<u>Osprey</u>	<u>Pandion haliaetus</u>
Herring gull	<i>Larus argentatus</i>	<u>Peregrine falcon</u>	<u>Falco peregrinus</u>
Laughing gull	<i>Larus atricilla</i>	<u>Raptors</u>	-
<u>Least tern</u>	<u>Sternula antillarum</u>	<u>Short-eared owl</u>	<u>Asio flammeus</u>
<u>Rare tern</u>	-	SHOREBIRD	
<u>Roseate tern</u>	<u>Sterna dougallii</u>	<u>American oystercatcher</u>	<u>Haematopus palliatus</u>
PASSERINE		<u>Eskimo curlew</u>	<u>Numenius borealis</u>
<u>Acadian flycatcher</u>	<u>Empidonax virescens</u>	Hudsonian godwit	<u>Limosa haemastica</u>
Canada warbler	<i>Wilsonia canadensis</i>	Lesser yellowlegs	<u>Tringa flavipes</u>
<u>Cerulean warbler</u>	<u>Setophaga cerulea</u>	<u>Piping plover</u>	<u>Charadrius melodus</u>
Common nighthawk	<i>Chordeiles minor</i>	Purple sandpiper	<u>Calidris maritima</u>
Fish crow	<i>Corvus ossifragus</i>	<u>Red knot</u>	<u>Calidris canutus</u>

SPECIES LIST

Common Name	Scientific Name	Common Name	Scientific Name
BIRDS, cont.		FISH, cont.	
Red-necked phalarope	<i>Phalaropus lobatus</i>	Blueback herring	<i>Alosa aestivalis</i>
Ruddy turnstone	<i>Arenaria interpres</i>	<u>Rare sturgeon</u>	-
Shorebirds	-	Sea lamprey	<i>Petromyzon marinus</i>
<u>Upland sandpiper</u>	<i>Bartramia longicauda</i>	Striped bass	<i>Morone saxatilis</i>
<u>Willet</u>	<i>Tringa semipalmata</i>	Atlantic herring	<i>Clupea harengus</i>
WADING		Bay anchovy	<i>Anchoa mitchilli</i>
<u>American bittern</u>	<i>Botaurus lentiginosus</i>	Black sea bass	<i>Centropristis striata</i>
<u>Black-crowned night-heron</u>	<i>Nycticorax nycticorax</i>	Bluefish	<i>Pomatomus saltatrix</i>
Cattle egret	<i>Bubulcus ibis</i>	Hogchoker	<i>Trinectes maculatus</i>
<u>Clapper rail</u>	<i>Rallus longirostris</i>	Northern kingfish	<i>Menticirrhus saxatilis</i>
<u>Egrets</u>	-	Scup	<i>Stenotomus chrysops</i>
<u>Glossy ibis</u>	<i>Plegadis falcinellus</i>	Summer flounder	<i>Paralichthys dentatus</i>
<u>King rail</u>	<i>Rallus elegans</i>	Weakfish	<i>Cynoscion regalis</i>
<u>Least bittern</u>	<i>Ixobrychus exilis</i>	White perch	<i>Morone americana</i>
Little blue heron	<i>Egretta caerulea</i>	Windowpane	<i>Scophthalmus aquosus</i>
<u>Marsh birds</u>	-	Winter flounder	<i>Pleuronectes americanus</i>
<u>Sora</u>	<i>Porzana carolina</i>	Atlantic silverside	<i>Menidia menidia</i>
Tricolored heron	<i>Egretta tricolor</i>	Fourspine stickleback	<i>Apeltes quadracus</i>
<u>Wading birds</u>	-	Inland silverside	<i>Menidia beryllina</i>
<u>Yellow-crowned night-heron</u>	<i>Nyctanassa violacea</i>	Killifish	<i>Fundulus spp.</i>
WATERFOWL		Mummichog	<i>Fundulus heteroclitus</i>
American black duck	<i>Anas rubripes</i>	Oyster toadfish	<i>Opsanus tau</i>
Blue-winged teal	<i>Anas discors</i>	Sheepshead minnow	<i>Cyprinodon variegatus</i>
Common eider	<i>Somateria mollissima</i>	Stickleback	<i>Gasterosteus sp.</i>
<u>Common gallinule</u>	<i>Gallinula galeata</i>	<u>Threespine stickleback</u>	<i>Gasterosteus aculeatus</i>
Dabbling ducks	-	<u>American brook lamprey</u>	<i>Lampetra appendix</i>
Diving ducks	-	Blacknose dace	<i>Rhinichthys atratulus</i>
Gadwall	<i>Anas strepera</i>	<u>Bridle shiner</u>	<i>Notropis bifrenatus</i>
Geese	-	Brook trout	<i>Salvelinus fontinalis</i>
Green-winged teal	<i>Anas crecca</i>	Brook trout (sea run)	<i>Salmo trutta (sea run)</i>
Harlequin duck	<i>Histrionicus histrionicus</i>	Common shiner	<i>Luxilus cornutus</i>
<u>Hooded merganser</u>	<i>Lophodytes cucullatus</i>	Creek chub	<i>Semotilus atromaculatus</i>
Sea ducks	-	Fallfish	<i>Semotilus corporalis</i>
<u>Waterfowl</u>	-	Longnose dace	<i>Rhinichthys cataractae</i>
FISH		Rainbow smelt	<i>Osmerus mordax</i>
Alewife	<i>Alosa pseudoharengus</i>	Redbreast sunfish	<i>Lepomis auritus</i>
American eel	<i>Anguilla rostrata</i>	Slimy sculpin	<i>Cottus cognatus</i>
American shad	<i>Alosa sapidissima</i>	Tessellated darter	<i>Etheostoma olmstedii</i>
Atlantic salmon	<i>Salmo salar</i>	White sucker	<i>Catostomus commersoni</i>
<u>Atlantic sturgeon</u>	<i>Acipenser oxyrinchus</i>	American plaice	<i>Hippoglossoides platessoides</i>

SPECIES LIST

Common Name	Scientific Name	Common Name	Scientific Name
FISH, cont.		HERPETOFAUNA	
American sand lance	<i>American sand lance</i>	AMPHIBIAN	
Atlantic cod	<i>Gadus morhua</i>	<u>Blue-spotted salamander</u>	<i>Ambystoma laterale</i>
Atlantic halibut	<i>Hippoglossus hippoglossus</i>	<u>Eastern spadefoot</u>	<i>Scaphiopus holbrookii</i>
Atlantic tomcod	<i>Microgadus tomcod</i>	Four-toed salamander	<i>Hemidactylium scutatum</i>
Atlantic wolffish	<i>Anarhichas lupus</i>	Fowler's toad	<i>Anaxyrus fowleri</i>
Goosefish	<i>Lophius americanus</i>	<u>Marbled salamander</u>	<i>Ambystoma opacum</i>
Haddock	<i>Melanogrammus aeglefinus</i>	Northern dusky salamander	<i>Desmognathus fuscus</i>
Little skate	<i>Leucoraja erinacea</i>	Northern leopard frog	<i>Rana pipiens</i>
Little tunny	<i>Euthynnus alletteratus</i>	Red-spotted newt	<i>Notophthalmus viridescens</i>
Longhorn sculpin	<i>Myoxocephalus octodecemspinosus</i>	Spotted salamander	<i>Ambystoma maculatum</i>
Ocean pout	<i>Macrozoarces americanus</i>	Wood frog	<i>Lithobates sylvaticus</i>
Pollock	<i>Pollock virens</i>	SNAKE	
Red hake	<i>Urophycis chuss</i>	<u>Eastern hog-nosed snake</u>	<i>Heterodon platirhinos</i>
Rock gunnel	<i>Pholis gunnellus</i>	<u>Eastern rat snake</u>	<i>Pantherophis alleghaniensis</i>
Searobins	<i>Prionotus spp.</i>	<u>Eastern ribbon snake</u>	<i>Thamnophis sauritus</i>
Silver hake	<i>Merluccius bilinearis</i>	TURTLE	
Skates	<i>Raja spp.</i>	<u>Blanding's turtle</u>	<i>Emydoidea blandingii</i>
Tautog	<i>Tautog onitis</i>	Eastern box turtle	<i>Terrapene carolina carolina</i>
White hake	<i>Urophycis tenuis</i>	<u>Green sea turtle</u>	<i>Chelonia mydas</i>
Winter skate	<i>Leucoraja ocellata</i>	<u>Kemp's ridley sea turtle</u>	<i>Lepidochelys kempii</i>
Witch flounder	<i>Glyptocephalus cynoglossus</i>	<u>Leatherback sea turtle</u>	<i>Dermochelys coriacea</i>
Yellowtail flounder	<i>Pleuronectes ferrugineus</i>	<u>Loggerhead sea turtle</u>	<i>Caretta caretta</i>
Atlantic mackerel	<i>Scomber scombrus</i>	Northern diamondback terrapin	<i>Malaclemys terrapin terrapin</i>
Sand tiger	<i>Carcharias taurus</i>	<u>Plymouth red-bellied turtle</u>	<i>Pseudemys rubriventris bangsi</i>
Spiny dogfish	<i>Squalus acanthias</i>	Rare reptile	-
Tunas	-	Spotted turtle	<i>Clemmys guttata</i>
HABITAT		<u>Wood turtle</u>	<i>Glyptemys insculpta</i>
PLANT		INVERTEBRATES	
<u>Endangered plant</u>	-	BIVALVE	
<u>Rare plant</u>	-	Atlantic jackknife clam	<i>Ensis directus</i>
<u>Seaside sandplant</u>	<i>Honckenya peploides</i>	Atlantic razor	<i>Siliqua costata</i>
<u>Threatened plant</u>	-	Atlantic surfclam	<i>Spisula solidissima</i>
WETLAND		Bay scallop	<i>Argopecten irradians</i>
<u>Rare wetland/aquatic plant</u>	-		
<u>Vernal pool</u>	-		

SPECIES LIST

Common Name	Scientific Name	Common Name	Scientific Name
INVERTEBRATES, cont.		MARINE MAMMALS	
Blue mussel	<i>Mytilus edulis</i>	DOLPHIN	
Eastern oyster	<i>Crassostrea virginica</i>	Atlantic spotted dolphin	<i>Stenella frontalis</i>
<u>Eastern pearlshell</u>	<u><i>Margaritifera</i></u> <u><i>margaritifera</i></u>	Atlantic white-sided dolphin	<i>Lagenorhynchus acutus</i>
European flat oyster	<i>Ostrea edulis</i>	Bottlenose dolphin	<i>Tursiops truncatus</i>
Mussel bed	-	Harbor porpoise	<i>Phocoena phocoena</i>
Northern quahog	<i>Mercenaria mercenaria</i>	Risso's dolphin	<i>Grampus griseus</i>
Ocean quahog	<i>Arctica islandica</i>	Short-beaked common dolphin	<i>Delphinus delphis</i>
<u>Rare freshwater mussel</u>	-	Striped dolphin	<i>Stenella coeruleoalba</i>
Sea scallop	<i>Placopecten magellanicus</i>	White-beaked dolphin	<i>Lagenorhynchus albirostri</i>
Softshell clam	<i>Mya arenaria</i>	PINNIPED	
CEPHALOPOD		Gray seal	<i>Phocoena phocoena</i>
Longfin squid	<i>Loligo pealeii</i>	Harbor seal	<i>Halichoerus grypus</i>
Northern shortfin squid	<i>Illex illecebrosus</i>	Harp seal	<i>Phoca vitulina</i>
CRAB		Hooded seal	<i>Pagophilus groenlandicus</i>
Atlantic rock crab	<i>Cancer irroratus</i>	WHALE	<i>Cystophora cristata</i>
Blue crab	<i>Callinectes sapidus</i>	<u>Fin whale</u>	<u><i>Balaenoptera physalus</i></u>
Horseshoe crab	<i>Limulus polyphemus</i>	<u>Humpback whale</u>	<u><i>Megaptera novaeangliae</i></u>
Jonah crab	<i>Cancer borealis</i>	Minke whale	<i>Balaenoptera acutorostrata</i>
GASTROPOD		<u>North Atlantic right whale</u>	<u><i>Eubalaena glacialis</i></u>
Channeled whelk	<i>Busycon canaliculatum</i>	Pilot whales	<i>Globicephala</i> spp.
Crepidula bed	<i>Crepidula</i> spp.	<u>Sei whale</u>	<u><i>Balaenoptera borealis</i></u>
Knobbed whelk	<i>Busycon carica</i>	<u>Sperm whale</u>	<u><i>Physeter macrocephalus</i></u>
Northern moonsnail	<i>Euspira heros</i>		
Rare snail	-		
Sea snails	-		
INSECT		TERRESTRIAL MAMMALS	
<u>American burying beetle</u>	<u><i>Nicrophorus americanus</i></u>	Northern myotis	<i>Myotis septentrionalis</i>
<u>Rare insect</u>	-	American water shrew	<u><i>Sorex (Otisorex) palustris</i></u>
<u>Ringed boghaunter</u>	<u><i>Williamsonia lintneri</i></u>	Eastern mole	<i>Scalopus aquaticus</i>
<u>Threatened insect</u>	-	Meadow vole	<i>Microtus pennsylvanicus</i>
INVERT		<u>New England cottontail</u>	<u><i>Sylvilagus transitionalis</i></u>
Ampelisca bed	<i>Ampelisca</i> spp.	Smoky shrew	<u><i>Sorex fumeus</i></u> <i>Synaptomys</i>
<u>Coastal swamp amphipod</u>	<u><i>Synurella chamberlaini</i></u>	<u>Southern bog lemming</u>	<u><i>cooperi</i></u>
LOBSTER		Woodland jumping mouse	<i>Napaeozapus insignis</i>
American lobster	<i>Homarus americanus</i>		
SHRIMP			
Daggerblade grass shrimp	<i>Palaemonetes pugio</i>		
Northern shrimp	<i>Pandalus borealis</i>		
Sevenspine bay shrimp	<i>Crangon septemspinosa</i>		

* Underlined species are listed as either threatened or endangered under the federal Endangered Species Act, and/or are listed as Threatened, Endangered, or Special Concern under State (Massachusetts and/or Rhode Island statutes.

SHORELINE DESCRIPTIONS

EXPOSED, ROCKY SHORES

ESI = 1A

DESCRIPTION

- Common along the outer, exposed coast of the study area
- The intertidal zone is steep (greater than 30° slope), solid and composed of large boulders and/or of bedrock
- Sediment accumulations are uncommon because waves and currents remove debris slumped from the eroding cliffs
- There is strong vertical zonation of intertidal biological communities in the estuarine parts of the river
- This shoreline type is regularly exposed to wave action and strong currents
- Wave reflection is a common phenomena along these shorelines
- Species density and diversity vary greatly depending on exposure and salinity, but barnacles, snails, mussels, amphipods, and macroalgae can be abundant



PREDICTED OIL BEHAVIOR

- In the lower estuary and outer coast, oil is held offshore by waves reflecting off the steep, hard surfaces; Any oil that is deposited is rapidly removed from exposed faces
- Along the river, oil can form a band at the high water line
- The most resistant oil would remain as a patchy band at or above the high-water line
- Impacts to intertidal communities are expected to be short-term in duration; An exception would be where heavy concentrations of a light refined product comes ashore very quickly

RESPONSE CONSIDERATIONS

- Cleanup is usually not required
- Access can be difficult and dangerous

SHORELINE DESCRIPTIONS

EXPOSED, SOLID MAN-MADE STRUCTURES

ESI = 1B

DESCRIPTION

- These structures are solid, man-made structures such as seawalls, jetties, breakwaters, groins, revetments, piers, and port facilities
- Many structures are constructed of concrete, wood, or metal
- Often there is no exposed substrate at low tide, but multiple habitats are indicated if present
- They are built to protect the shore from erosion by waves, boat wakes, and currents, and thus are exposed to relatively high-energy processes
- Attached animals and plants are variable in cover, with sparse biota in fresh/brackish areas and higher biota in salt water areas
- Present in highly developed industrial and port areas and scattered along residential waterfronts

PREDICTED OIL BEHAVIOR

- Oil is held offshore by waves reflecting off the steep, hard surface in exposed settings
- Oil readily adheres to the dry, rough surfaces, but it does not adhere to wet substrates
- The most resistant oil would remain as a band at or above the high-tide line



RESPONSE CONSIDERATIONS

- Cleanup is usually not required
- High-pressure water spraying may be conducted to:
 - remove persistent oil in crevices;
 - minimize aesthetic damage; and
 - prevent chronic leaching of oil from the structure

SHORELINE DESCRIPTIONS

EXPOSED, WAVE-CUT PLATFORMS (BEDROCK/MUD/CLAY)

ESI = 2A

DESCRIPTION

- They are characterized by a narrow shelf or platform that can be flooded depending on water levels
- The substrate is solid and portions of the platform may be covered by a relatively thin veneer of sand or gravel
- Species density and diversity vary greatly, but barnacles, snails, mussels, polychaetes, and macroalgae are often very abundant
- Attached organisms are accustomed to the impacts of the waves and the associated hydraulic pressure
- They are often found with gravel and mixed sediment beaches along the high tide line. Also common at the foot of exposed rocky shores

PREDICTED OIL BEHAVIOR

- Oil will not adhere to the wet rock surface, but could penetrate crevices, sediment veneers, or associated beaches if present
- Persistence of oil is usually short-term, except in wave shadows or where the oil was deposited high above normal wave activity



RESPONSE CONSIDERATIONS

- Cleanup is usually not required except for areas of high recreational use
- Where the high-tide area is accessible, it may be feasible to manually remove heavy oil accumulations and oiled debris

SHORELINE DESCRIPTIONS

EXPOSED SCARPS AND STEEP SLOPES (CLAY)

ESI = 2B

DESCRIPTION

- Regular exposure to high wave energy or tidal currents
- Scarp heights vary from about 1 to 3 feet and usually consist of a heavily rooted, peaty soil
- May be fronted by a narrow beach of fine- to medium-grained sand
- Low biological utilization due to strong currents
- Typically backed by wetland vegetation
- Uncommon in study area

PREDICTED OIL BEHAVIOR

- Oil is not expected to adhere to the wet, impermeable clay surface
- There may be a thin band of oil left at or above the high water line
- Biological impacts can be immediate and severe, particularly if oil is left to pool on the landward side of scarp



RESPONSE CONSIDERATIONS

- Cleanup is usually not required, because any stranded oil is quickly removed by wave action
- Access may be difficult
- Where the high-tide area is accessible, it may be feasible to remove heavy oil accumulations and oiled debris in order to protect a nearshore marine resource, such as marine birds

SHORELINE DESCRIPTIONS

FINE TO MEDIUM GRAINED SAND BEACHES

ESI = 3A

DESCRIPTION

- These beaches are flat to moderately sloping and relatively hard packed
- They are composed of predominantly quartz sand
- There can be heavy accumulations of wrack present
- They are utilized by birds and turtles
- Upper beach fauna are scarce; lower beach fauna can be moderate, but are highly variable
- They are generally areas of heavy recreational use

PREDICTED OIL BEHAVIOR

- Light oil accumulations will be deposited as oily swashes or bands along the upper intertidal zone
- Heavy oil accumulations will cover the entire beach surface; oil will be lifted off the lower beach with the rising tide
- Maximum penetration of oil into fine- to medium-grained sand is about 10-15 cm
- Burial of oiled layers by clean sand within the first week after a spill typically will be less than 30 cm along the upper beach face
- Organisms living in the beach sediment may be killed by smothering or lethal oil concentrations in the interstitial water
- Biological impacts include temporary declines in infauna, which can affect important shorebird foraging areas



RESPONSE CONSIDERATIONS

- These beaches are among the easiest shoreline types to clean
- Cleanup should concentrate on removing oil and oily debris from the upper swash zone once oil has come ashore
- Traffic through dune areas should be severely limited to prevent contamination of clean areas
- Manual cleanup, rather than road graders and front-end loaders, is advised to minimize the volume of sand removed from the shore and requiring disposal
- All efforts should focus on preventing the mixing of oil deeper into the sediments by vehicular and foot traffic
- Mechanical reworking of lightly oiled sediments from the high-tide line to the upper intertidal zone and be effective along outer beaches

SHORELINE DESCRIPTIONS

SCARPS AND STEEP SLOPES (SAND)

ESI = 3B

DESCRIPTION

- This shoreline type occurs where sandy bluffs are undercut by waves or currents and slump
- Some scarps are fronted by narrow beaches, if the erosion rates are moderate and episodic
- Trees growing at the top of these slopes are eventually undercut and woody debris can accumulate at the base of the scarp
- Biological utilization by birds and infauna is low

PREDICTED OIL BEHAVIOR

- Any stranded oil will concentrate at the high-water line and may penetrate sandy sediments if a beach is present
- Oil will also adhere to the dry surfaces of any woody debris that has accumulated at the base of the scarp
- Burial risk is low except when slumping of the bluff occurs
- Active erosion of the scarp will remove the oil



RESPONSE CONSIDERATIONS

- In most cases, cleanup is not necessary because of the short residence time of the oil
- The need for removal of oiled sediments and debris should be carefully evaluated because of the potential for increased erosion
- Closely supervised manual labor should be used so that the minimal amount of material is removed during cleanup

SHORELINE DESCRIPTIONS

COARSE GRAINED SAND BEACHES

ESI = 4

DESCRIPTION

- These beaches are moderate to steep sloping, are of variable width and have soft sediments
- Species density and diversity is generally lower than on fine-grained sand beaches
- Substrate permeability is moderate
- They are very common along the shoreline of the bay and banks of major rivers

PREDICTED OIL BEHAVIOR

- During small spills, oil will be deposited primarily as a band along the high-tide line
- Under very heavy accumulations, oil may spread across the entire beach face, though the oil will be lifted off the lower part of the beach with the rising tide
- Penetration of oil into coarse-grained sand can reach 25 cm
- Burial of oiled layers by clean sand can be as rapid as one tidal cycle and to depths of 60 cm or more
- Burial to depths of over one meter is possible if the oil comes ashore at the start of a depositional period
- Organisms living in the beach sediment may be killed by smothering or lethal oil concentrations in the interstitial water
- Biological impacts include temporary declines in infaunal populations, which can also affect important shorebird foraging areas



RESPONSE CONSIDERATIONS

- Remove oil primarily from the upper swash lines
- Removal of sediment should be limited to avoid erosion problems
- Mechanical reworking of the sediment into the surf zone may be used as a final polishing step to treat stained sand without sediment removal
- Activity in the oiled sand should be limited to prevent mixing oil deeper into the beach
- Use of heavy equipment for oil/sand removal may result in the removal of excessive amounts of sand; manual cleanup may be more effective

SHORELINE DESCRIPTIONS

MIXED SAND AND GRAVEL BEACHES

ESI = 5

DESCRIPTION

- Moderately sloping beaches composed of a mixture of sand and gravel (gravel component comprises between 20 to 80 percent of total sediments)
- Because of the mixed sediment sizes, there may be some areas on the beach of pure sand, pebbles, or cobbles
- There can be large-scale changes in the sediment distribution patterns depending upon season, because of transport of the sand offshore during storms
- Because of sediment desiccation and mobility on exposed beaches, there are low densities of attached animals and plants
- The presence of attached algae, mussels and barnacles indicates beaches are relatively sheltered, with the more stable substrate supporting a richer biota

PREDICTED OIL BEHAVIOR

- During small spills, oil will be deposited along and above the high-tide swash
- Large spills will spread across the entire intertidal area
- Oil penetration into the beach sediments may be up to 50 cm; however, the sand fraction can be quite mobile, and oil behavior is much like on a sand beach if the sand fraction exceeds about 40 percent
- Burial of oil may be deep at and above the high-tide line, where oil tends to persist, particularly where beaches are only intermittently exposed to waves
- In sheltered pockets on the beach, pavements of asphalted sediments can form if there is no removal of heavy oil accumulations because most of the oil remains on the surface
- Once formed, these asphalt pavements can persist for years



RESPONSE CONSIDERATIONS

- Remove heavy accumulations of pooled oil as soon as possible
- All oiled debris should be removed
- Sediment removal should be limited as much as possible
- Low-pressure flushing can be used to float liquid oil away from the sediments for recovery by skimmers or sorbents. High-pressure spraying should be avoided because of potential for transporting contaminated finer sediments (sand) to the lower intertidal or subtidal zones
- Mechanical reworking of lightly oiled sediments from the high-tide zone to the middle intertidal zone can be effective in areas regularly exposed to wave activity (as evidenced by storm berms). However, oiled sediments should not be relocated below the mid-tide-zone
- In-place tilling/excavation may be used to reach deeply buried oil in layers in the middle zone on exposed beaches

SHORELINE DESCRIPTIONS

GRAVEL BEACHES

ESI = 6A

DESCRIPTION

- Gravel beaches can be steep, with multiple wave-built berms forming the upper bench
- Gravel beaches have the lowest trafficability of all beach types and may contain shell and woody debris
- Because of the high mobility of sediments on exposed gravel beaches, there are low densities of animals and plants
- Most permeable of all beach types

PREDICTED OIL BEHAVIOR

- Deep penetration of stranded oil is likely on wave-built gravel beaches because of their high permeability
- On exposed beaches, oil can be pushed over the high-tide and storm berms, pooling and persisting above the normal zone of wave wash
- Deeply penetrated oil can become sources of chronic sheening
- Long-term persistence will be controlled by the depth of the routine reworking by waves or boat wakes



RESPONSE CONSIDERATIONS

- Heavy accumulations of pooled oil should be removed quickly from the upper beach
- All oiled debris should be removed
- Sediment removal should be limited as much as possible
- Low-pressure flushing can be used to float fresh oil away from the sediments for recovery by skimmers or sorbents
- High-pressure spraying should be avoided because of the potential for transporting contaminated finer sediments (sand) to the lower intertidal or subtidal zones
- Mechanical reworking of oiled sediments from the high-tide line to the upper intertidal zone can be effective in areas regularly exposed to wave activity (as evidenced by storm berms). However, oiled sediments should not be relocated below the mid-tide-zone
- In-place tilling may be used to reach deeply buried oil layers along the mid-intertidal zone on exposed beaches

SHORELINE DESCRIPTIONS

RIPRAP

ESI = 6B

DESCRIPTION

- Riprap structures are composed of cobble- to boulder-sized blocks of granite, limestone, or concrete
- Riprap structures are used for shoreline protection and tidal inlet stabilization
- Attached biota are sparse to moderate on exposed riprap
- Common along highly developed commercial waterfronts and residential areas

PREDICTED OIL BEHAVIOR

- Deep penetration of oil between the blocks is likely
- Oil adheres readily to the rough surfaces of the blocks
- Uncleaned oil can cause chronic leaching until the oil hardens



RESPONSE CONSIDERATIONS

- When the oil is fresh and liquid, high-pressure spraying and/or water flooding may be effective, making sure to recover all mobilized oil
- Heavy and weathered oils are more difficult to remove, requiring scraping and/or hot-water spraying
- It may be necessary to remove and replace heavily oiled blocks in high-use areas

SHORELINE DESCRIPTIONS

EXPOSED TIDAL FLATS

ESI = 7

DESCRIPTION

- Flat accumulations of sediment, less than three degrees
- Highly permeable substrate is dominated by sand, although there may be silt and gravel components
- Sediments are soft with low trafficability
- Biological utilization can be very high, with large numbers of infauna, heavy use by birds for roosting and foraging, and by foraging fish
- Only present towards the seaward extent for this study area

PREDICTED OIL BEHAVIOR

- Oil does not usually adhere to the surface of exposed tidal flats, but rather moves across the flat and accumulates at the high-tide line
- Deposition of oil on the flat may occur on a falling tide if concentrations are heavy
- Oil does not penetrate water-saturated sediments, but can penetrate into the tops of the bars and burrows when they dry out at low tide
- Biological damage may be severe, primarily to infauna, thereby reducing food sources for birds and other predators



RESPONSE CONSIDERATIONS

- Currents and waves can be very effective in natural removal of the oil
- Cleanup is very difficult (and possible only during low tides)
- The use of machinery should be restricted to prevent mixing of oil into the sediments

SHORELINE DESCRIPTIONS

SHELTERED, IMPERMEABLE, ROCKY SHORES

ESI = 8A

DESCRIPTION

- The substrate is solid and composed of bedrock
- Sediments (rock debris, etc.) may accumulate at the base of this shoreline type
- The slope of the intertidal zone is generally moderate to steep (greater than 15°)
- Located in calm, interior environments and particularly common throughout the study area

PREDICTED OIL BEHAVIOR

- Stranded oil will persist because of low energy setting



RESPONSE CONSIDERATIONS

- Low-pressure flushing at ambient temperatures is most effective when the oil is fresh and still liquid
- Care must be taken during flushing operations to prevent oily effluents from affecting biologically rich, lower intertidal levels
- Where the high-tide area is accessible, it may be feasible to remove heavy oil accumulations and oiled debris

SHORELINE DESCRIPTIONS

SHELTERED, SOLID MAN-MADE STRUCTURES

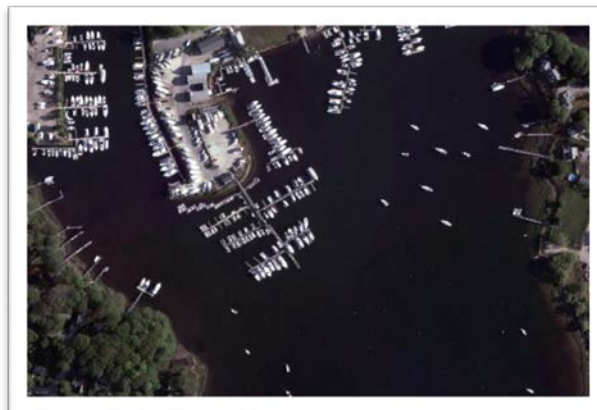
ESI = 8B

DESCRIPTION

- These structures are solid man-made structures such as seawalls, groins, revetments, piers, and port facilities
- Most of the structures are designed to protect a single lot, thus their composition, design, and condition are highly variable; most are constructed of concrete, wood, or metal
- Often there is no exposed beach at low tide, but multiple habitats are indicated if present
- High densities of attached biota may be present at lower tidal elevations
- Common in highly developed commercial areas and along residential waterfront areas throughout the bays

PREDICTED OIL BEHAVIOR

- Oil will adhere readily to rough surfaces, particularly along the high-tide line, forming a distinct oil band
- If the oil is not removed, it may cause chronic sheening until the oil hardens
- The lower intertidal zone usually stays wet (particularly if algae-covered), preventing oil from adhering to the surface



RESPONSE CONSIDERATIONS

- Cleanup of seawalls is usually conducted for aesthetic reasons or to prevent sheening
- Low- to high-pressure spraying at ambient water temperatures is most effective when the oil is fresh

SHORELINE DESCRIPTIONS

SHELTERED RIPRAP

ESI = 8C

DESCRIPTION

- Riprap structures are composed of cobble- to boulder-sized blocks of granite, limestone, or concrete
- These structures are found inside harbors and bays in developed areas, sheltered from direct exposure to waves
- High densities of attached biota may be present at lower tidal elevations
- Common in highly developed commercial and residential waterfront areas primarily along the shorelines of bridges



PREDICTED OIL BEHAVIOR

- Oil adheres readily to the rough surfaces
- Deep penetration of oil between the blocks is likely
- If oil is left uncleaned, it may cause chronic leaching until the oil hardens

RESPONSE CONSIDERATIONS

- High-pressure spraying may be required to remove oil for aesthetic reasons and to prevent leaching of oil from the structure
- Cleanup crews should make sure to recover all released oil
- It may be necessary to remove and replace heavily oiled riprap in high-use areas

SHORELINE DESCRIPTIONS

SHELTERED, ROCKY, RUBBLE SHORES

ESI = 8D

DESCRIPTION

- Relatively steep and narrow rocky shore which is covered by a veneer of angular rubble without any evidence of re-working by waves or sediment transport
- The surface rubble is highly variable in size and packing, but there is always some permeability in the surface materials
- Can co-occur with gravel beaches; the gravel beach can be either at the upper or the lower half of the intertidal zone, depending on the nature of the rock outcrop
- This shoreline type is sheltered from significant wave activity and strong currents
- Species density and diversity vary greatly; barnacles, snails, mussels, clams, polychaetes, rockweed, and crabs are abundant

PREDICTED OIL BEHAVIOR

- Oil tends to adhere to the upper intertidal zone where the rock surface dries out during low tide, and the algal cover is sparse
- On solid bedrock surfaces, the oil will occur as a surface coating
- Oil will pool and penetrate crevices in the surface rubble
- Where the rubble is loosely packed, oil can penetrate deeply, causing long-term contamination of the subsurface



RESPONSE CONSIDERATIONS

- Thick accumulations of pooled oil should be of high priority for removal, to prevent re-mobilization and/or penetration
- Manual removal of heavy oil is likely to leave significant residues, but may be useful for oil in crevices or sediment pockets
- Flushing techniques will be most effective when oil is still fresh and liquid; restrict operations to tidal levels that will prevent oily effluents from impacting lower tidal elevations with rich intertidal communities
- Expect to increase temperature and pressure over time as the oil weathers; Evaluate trade-offs between oil removal and pressure/temperature impacts on intertidal communities
- Consider potential impacts to rich biological communities on the rocky shores when conducting cleanup of associated gravel beaches

SHORELINE DESCRIPTIONS

SHELTERED TIDAL FLATS

ESI = 9A

DESCRIPTION

- They are present in calm-water habitats, sheltered from regular wave activity, and are usually backed by marshes
- The sediments are very soft and cannot support even light foot traffic in many areas
- Sheltered tidal flats can be sparsely to heavily covered with algae and/or seagrasses
- They can have heavy wrack deposits along the upper fringe
- Large concentrations of shellfish, worms, and snails can be found on and in the sediments
- Bird life is seasonally abundant and flats are heavily utilized by birds for feeding
- Common within sheltered coves and bays

PREDICTED OIL BEHAVIOR

- Oil does not usually adhere to the surface of sheltered tidal flats, but rather moves across the flat and accumulates at the high-tide line
- Deposition of oil on the flat may occur on a falling tide if concentrations are heavy
- Oil will not penetrate the water-saturated sediments, but could penetrate burrows or other crevices in muddy sediments
- In areas of high suspended sediments, sorption of oil can result in deposition of contaminated sediments on the flats
- Biological damage may be severe



RESPONSE CONSIDERATIONS

- These are high-priority areas necessitating the use of spill protection devices to limit oil-spill impact; deflection or sorbent booms and open water skimmers should be used
- Cleanup of the flat surface is very difficult because of the soft substrate; many methods may be restricted
- Low-pressure flushing, vacuum, and deployment of sorbents from shallow-draft boats may be helpful

SHORELINE DESCRIPTIONS

VEGETATED LOW BANKS

ESI = 9B

DESCRIPTION

- These habitats are either low banks with grasses or trees and tree roots exposed to the water
- They are flooded occasionally by high water
- Sporadic along many tidal channels

PREDICTED OIL BEHAVIOR

- During low water stages there is little impact, with the oil coating a narrow band of sediment at the water level
- During high water stages, the oil could cover and coat the vegetation
- Oiling may cause loss of the grasses, but the trees should survive unless oil penetrates and persists in the substrate



RESPONSE CONSIDERATIONS

- Low-pressure flushing of oiled areas is effective in removing moderate to heavy accumulations of fresh oil from along the banks
- Sorbent and containment boom should be placed on the water side of the cleanup operations to contain and collect oil outflow
- Low- to high-pressure flushing can be used to remove weathered oil from tree roots and trunks, if deemed necessary in areas of high-use area

SHORELINE DESCRIPTIONS

SALT- AND BRACKISH-WATER MARSHES

ESI = 10A

DESCRIPTION

- Intertidal wetlands containing emergent, herbaceous vegetation
- Width of the marsh can vary widely, from a narrow fringe to a broad area within estuaries
- Exposed areas are located along bays with wide fetches and along heavily trafficked waterways
- Sheltered areas and tidal creeks are not exposed to significant wave or boat wake activity
- Resident flora and fauna are abundant and diverse, with high utilization by birds, fish, and shellfish

PREDICTED OIL BEHAVIOR

- Oil adheres readily to intertidal vegetation
- The band of coating will vary widely, depending upon the water level at the time oil slicks are in the vegetation; there may be multiple bands
- Large slicks will persist through multiple tidal cycles and coat the entire stem from the high-tide line to the base
- If the vegetation is thick, heavy oil coating will be restricted to the outer fringe, although lighter oils can penetrate deeper, to the limit of tidal influence
- Medium to heavy oils do not readily adhere to or penetrate the fine sediments, but can pool on the surface or penetrate into burrows
- Light oils can penetrate the top few centimeters of sediment and deeply into burrows and cracks (up to 1 meter)



RESPONSE CONSIDERATIONS

- Under light oiling, the best practice is natural recovery; natural removal processes and rates should be evaluated prior to conducting cleanup
- Heavy accumulations of pooled oil can be removed by vacuum, sorbents, or low-pressure flushing. During flushing, care must be taken to prevent transporting oil to sensitive areas down slope or along shore
- Cleanup activities should be carefully supervised to avoid vegetation damage
- Any cleanup activity must not mix the oil deeper into the sediments; trampling of the roots must be minimized
- Cutting of oiled vegetation should only be considered when other resources present are at great risk from leaving the oiled vegetation in place

SHORELINE DESCRIPTIONS

FRESHWATER MARSHES

ESI = 10B

DESCRIPTION

- These are grassy wetlands composed of emergent herbaceous vegetation
- They occur upstream of brackish vegetation along major rivers and tributary creeks
- Those along major channels are exposed to strong currents and boat wakes; smaller channels tend to be sheltered
- The sediment substrate is seldom exposed because daily water level changes are low; greater changes result from floods and wind-generated tides
- Resident flora and fauna are abundant and diverse, with high utilization by birds and fish

PREDICTED OIL BEHAVIOR

- Oil adheres readily to the vegetation
- The band of coating will vary widely, depending upon the water level at the time oil slicks are in the vegetation; there may be multiple bands
- If the vegetation is thick, heavy oil coating will be restricted to the outer fringe, although lighter oils can penetrate deeper
- Medium to heavy oils do not readily adhere to or penetrate the fine sediments, but can pool on the surface or penetrate into burrows



RESPONSE CONSIDERATIONS

- Under light oiling, the best practice is natural recovery; natural removal processes and rates should be evaluated prior to conducting cleanup
- Heavy accumulations of pooled oil can be removed by vacuum, sorbents, or low-pressure flushing
- Cleanup activities should be carefully supervised to avoid vegetation damage
- Any cleanup activity must not mix the oil deeper into the sediments; trampling of the roots should be minimized through the use of walking boards
- Cutting of oiled vegetation should only be considered when other resources present are at great risk from leaving the oiled vegetation in place

SHORELINE DESCRIPTIONS

SWAMPS

ESI = 10C

DESCRIPTION

- Swamps consist of shrubs and hardwood forested wetlands, essentially flooded forests; vegetation is taller, on average, greater than 6 m
- The sediment tends to be silty clay with large amounts of organic debris
- They are seasonally flooded, though there are many low, permanently flooded areas
- Resident flora and fauna are abundant with numerous species

PREDICTED OIL BEHAVIOR

- Oil behavior depends on whether the swamp is flooded or not
- During floods, most of the oil passes through the forest, coating the vegetation at the waterline, which changes levels throughout the flood event
- Woody vegetation is less sensitive than grasses to oil coating
- Some oil can be trapped and pooled on the swamp floodplain as water levels drop
- Penetration into the floodplain soils is usually limited because of high water levels, saturated soils, muddy composition, surface organic debris, and vegetation cover
- There can be large amounts of oily debris
- During dry periods, terrestrial spills flow downhill and accumulate in depressions or reach water bodies



RESPONSE CONSIDERATIONS

- Under light oiling, the best practice is to let the area recover naturally
- Heavy accumulations of pooled oil can be removed by vacuum, sorbents, or low-pressure flushing. During flushing, care must be taken to prevent transporting oil to sensitive areas down slope or along shore
- Under stagnant water conditions, herding of oil with water spray may be needed to push oil to collection areas
- Oily debris can be removed where there is access
- Any cleanup activity must not mix the oil deeper into the sediments

SHORELINE DESCRIPTIONS

SCRUB AND SHRUB WETLANDS

ESI = 10D

DESCRIPTION

- Scrub-shrub wetlands consist of woody vegetation less than 6 m tall including true shrubs, small trees, and trees and shrubs that are stunted due to environmental conditions
- The sediments are silty clay mixed with organic debris
- They are seasonally flooded, though there are many low, permanently flooded areas
- Resident flora and fauna are abundant and diverse
- Present along sheltered portions of bays and tidal channels



PREDICTED OIL BEHAVIOR

- Oil behavior depends on water level
- During high water, most of the oil passes through the wetland, coating the vegetation above the waterline
- Woody vegetation is less sensitive than grasses to oil
- Some oil can be trapped and pooled on the surface as water levels drop
- Penetration into the soils is usually limited because of high water levels, muddy composition, surface organic debris, and vegetation cover
- Large amounts of oily debris can remain
- During dry periods, terrestrial spills flow downhill and accumulate in depressions or reach water bodies

RESPONSE CONSIDERATIONS

- Under light oiling, the best practice is natural recovery
- Heavy accumulations of pooled oil can be removed by vacuum, sorbents, or low-pressure flushing
- Under stagnant water conditions, herding of oil with water spray may be needed to push oil to collection areas
- Oily debris can be removed where there is access
- Any cleanup activity must not mix the oil deeper into the sediments. Trampling of the roots must be minimized
- Woody vegetation should not be cut

ENVIRONMENTAL SENSITIVITY INDEX MAPS



Map 15
Massachusetts and Rhode Island

HUMAN USE RESOURCES

DISPLAYED ON MAP (POLYGONS)				
Map ID	Type	Name	Contact	Phone
1	CRITICAL HABITAT	CRITICAL HABITAT: NORTH ATLANTIC RIGHT WHALE		
2	MANAGEMENT AREA	NARW SMA - NE U.S. OFF RACE POINT		
3	MANAGEMENT AREA	LOBSTER MANAGEMENT AREA 1		
4	MANAGEMENT AREA	LOBSTER MANAGEMENT AREA 3		
5	MANAGEMENT AREA	OUTER CAPE LOBSTER MANAGEMENT AREA		
6	MANAGEMENT AREA	STELLWAGEN BANK/JEFFREYS LEDGE RESTRICTED AREA		
7	MANAGEMENT AREA	OFFSHORE TRAP/POT WATERS		
8	MANAGEMENT AREA	GEORGES BANK SEASONAL CLOSURE AREA		
9	MANAGEMENT AREA	GULF OF MAINE ROLLING CLOSURE AREAS		
10	MANAGEMENT AREA	MASSACHUSETTS BAY MANAGEMENT AREA		
11	MANAGEMENT AREA	NORTHERN INSHORE STATE TRAP/POT WATERS AREA		
12	MANAGEMENT AREA	NORTHERN NEARSHORE TRAP/POT WATERS AREA		
13	MANAGEMENT AREA	OTHER NORTHEAST GILLNET WATERS AREA		
14	MANAGEMENT AREA	SEASONAL MANAGEMENT AREA WEST		
15	MARINE SANCTUARY	STUDDS/STELLWAGEN BANK NATIONAL MARINE SANCTUARY	BENJAMIN HASKELL, NOAA	781-546-6005
16	NATIONAL PARK	CAPE COD NATIONAL SEASHORE		

ALSO PRESENT IN MAPPED AREA (POINTS)			
Type	Name	Contact	Phone
ESSENTIAL HABITAT	OBLIGATE SPECIES -VERNAL POOL	MA DFW NHESP, WESTBOROUGH, MA	508-389-6375

ALSO PRESENT IN MAPPED AREA (POLYGONS)			
Type	Name	Contact	Phone
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: AMERICAN PLAICE	NORTHEAST FISHERIES MANAGEMENT COUNCIL	
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: ATLANTIC COD	NORTHEAST FISHERIES MANAGEMENT COUNCIL	
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: ATLANTIC HALIBUT	NORTHEAST FISHERIES MANAGEMENT COUNCIL	
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: ATLANTIC HERRING	NORTHEAST FISHERIES MANAGEMENT COUNCIL	
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: ATLANTIC WOLFFISH	NORTHEAST FISHERIES MANAGEMENT COUNCIL	
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: HADDOCK	NORTHEAST FISHERIES MANAGEMENT COUNCIL	
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: LITTLE SKATE	NORTHEAST FISHERIES MANAGEMENT COUNCIL	
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: MONKFISH	NORTHEAST FISHERIES MANAGEMENT COUNCIL	
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: OCEAN POUT	NORTHEAST FISHERIES MANAGEMENT COUNCIL	
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: POLLOCK	NORTHEAST FISHERIES MANAGEMENT COUNCIL	
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: RED HAKE	NORTHEAST FISHERIES MANAGEMENT COUNCIL	
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: REDFISH	NORTHEAST FISHERIES MANAGEMENT COUNCIL	
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: SEA SCALLOP	NORTHEAST FISHERIES MANAGEMENT COUNCIL	
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: SILVER HAKE	NORTHEAST FISHERIES MANAGEMENT COUNCIL	
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: SMOOTH SKATE	NORTHEAST FISHERIES MANAGEMENT COUNCIL	
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: THORNY SKATE	NORTHEAST FISHERIES MANAGEMENT COUNCIL	

ALSO PRESENT IN MAPPED AREA (POLYGONS) (continued)

ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: WHITE HAKE	NORTHEAST FISHERIES MANAGEMENT COUNCIL
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: WINDOW PANE FLOUNDER	NORTHEAST FISHERIES MANAGEMENT COUNCIL
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: WINTER FLOUNDER	NORTHEAST FISHERIES MANAGEMENT COUNCIL
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: WINTER SKATE	NORTHEAST FISHERIES MANAGEMENT COUNCIL
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: WITCH FLOUNDER	NORTHEAST FISHERIES MANAGEMENT COUNCIL
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: YELLOWTAIL FLOUNDER	NORTHEAST FISHERIES MANAGEMENT COUNCIL
MANAGEMENT AREA	PRIORITY HABITAT	MDFW NHESP

508-389-6380

JURISDICTIONS

COUNTY:	BARNSTABLE	FEMA:	REGION I
COAST GUARD:	DISTRICT 1, SECTOR BOSTON, SECTOR SE NEW ENGLAND	EPA:	REGION 1
USACE:	NORTH ATLANTIC DIVISION, NEW ENGLAND DISTRICT		

SHORELINE RESOURCES

ESI POLYGON HABITAT TYPES

ESI Rank	Habitat Classification	Area (Acres)	Area (Sq. Miles)
10A	Salt and Brackish Water Marshes	6.01	0.01
10B	Freshwater Marshes	16.43	0.03
10C	Swamps	9.78	0.02
10D	Scrub and Shrub Wetlands	103.05	0.16

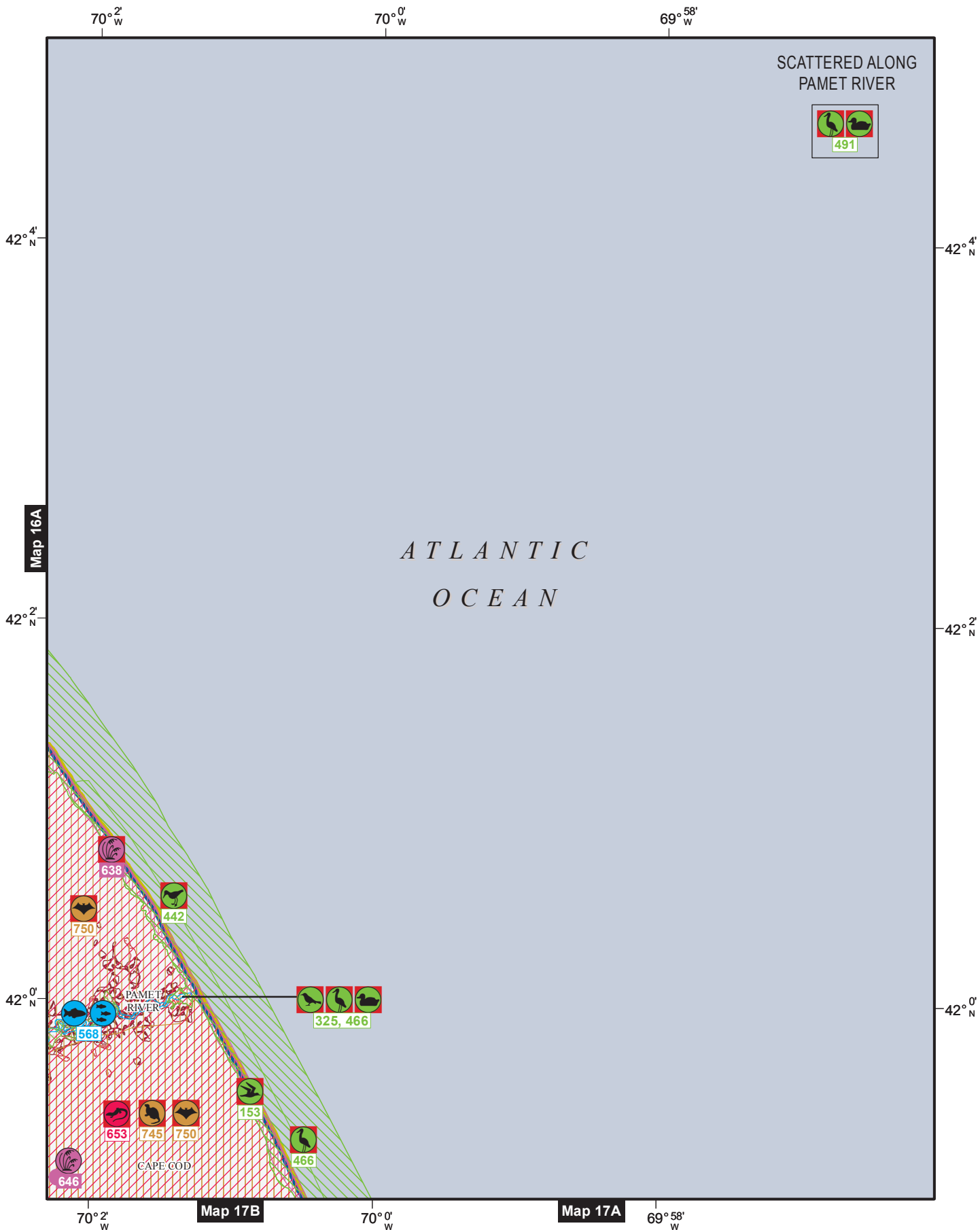
ESI SHORELINE HABITAT TYPES

ESI Rank	Shoreline Habitat Classification	Length (Meters)	Length (Miles)	% of ESI Shoreline
7	Exposed Tidal Flats	5,102.57	3.17	50%
3A	Fine to Medium Grained Sand Beaches	5,102.57	3.17	50%
Total ESI Shoreline:		10,205.14	6.34	
Total Shoreline:		5,102.57	3.17	

Note: A shoreline segment may include multiple shoreline habitats. If any segments include multiple habitats, the combined length of all habitats may exceed the length of the mapped shoreline, and the percent of ESI shoreline values will sum to greater than 100%

All underlying GIS data can be obtained from response.restoration.noaa.gov





Map 15A
Massachusetts and Rhode Island

BIOLOGICAL RESOURCES

Note: An asterisk (*) indicates that life stage occurs in this range but not in all months included

DISPLAYED ON MAP

BENTHIC

Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N	D
SAV	Rare aquatic/wetland plant	High Ecological Value				Present												

BIRDS

Map ID	Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N	D	Nest	Mig.(S)	Mig.(F)	Juveniles	Molt
153	Gull/Tern	Rare tern	Nesting		C/-		Rare													May-Aug	-	-	-	-
325	Passerine	Marsh passerines	General Distribution		-/C		Common													Apr-Aug	Apr-May	Aug-Nov	Sep-Oct	-
	Wading	Egrets	Migration		-/C		Common													Apr-Jul	Mar-May	Aug-Sep	-	-
	Wading	Marsh birds	General Distribution		C/C		Common													-	Mar-May	Aug-Nov	Jul-Aug	-
	Waterfowl	Waterfowl	General Distribution		C/C		Common													May-Jul	Apr-May	Aug-Oct	Aug-Sep	-
442	Shorebird	Piping plover	Nesting		T/E	T	Common													Mar-Aug	Mar-Apr	Jul-Oct	-	-
	Shorebird	Red knot	Migration		T		Common													-	May-Jun	Jul-Sep	-	-
	Shorebird	Shorebirds	Migration				Common													-	Mar-Jun	Jul-Nov	Aug	-
466	Wading	Wading birds	General Distribution		-/C		Common													-	Mar-May	Jul-Oct	-	-
491	Wading	Marsh birds	General Distribution		C/C		Common													-	Mar-May	Aug-Nov	Jul-Aug	-
	Waterfowl	Waterfowl	General Distribution		C/C		Common													May-Jul	Apr-May	Aug-Oct	Aug-Sep	-

FISH

Map ID	Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N	D	Spawn	Eggs	Larvae	Juveniles	Adults
568	Diadromous	Alewife	Spawning Area				-													Apr-Jun	Apr-Jun	Apr-Jun	-	Apr-Jun
	Diadromous	American eel	Migration				-													-	-	-	Jan-Dec	Jan-Dec
	Diadromous	American shad	Spawning Area				-													Apr-Jun	Apr-Jun	Apr-Jun	-	Apr-Jun
	Diadromous	Blueback herring	Spawning Area				-													Apr-Jun	Apr-Jun	Apr-Jun	-	Apr-Jun
	Estuarine Nursery	White perch	Spawning Area				-													Apr-Aug	Apr-Aug	May-Sep	Jan-Dec	Jan-Dec

HABITATS & RARE PLANTS

Map ID	Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N	D
638	Plant	Rare plant	Vulnerable Occurrence		T/C		-												
646	Wetland	Vernal pool	Vulnerable Occurrence				-												

REPTILES & AMPHIBIANS




Map ID	Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N	D	Nest	Hatch	Intersect	Juveniles	Adults
653	Amphibian	Eastern spadefoot	Vulnerable Occurrence		T/E		-													Apr-Jun	May-Jul	-	Jan-Dec	Jan-Dec

TERRESTRIAL MAMMALS


Map ID	Subelement	Species	Mapping Qualifier	MA/R/I	S	F	Concentration	Monthly Presence											
745	Small Mammal	New England cottontail	General Distribution	-/C			Rare	J	F	M	A	M	J	J	A	S	O	N	D
750	Bat	Northern myotis	General Distribution	E/-	T		Rare												

WIDESPREAD IN MAPPED AREA (> 10 SQUARE KILOMETERS)




BIRDS

Subelement	Species	Mapping Qualifier	MA/R/I	S	F	Concentration	Monthly Presence												Nest	Mig. (S)	Mig. (F)	Juveniles	Molt
	Alcid	Razorbill	Wintering			Common	J	F	M	A	M	J	J	A	S	O	N	D	-	-	Oct-Nov	-	-
	Diving	Loons	General Distribution	C/-		Common													-	Mar-Jun	Sep-Dec	Jan-Mar	-
		Loons	Migration	C/-		Common													-	Mar-Jun	Sep-Dec	Jan-Mar	-
	Gull/Tern	Rare tern	General Distribution	C/-		Common													-	Apr-May	Jul-Sep	-	-
		Rare tern	General Distribution	C/-		Rare													-	Apr-May	Jul-Sep	-	-
		Roseate tern	General Distribution	E/-	E	Common													-	Apr-May	Jul-Sep	-	-
		Roseate tern	General Distribution	E/-	E	Rare													-	Apr-May	Jul-Sep	-	-


REPTILES & AMPHIBIANS

Subelement	Species	Mapping Qualifier	MA/R/I	S	F	Concentration	Monthly Presence												Nest	Hatch	Internest	Juveniles	Adults
	Turtle	Green sea turtle	General Distribution	T/E	T	Regular	J	F	M	A	M	J	J	A	S	O	N	D	-	-	-	May-Nov	May-Nov
		K. ridley sea turtle	General Distribution	E/E	E	Regular													-	-	-	May-Nov	May-Nov
		Leatherback sea turtle	General Distribution	E/E	E	Regular													-	-	-	May-Nov	May-Nov
		Loggerhead sea turtle	General Distribution	T/E	T	Regular													-	-	-	May-Nov	May-Nov

INVERTEBRATES

Subelement	Species	Mapping Qualifier	MA/R/I	S	F	Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
	Bivalve	Sea scallop	Concentration Area			Medium	J	F	M	A	M	J	J	A	S	O	N	D	Jul-Oct	Jul-Oct	Jul-Oct	May-Oct	May-Oct
		Sea scallop	Concentration Area			High													Jul-Oct	Jul-Oct	Jul-Oct	May-Oct	May-Oct
	Cephalopod	Longfin squid	Concentration Area			Common													May-Aug	May-Aug	May-Aug	Apr-Nov	Apr-Nov
	Crab	Jonah crab	Concentration Area			Low													May-Oct	May-Oct	May-Oct	Apr-Oct	Apr-Oct

MARINE MAMMALS

Subelement	Species	Mapping Qualifier	MA/R/I	S	F	Concentration	Monthly Presence												Mating	Calving	Pupping	Molt
	Whale	Fin whale	Concentration Area	E/E	E	Common	J	F	M	A	M	J	J	A	S	O	N	D	-	-	-	-
		Fin whale	General Distribution	E/E	E	Rare													-	-	-	-
		Humpback whale	Concentration Area	E/E	E	Common													-	-	-	-
		N.A. right whale	Concentration Area	E/E	E	Common													-	-	-	-
		Sei whale	General Distribution	E/-	E	Rare													-	-	-	-
		Sei whale	General Distribution	E/-	E	Common													-	-	-	-
		Sperm whale	General Distribution	E/-	E	Rare													-	-	-	-


BIRDS

Subelement	Species	Monthly Presence												Nest	Mig. (S)	Mig. (F)	Molt
		J	F	M	A	M	J	J	A	S	O	N	D				
Alcid	Atlantic puffin													-	Mar	Sep	-
	Razorbill													-	May-Jun	-	-
Diving	D. crested cormorant													Apr-Jun	-	-	-
	D. crested cormorant													-	Mar-Apr	Sep-Oct	-
Gull/Tern	Gulls													-	Apr-May	Aug-Nov	-
	Northern gannet													-	Apr-May	Oct-Nov	-
Pelagic	Shearwaters													-	May	Oct	-
	Red-necked phalarope													-	May	Oct	-
Shorebird	American black duck													Mar-Jul	Sep-Mar	-	-
	Waterfowl													Mar-Apr	Sep-Apr	-	-
	Diving ducks													May	Mar-May	Sep-Nov	-
	Geese													-	Mar-May	Sep-Oct	-
	Sea ducks													-	Mar-May	Sep-Oct	-

FISH

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
Diadromous	Alewife													-	-	-	Jan-Dec	Jan-Dec
	American eel													-	-	-	Jan-Dec	Jan-Dec
	American shad													-	-	-	Jan-Dec	Jan-Dec
	Atlantic salmon													Sep-Dec	Sep-Mar	Feb-Jul	Jan-Dec	Jan-Dec
	Blueback herring													-	-	-	Jan-Dec	Jan-Dec
	Striped bass													-	-	-	Apr-Nov	Apr-Nov
Estuarine Nursery	Atlantic herring													Aug-Nov	Aug-Nov	Oct-Dec	Jan-Dec	Jan-Dec
	Bay anchovy													Jun-Aug	Jun-Aug	Jun-Sep	Jan-Dec	Jan-Dec
	Black sea bass													-	-	-	Aug-Jan	Aug-Jan
	Black sea bass													Feb-Jul	Feb-Jul	Mar-Jul	Jan-Dec	Jan-Dec
	Black sea bass													Feb-Jul	Feb-Jul	Mar-Jul	Feb-Jul	Feb-Jul
	Bluefish													-	-	Jun-Aug	May-Nov	May-Nov
	Northern kingfish													Jun-Jul	Jun-Jul	Jun-Aug	May-Nov	May-Nov
	Scup													May-Aug	May-Aug	Jun-Aug	May-Oct	May-Oct
	Summer flounder													Aug-Nov	Aug-Nov	Sep-Nov	Apr-Nov	Apr-Nov
	Winduppane													May-Aug	May-Aug	Jun-Aug	Jan-Dec	Jan-Dec
Marine Benthic	Winter flounder													Jan-May	Jan-May	Feb-May	Jan-Dec	Jan-Dec
	American plaice													Feb-Jun	Feb-Jun	Mar-Jul	Jan-Dec	Jan-Dec
	Atlantic cod													Nov-Mar	Nov-Mar	Dec-Mar	Jan-Dec	Jan-Dec
	Atlantic halibut													Apr-Sep	Apr-Sep	Apr-Sep	Jan-Dec	Jan-Dec
	Atlantic wolffish													Mar-Aug	Mar-Aug	Mar-Sep	Jan-Dec	Jan-Dec
	Goosefish													-	-	-	-	Jan-Jun
	Haddock													-	-	-	Aug-Jan	Aug-Jan
	Haddock													Feb-Jun	Feb-Jun	Mar-Jun	Jan-Dec	Jan-Dec
	Haddock													Feb-Jun	Feb-Jun	Mar-Jun	Feb-Jul	Feb-Jul
	Little skate													Jan-Dec	Jan-Dec	-	Jan-Dec	Jan-Dec






FISH (continued)

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	Longhorn sculpin													Dec-Feb	Dec-Feb	Jan-Jun	Jan-Dec	Jan-Dec
	Ocean pout													Aug-Oct	Aug-Dec	Sep-Feb	Jan-Dec	Jan-Dec
	Pollock													-	-	-	Apr-Oct	Apr-Oct
	Red hake													Jun-Sep	Jun-Sep	Jul-Nov	Jan-Dec	Jan-Dec
	Rock gunnel													Nov-Mar	Nov-Apr	Jan-Jun	Jan-Dec	Jan-Dec
	Searobins													Jun-Sep	Jun-Sep	Jun-Oct	Jan-Dec	Jan-Dec
	Silver hake													Jul-Oct	Jul-Oct	Aug-Oct	Jan-Dec	Jan-Dec
	Tautog													May-Aug	May-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	White hake													Apr-Sep	May-Nov	May-Nov	Jan-Dec	Jan-Dec
	Winter skate													-	-	-	Jan-Dec	Jan-Dec
	Witch flounder													May-Aug	May-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Yellowtail flounder													Mar-Jul	Mar-Jul	Apr-Jul	Jan-Dec	Jan-Dec
	Atlantic mackerel													May-Jul	May-Aug	May-Aug	Mar-Dec	Mar-Dec
	Spiny dogfish													-	-	-	Jan-Dec	Jan-Dec
	Tunas													-	-	-	Jun-Sep	-




REPTILES & AMPHIBIANS

Subelement	Species	Monthly Presence												Nest	Hatch	Interest	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	Eastern box turtle													Jun-Jul	Aug-Oct	-	Jan-Dec	Jan-Dec

INVERTEBRATES

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	Atlantic surfclam													Jun-Aug	Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Blue mussel													May-Nov	May-Nov	May-Nov	Jan-Dec	Jan-Dec
	Ocean quahog													Jul-Nov	Jul-Nov	Jul-Dec	Jan-Dec	Jan-Dec
	Sea scallop													Jul-Oct	Jul-Oct	Jul-Oct	Jan-Dec	Jan-Dec
	Longfin squid													May-Aug	May-Aug	May-Aug	Apr-Nov	Apr-Nov
	Northern shortfin squid													-	-	-	Apr-Nov	Apr-Nov
	Atlantic rock crab													May-Oct	Jun-Oct	Jun-Oct	Jan-Dec	Jan-Dec
	Blue crab													-	Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Horseshoe crab													May-Jul	May-Jul	-	Jan-Dec	Jan-Dec
	Jonah crab													May-Oct	May-Oct	May-Oct	Jan-Dec	Jan-Dec
	American lobster													Aug-Nov	Jan-Dec	Jun-Oct	Jan-Dec	Jan-Dec
	Northern shrimp													-	Dec-Apr	Jan-Dec	Jan-Dec	Dec-Apr
	Sevenspine bay shrimp													May-Jul	May-Jul	May-Jul	Jan-Dec	Jan-Dec

MARINE MAMMALS

Subelement	Species	Monthly Presence												Mating	Calving	Pupping	Molt
		J	F	M	A	M	J	J	A	S	O	N	D				
	Atl. spotted dolphin													-	-	-	-
	Atl. wht.-side dolphin													-	-	-	-
	Bottlenose dolphin													-	-	-	-
	Harbor porpoise													-	-	-	-
	Risso's dolphin													-	-	-	-
	Short-beaked common dolphin													-	-	-	-
	Striped dolphin													-	-	-	-
	White-beaked dolphin													-	-	-	-
	Gray seal													Dec-Feb	Dec-Feb	Dec-Feb	Mar-May
	Harbor seal													-	-	-	-
	Harp seal													-	-	-	-
	Hooded seal													-	-	-	-
	Minke whale													-	-	-	-
	Pilot whales													-	-	-	-

For additional information about species locations and extent, reference the underlying GIS data available from response.restoration.noaa.gov

SHORELINE RESOURCES

ESI POLYGON HABITAT TYPES

ESI Rank	Habitat Classification	Area (Acres)	Area (Sq. Miles)
10A	Salt and Brackish Water Marshes	6.01	0.01
10B	Freshwater Marshes	16.43	0.03
10C	Swamps	9.78	0.02
10D	Scrub and Shrub Wetlands	103.05	0.16

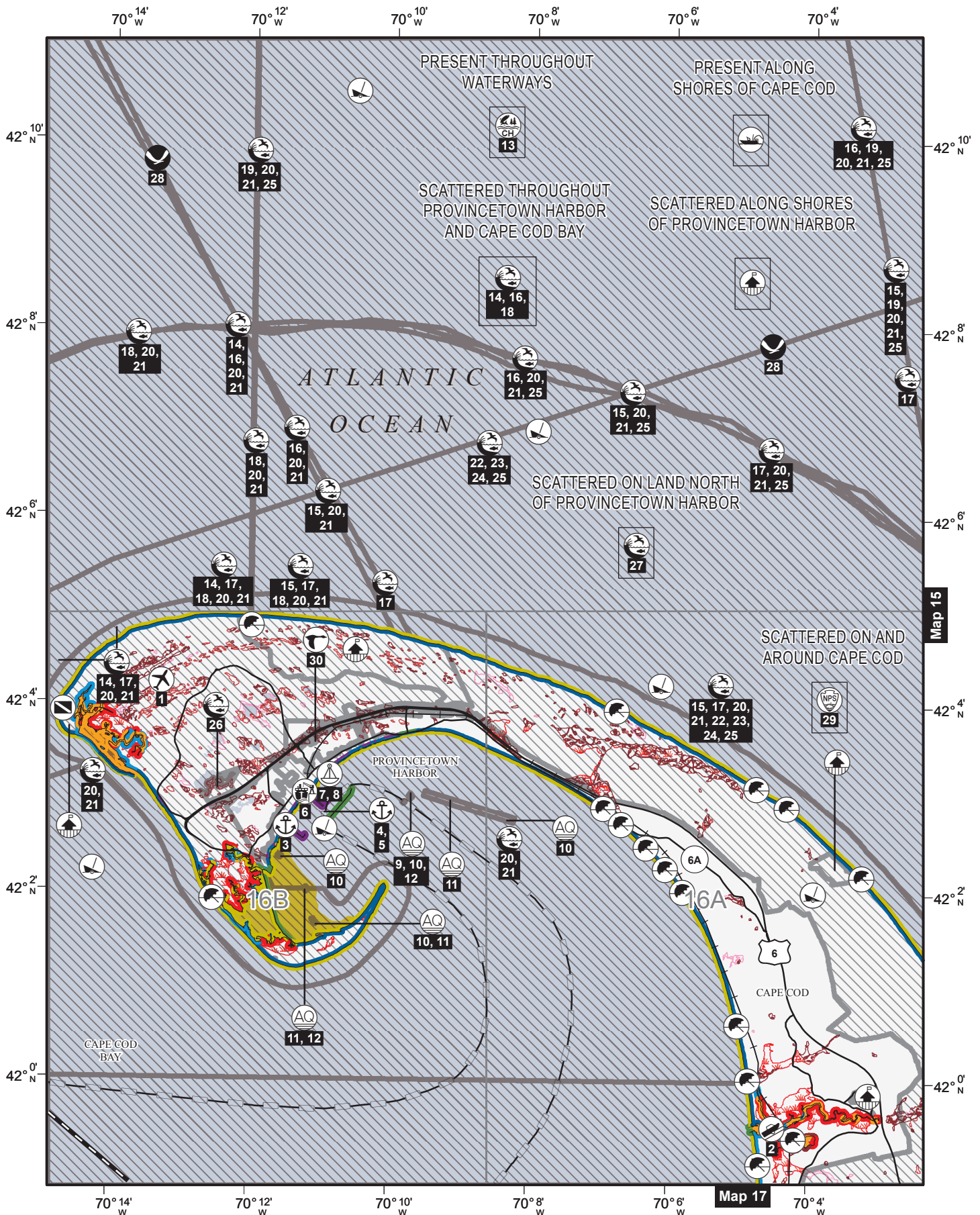
ESI SHORELINE HABITAT TYPES

ESI Rank	Shoreline Habitat Classification	Length (Meters)	Length (Miles)	% of ESI Shoreline
7	Exposed Tidal Flats	5,100.63	3.17	50%
3A	Fine to Medium Grained Sand Beaches	5,100.63	3.17	50%
Total ESI Shoreline:		10,201.26	6.34	
Total Shoreline:		5,100.63	3.17	

Note: A shoreline segment may include multiple shoreline habitats. If any segments include multiple habitats, the combined length of all habitats may exceed the length of the mapped shoreline, and the percent of ESI shoreline values will sum to greater than 100%

All underlying GIS data can be obtained from response.restoration.noaa.gov





Map 16
Mass. / Rhode Island



SEE BACK OF MAP
for details about mapped resources and
other resources that occur in mapped area.
Data Published: November 2016

0 2 Miles
Not for Navigation
0 2 Kilometers

1:100,000

Map 16
Massachusetts and Rhode Island

HUMAN USE RESOURCES

DISPLAYED ON MAP (POINTS)				
Map ID	Type	Name	Contact	Phone
1	AIRPORT	PROVINCETOWN MUNICIPAL AIRPORT		
2	BOAT RAMP	PAMET RIVER	MDFG, OFFICE OF FISHING AND BOATING ACCESS	508-389-7810
3	MARINA	FLYERS BOAT YARD		
4	MARINA	PROVINCETOWN MARINA		
5	MARINA	PROVINCETOWN YACHT & MARINE MARINA		
6	PORT	MACMILLAN PIER		
7	REPEATED MEASUREMENT SITE	INVASIVES - PROVINCETOWN HARBOR		
8	REPEATED MEASUREMENT SITE	TIDE GAUGE - PROVINCETOWN		
DISPLAYED ON MAP (POLYGONS)				
Map ID	Type	Name	Contact	Phone
9	AQUACULTURE	BLUE MUSSEL	CHRISTOPHER SCHILLACI, MA DMF, N. BEDFORD, MA	508-990-2860
10	AQUACULTURE	OYSTER	CHRISTOPHER SCHILLACI, MA DMF, N. BEDFORD, MA	508-990-2860
11	AQUACULTURE	QUAHOG	CHRISTOPHER SCHILLACI, MA DMF, N. BEDFORD, MA	508-990-2860
12	AQUACULTURE	SURF CLAM	CHRISTOPHER SCHILLACI, MA DMF, N. BEDFORD, MA	508-990-2860
13	CRITICAL HABITAT	CRITICAL HABITAT: NORTH ATLANTIC RIGHT WHALE		
14	MANAGEMENT AREA	NARW SMA - NE U.S. CAPE COD BAY		
15	MANAGEMENT AREA	NARW SMA - NE U.S. OFF RACE POINT		
16	MANAGEMENT AREA	LOBSTER MANAGEMENT AREA 1		
17	MANAGEMENT AREA	OUTER CAPE LOBSTER MANAGEMENT AREA		
18	MANAGEMENT AREA	CAPE COD BAY RESTRICTED AREA		
19	MANAGEMENT AREA	STELLWAGEN BANK/JEFFREYS LEDGE RESTRICTED AREA		
20	MANAGEMENT AREA	GULF OF MAINE ROLLING CLOSURE AREAS		
21	MANAGEMENT AREA	MASSACHUSETTS BAY MANAGEMENT AREA		
22	MANAGEMENT AREA	NORTHERN INSHORE STATE TRAP/POT WATERS AREA		
23	MANAGEMENT AREA	NORTHERN NEARSHORE TRAP/POT WATERS AREA		
24	MANAGEMENT AREA	OTHER NORTHEAST GILLNET WATERS AREA		
25	MANAGEMENT AREA	SEASONAL MANAGEMENT AREA WEST		
26	MANAGEMENT AREA	CLAPPS POND WMA	EOEEA, DEPARTMENT OF FISH AND GAME	617-626-1500
27	MANAGEMENT AREA	PROVINCETOWN CORRIDOR WMA	EOEEA, DEPARTMENT OF FISH AND GAME	617-626-1500
28	MARINE SANCTUARY	STUDDS/STELLWAGEN BANK NATIONAL MARINE SANCTUARY	BENJAMIN HASKELL, NOAA	781-546-6005
29	NATIONAL PARK	CAPE COD NATIONAL SEASHORE		
30	WILDLIFE REFUGE	HAWTHORNE WILDLIFE SANCTUARY CR	EOEEA, DEPT. OF CONSERVATION AND RECREATION	617-626-1250
ALSO PRESENT IN MAPPED AREA (POINTS)				
Type	Name	Contact	Phone	
COAST GUARD	STA PROVINCETOWN	USCG	508-487-0077	
ESSENTIAL HABITAT	FACULTATIVE SPECIES -VERNAL POOL	MA DFW NHESP, WESTBOROUGH, MA	508-389-6375	

ALSO PRESENT IN MAPPED AREA (POLYGONS)

Type	Name	Contact	Phone
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: AMERICAN PLAICE	NORTHEAST FISHERIES MANAGEMENT COUNCIL	
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: ATLANTIC COD	NORTHEAST FISHERIES MANAGEMENT COUNCIL	
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: ATLANTIC HALIBUT	NORTHEAST FISHERIES MANAGEMENT COUNCIL	
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: ATLANTIC HERRING	NORTHEAST FISHERIES MANAGEMENT COUNCIL	
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: ATLANTIC WOLFFISH	NORTHEAST FISHERIES MANAGEMENT COUNCIL	
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: HADDOCK	NORTHEAST FISHERIES MANAGEMENT COUNCIL	
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: LITTLE SKATE	NORTHEAST FISHERIES MANAGEMENT COUNCIL	
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: MONKFISH	NORTHEAST FISHERIES MANAGEMENT COUNCIL	
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: OCEAN POUT	NORTHEAST FISHERIES MANAGEMENT COUNCIL	
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: POLLOCK	NORTHEAST FISHERIES MANAGEMENT COUNCIL	
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: RED HAKE	NORTHEAST FISHERIES MANAGEMENT COUNCIL	
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: REDFISH	NORTHEAST FISHERIES MANAGEMENT COUNCIL	
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: SEA SCALLOP	NORTHEAST FISHERIES MANAGEMENT COUNCIL	
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: SILVER HAKE	NORTHEAST FISHERIES MANAGEMENT COUNCIL	
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: SMOOTH SKATE	NORTHEAST FISHERIES MANAGEMENT COUNCIL	
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: THORNY SKATE	NORTHEAST FISHERIES MANAGEMENT COUNCIL	
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: WHITE HAKE	NORTHEAST FISHERIES MANAGEMENT COUNCIL	
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: WINDOW PANE FLOUNDER	NORTHEAST FISHERIES MANAGEMENT COUNCIL	
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: WINTER FLOUNDER	NORTHEAST FISHERIES MANAGEMENT COUNCIL	
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: WINTER SKATE	NORTHEAST FISHERIES MANAGEMENT COUNCIL	
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: WITCH FLOUNDER	NORTHEAST FISHERIES MANAGEMENT COUNCIL	
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: YELLOWTAIL FLOUNDER	NORTHEAST FISHERIES MANAGEMENT COUNCIL	
MANAGEMENT AREA	PRIORITY HABITAT	MDFW NHESP	508-389-6380

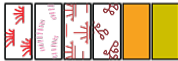
JURISDICTIONS

COUNTY:	BARNSTABLE	FEMA:	REGION I
COAST GUARD:	DISTRICT 1, SECTOR BOSTON, SECTOR SE NEW ENGLAND	EPA:	REGION 1
USACE:	NORTH ATLANTIC DIVISION, NEW ENGLAND DISTRICT		

SHORELINE RESOURCES

ESI POLYGON HABITAT TYPES

<i>ESI Rank</i>	<i>Habitat Classification</i>	<i>Area (Acres)</i>	<i>Area (Sq. Miles)</i>
10A	Salt and Brackish Water Marshes	774.60	1.21
10B	Freshwater Marshes	144.87	0.23
10C	Swamps	244.66	0.38
10D	Scrub and Shrub Wetlands	620.48	0.97
9A	Sheltered Tidal Flats	153.34	0.24
7	Exposed Tidal Flats	601.06	0.94



ESI SHORELINE HABITAT TYPES

<i>ESI Rank</i>	<i>Shoreline Habitat Classification</i>	<i>Length (Meters)</i>	<i>Length (Miles)</i>	<i>% of ESI Shoreline</i>
10A	Salt and Brackish Water Marshes	33,598.46	20.88	16%
10D	Scrub and Shrub Wetlands	567.82	0.35	< 1%
9A	Sheltered Tidal Flats	27,242.50	16.93	13%
9B	Vegetated Low Banks	1,314.74	0.82	1%
8B	Sheltered, Solid Man-Made Structures	40.13	0.02	< 1%
8C	Sheltered Riprap	83.95	0.05	< 1%
7	Exposed Tidal Flats	70,925.90	44.07	34%
6B	Riprap	5,778.22	3.59	3%
5	Mixed Sand and Gravel Beaches	24.64	0.02	< 1%
4	Coarse Grained Sand Beaches	16,793.62	10.44	8%
3A	Fine to Medium Grained Sand Beaches	49,367.88	30.68	23%
1B	Exposed, Solid Man-Made Structures	4,870.89	3.03	2%
Total ESI Shoreline:		210,608.75	130.87	
Total Shoreline:		106,556.80	66.21	

Note: A shoreline segment may include multiple shoreline habitats. If any segments include multiple habitats, the combined length of all habitats may exceed the length of the mapped shoreline, and the percent of ESI shoreline values will sum to greater than 100%

All underlying GIS data can be obtained from response.restoration.noaa.gov



Map 16A
Massachusetts and Rhode Island

BIOLOGICAL RESOURCES

Note: An asterisk (*) indicates that life stage occurs in this range but not in all months included

DISPLAYED ON MAP

BENTHIC

Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence											
							J	F	M	A	M	J	J	A	S	O	N	D
SAV	Eelgrass	High Ecological Value				Potential												
SAV	Eelgrass	High Ecological Value				Present												
SAV	Rare aquatic/wetland plant	High Ecological Value				Present												

BIRDS

Map ID	Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence												Nest	Mig. (S)	Mig. (F)	Molt
								J	F	M	A	M	J	J	A	S	O	N	D				
15	Raptor	Northern harrier	Nesting		T/E		Rare													Mar-Jul	-	-	-
51	Passerine	Vesper sparrow	Nesting		T/-		Rare													May-Aug	-	-	-
72	Diving	Loons	General Distribution		C/-		Common													-	Mar-Jun	Sep-Dec	Jan-Mar
176	Gull/Tern	Rare tern	Nesting		C/-		Rare													May-Aug	-	-	-
	Shorebird	Piping plover	Nesting		T/E	T	Common													Mar-Aug	Mar-Apr	Jul-Oct	-
	Shorebird	Red knot	Migration		T		Common													-	May-Jun	Jul-Sep	-
	Shorebird	Shorebirds	Migration				Common													-	Mar-Jun	Jul-Nov	Aug
325	Passerine	Marsh passerines	General Distribution		-/C		Common													Apr-Aug	Apr-May	Aug-Nov	Sep-Oct
	Wading	Egrets	Migration		-/C		Common													Apr-Jul	Mar-May	Aug-Sep	-
	Wading	Marsh birds	General Distribution		C/C		Common													-	Mar-May	Aug-Nov	Jul-Aug
	Waterfowl	Waterfowl	General Distribution		C/C		Common													May-Jul	Apr-May	Aug-Oct	Aug-Sep
440	Shorebird	Piping plover	Nesting		T/E	T	Common													Mar-Aug	Mar-Apr	Jul-Oct	-
	Shorebird	Red knot	Migration		T		Common													-	May-Jun	Jul-Sep	-
442	Shorebird	Piping plover	Nesting		T/E	T	Common													Mar-Aug	Mar-Apr	Jul-Oct	-
	Shorebird	Red knot	Migration		T		Common													-	May-Jun	Jul-Sep	-
	Shorebird	Shorebirds	Migration				Common													-	Mar-Jun	Jul-Nov	Aug
464	Shorebird	Shorebirds	Migration				Common													-	Mar-Jun	Jul-Nov	Aug
489	Raptor	Northern harrier	Nesting		T/E		Rare													Mar-Jul	-	-	-
	Wading	Marsh birds	General Distribution		C/C		Common													-	Mar-May	Aug-Nov	Jul-Aug
	Waterfowl	Waterfowl	General Distribution		C/C		Common													May-Jul	Apr-May	Aug-Oct	Aug-Sep
491	Wading	Marsh birds	General Distribution		C/C		Common													-	Mar-May	Aug-Nov	Jul-Aug
	Waterfowl	Waterfowl	General Distribution		C/C		Common													May-Jul	Apr-May	Aug-Oct	Aug-Sep
500	Gull/Tern	Rare tern	Migration		C/-		Common													May-Aug	Apr-May	Jul-Sep	-
501	Gull/Tern	Rare tern	Migration		C/-		Common													May-Aug	Apr-May	Jul-Sep	-
	Gull/Tern	Roseate tern	Migration		E/-	E	Common													-	Apr-May	Jul-Sep	-
503	Gull/Tern	Roseate tern	Migration		E/-	E	Common													-	Apr-May	Jul-Sep	-
550	Gull/Tern	Rare tern	Nesting		C/-		Rare													May-Aug	Apr-May	Jul-Sep	-

FISH

Map ID	Subelement	Species	Mapping Qualifier	MA/RI		Concentration	Monthly Presence												Eggs	Larvae	Juveniles	Adults
				S	F		J	F	M	A	M	J	J	A	S	O	N	D				
568	Diadromous	Alewife	Spawning Area			-													Apr-Jun	Apr-Jun	-	Apr-Jun
	Diadromous	American eel	Migration			-													-	-	Jan-Dec	Jan-Dec
	Diadromous	American shad	Spawning Area			-													Apr-Jun	Apr-Jun	-	Apr-Jun
	Diadromous	Blueback herring	Spawning Area			-													Apr-Jun	Apr-Jun	-	Apr-Jun
	Estuarine Nursery	White perch	Spawning Area			-													Apr-Aug	May-Sep	Jan-Dec	Jan-Dec

HABITATS & RARE PLANTS

Map ID	Subelement	Species	Mapping Qualifier	MA/RI		Monthly Presence												Concentration	T/C	Vulnerable Occurrence
				S	F	J	F	M	A	M	J	J	A	S	O	N	D			
638	Plant	Rare plant	Vulnerable Occurrence															-		
646	Wetland	Vernal pool	Vulnerable Occurrence															-		

REPTILES & AMPHIBIANS

Map ID	Subelement	Species	Mapping Qualifier	MA/RI		Monthly Presence												Concentration	Nest	Hatch	Internest	Juveniles	Adults
				S	F	J	F	M	A	M	J	J	A	S	O	N	D						
652	Turtle	Rare reptile	Vulnerable Occurrence															-	-	Apr-Jul	Jun-Nov	Jan-Dec	Jan-Dec

INVERTEBRATES

Map ID	Subelement	Species	Mapping Qualifier	MA/RI		Monthly Presence												Concentration	Spawn	Eggs	Larvae	Juveniles	Adults
				S	F	J	F	M	A	M	J	J	A	S	O	N	D						
666	Crab	Blue crab	Nursery															Common	Jun-Aug	-	Jun-Aug	Jan-Dec	Jan-Dec
	Crab	Horseshoe crab	Nursery															Abundant	May-Jul	May-Jul	-	Jan-Dec	Jan-Dec
687	Crab	Horseshoe crab	Spawning															Abundant	May-Jul	May-Jul	-	May-Jul	May-Jul
705	Bivalve	Sea scallop	Concentration Area															High	Jul-Oct	Jul-Oct	Jul-Oct	May-Oct	May-Oct





MARINE MAMMALS

Map ID	Subelement	Species	Mapping Qualifier	MA/RI		Monthly Presence												Concentration	Mating	Calving	Pupping	Molt																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
				S	F	J	F	M	A	M	J	J	A	S	O	N	D																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
720	Whale	Humpback whale	General Distribution																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								



TERRESTRIAL MAMMALS

Map ID	Subelement	Species	Mapping Qualifier	MA/RI		Monthly Presence												Concentration	-JC
				S	F	J	F	M	A	M	J	J	A	S	O	N	D		
745	Small Mammal	New England cottontail	General Distribution															Rare	

BIRDS

Subelement	Species	Mapping Qualifier	MA/RI		Concentration	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt
			S	F		J	F	M	A	M	J	J	A	S	O	N	D				
 Alcid	Razorbill	Wintering			Common													-	-	Oct-Nov	-
 Diving	Loons	Migration	C/-		Common													-	Mar-Jun	Sep-Dec	Jan-Mar
 Gull/Tern	Rare tern	General Distribution	C/-		Common													-	Apr-May	Jul-Sep	-
	Roseate tern	General Distribution	E/-	E	Common													-	Apr-May	Jul-Sep	-
	Wading birds	General Distribution	-/C		Common													-	Mar-May	Jul-Oct	-
 Waterfowl	Sea ducks	Wintering			Abundant													-	Mar-May	Sep-Oct	-


REPTILES & AMPHIBIANS

Subelement	Species	Mapping Qualifier	MA/RI		Concentration	Monthly Presence												Nest	Hatch	Interst	Juveniles	Adults
			S	F		J	F	M	A	M	J	J	A	S	O	N	D					
 Amphibian	Eastern spadefoot	Vulnerable Occurrence	T/E		-													Apr-Jun	May-Jul	-	Jan-Dec	Jan-Dec
 Turtle	Green sea turtle	General Distribution	T/E	T	Regular													-	-	-	May-Nov	May-Nov
	K. ridley sea turtle	General Distribution	E/E	E	Regular													-	-	-	May-Nov	May-Nov
	Leatherback sea turtle	General Distribution	E/E	E	Regular													-	-	-	May-Nov	May-Nov
	Loggerhead sea turtle	General Distribution	T/E	T	Regular													-	-	-	May-Nov	May-Nov

INVERTEBRATES

Subelement	Species	Mapping Qualifier	MA/RI		Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
			S	F		J	F	M	A	M	J	J	A	S	O	N	D					
 Bivalve	Sea scallop	Concentration Area			Medium													Jul-Oct	Jul-Oct	Jul-Oct	May-Oct	May-Oct
 Cephalopod	Longfin squid	Concentration Area			Common													May-Aug	May-Aug	May-Aug	Apr-Nov	Apr-Nov
 Crab	Jonah crab	Concentration Area			Low													May-Oct	May-Oct	May-Oct	Apr-Oct	Apr-Oct

MARINE MAMMALS

Subelement	Species	Mapping Qualifier	MA/RI		Concentration	Monthly Presence												Mating	Calving	Pupping	Molt
			S	F		J	F	M	A	M	J	J	A	S	O	N	D				
 Whale	Fin whale	Concentration Area	E/E	E	Common													-	-	-	-
	Humpback whale	Concentration Area	E/E	E	Common													-	-	-	-
	N.A. right whale	Concentration Area	E/E	E	Common													-	-	-	-
	Sei whale	General Distribution	E/-	E	Rare													-	-	-	-
	Sei whale	General Distribution	E/-	E	Common													-	-	-	-
	Sperm whale	General Distribution	E/-	E	Rare													-	-	-	-

TERRESTRIAL MAMMALS

Subelement	Species	Mapping Qualifier	MA/RI		Concentration	Monthly Presence											
			S	F		J	F	M	A	M	J	J	A	S	O	N	D
 Bat	Northern myotis	General Distribution	E/-	T	Rare												


BIRDS

Subelement	Species	Monthly Presence											
		J	F	M	A	M	J	J	A	S	O	N	D
Alcid	Atlantic puffin												
	D. crested cormorant												
	D. crested cormorant												
Gull/Tern	Gulls												
	Northern gannet												
	Shearwaters												
Shorebird	Red-necked phalarope												
Waterfowl	American black duck												
	Diving ducks												
	Geese												
	Sea ducks												

FISH

Subelement	Species	Monthly Presence											
		J	F	M	A	M	J	J	A	S	O	N	D
Diadromous	Alewife												
	American eel												
	American shad												
	Atlantic salmon												
	Blueback herring												
	Striped bass												
Estuarine Nursery	Atlantic herring												
	Bay anchovy												
	Black sea bass												
	Black sea bass												
	Black sea bass												
	Bluefish												
	Northern kingfish												
	Scup												
	Summer flounder												
	Windowpane												
	Winter flounder												
Freshwater	Rainbow smelt												
Marine Benthic	American plaice												
	Atlantic cod												
	Atlantic halibut												
	Atlantic tomcod												
	Atlantic wolffish												
	Goosefish												
	Goosefish												
	Haddock												
	Haddock												





FISH (continued)

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	Haddock													Feb-Jun	Feb-Jun	Mar-Jun	Feb-Jul	Feb-Jul
	Little skate													Jan-Dec	Jan-Dec	-	Jan-Dec	Jan-Dec
	Longhorn sculpin													Dec-Feb	Dec-Feb	Jan-Jun	Jan-Dec	Jan-Dec
	Ocean pout													Aug-Oct	Aug-Dec	Sep-Feb	Jan-Dec	Jan-Dec
	Pollock													-	-	-	Apr-Oct	Apr-Oct
	Red hake													Jun-Sep	Jun-Sep	Jul-Nov	Jan-Dec	Jan-Dec
	Rock gunnel													Nov-Mar	Nov-Apr	Jan-Jun	Jan-Dec	Jan-Dec
	Searobins													Jun-Sep	Jun-Sep	Jun-Oct	Jan-Dec	Jan-Dec
	Silver hake													Jul-Oct	Jul-Oct	Aug-Oct	Jan-Dec	Jan-Dec
	Tautog													May-Aug	May-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	White hake													Apr-Sep	May-Nov	May-Nov	Jan-Dec	Jan-Dec
	Winter skate													-	-	-	Jan-Dec	Jan-Dec
	Witch flounder													May-Aug	May-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Yellowtail flounder													Mar-Jul	Mar-Jul	Apr-Jul	Jan-Dec	Jan-Dec
	Atlantic mackerel													May-Jul	May-Aug	May-Aug	Mar-Dec	Mar-Dec
	Spiny dogfish													-	-	-	Jan-Dec	Jan-Dec
	Tunas													-	-	-	Jun-Sep	-




REPTILES & AMPHIBIANS

Subelement	Species	Monthly Presence												Nest	Hatch	Interest	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	Eastern box turtle													Jun-Jul	Aug-Oct	-	Jan-Dec	Jan-Dec

INVERTEBRATES

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	Atlantic surfclam													Jun-Aug	Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Blue mussel													May-Nov	May-Nov	May-Nov	Jan-Dec	Jan-Dec
	Eastern oyster													Jun-Aug	Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Northern quahog													Jun-Aug	Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Ocean quahog													Jul-Nov	Jul-Nov	Jul-Dec	Jan-Dec	Jan-Dec
	Sea scallop													Jul-Oct	Jul-Oct	Jul-Oct	Jan-Dec	Jan-Dec
	Softshell clam													Jun-Aug	Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Northern shortfin squid													-	-	-	Apr-Nov	Apr-Nov
	Atlantic rock crab													May-Oct	Jun-Oct	Jun-Oct	Jan-Dec	Jan-Dec
	Blue crab													-	Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Horseshoe crab													May-Jul	May-Jul	-	Jan-Dec	Jan-Dec
	Jonah crab													May-Oct	May-Oct	May-Oct	Jan-Dec	Jan-Dec
	American lobster													Aug-Nov	Jan-Dec	Jun-Oct	Jan-Dec	Jan-Dec
	Db grass shrimp													May-Jul	May-Jul	May-Jul	Jan-Dec	Jan-Dec
	Northern shrimp													-	Dec-Apr	Jan-Dec	Jan-Dec	Dec-Apr
	Sevenspine bay shrimp													May-Jul	May-Jul	May-Jul	Jan-Dec	Jan-Dec

MARINE MAMMALS

	Subelement	Species	Monthly Presence												Mating	Calving	Pupping	Molt
			J	F	M	A	M	J	J	A	S	O	N	D				
	Dolphin	Atl. spotted dolphin													-	-	-	-
		Atl. wht.-side dolphin													-	-	-	-
		Bottlenose dolphin													-	-	-	-
		Harbor porpoise													-	-	-	-
		Risso's dolphin													-	-	-	-
		Short-beaked common dolphin													-	-	-	-
		Striped dolphin													-	-	-	-
	Pinniped	White-beaked dolphin													-	-	-	-
		Gray seal													Dec-Feb	Dec-Feb	Dec-Feb	Mar-May
		Harbor seal													-	-	-	-
		Harp seal													-	-	-	-
	Whale	Hooded seal													-	-	-	-
		Minke whale													-	-	-	-
		Pilot whales													-	-	-	-

For additional information about species locations and extent, reference the underlying GIS data available from response.restoration.noaa.gov

SHORELINE RESOURCES

ESI POLYGON HABITAT TYPES

ESI Rank	Habitat Classification	Area (Acres)	Area (Sq. Miles)
10A	Salt and Brackish Water Marshes	411.46	0.64
10B	Freshwater Marshes	57.02	0.09
10C	Swamps	12.91	0.02
10D	Scrub and Shrub Wetlands	344.04	0.54
9A	Sheltered Tidal Flats	37.49	0.06



ESI SHORELINE HABITAT TYPES

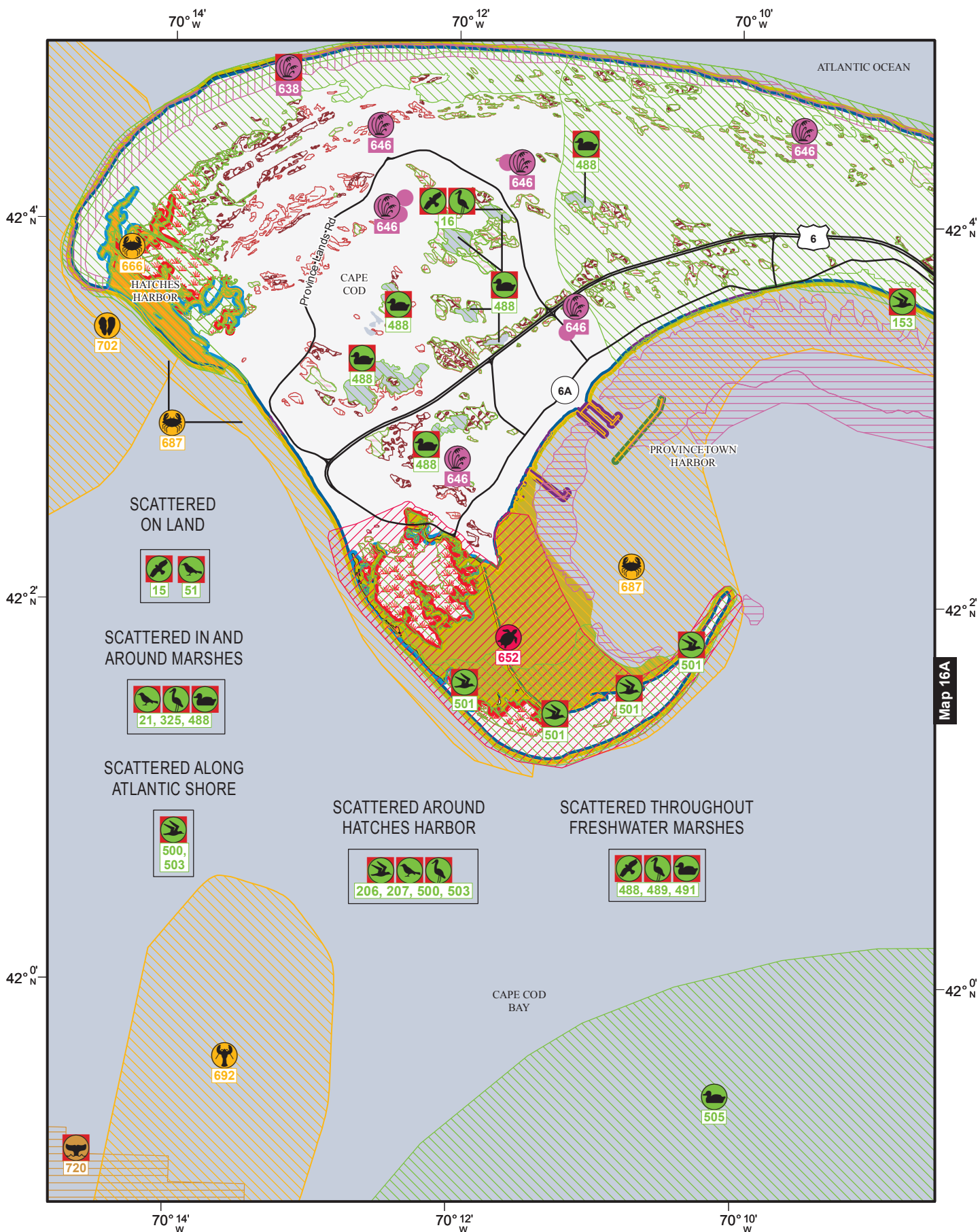
ESI Rank	Shoreline Habitat Classification	Length (Meters)	Length (Miles)	% of ESI Shoreline
10A	Salt and Brackish Water Marshes	11,762.55	7.31	17%
10D	Scrub and Shrub Wetlands	567.82	0.35	1%
9A	Sheltered Tidal Flats	10,545.09	6.55	15%
9B	Vegetated Low Banks	532.90	0.33	1%
8B	Sheltered, Solid Man-Made Structures	40.13	0.02	< 1%
7	Exposed Tidal Flats	21,540.92	13.38	31%
6B	Riprap	240.83	0.15	< 1%
5	Mixed Sand and Gravel Beaches	24.64	0.02	< 1%
4	Coarse Grained Sand Beaches	3,029.09	1.88	4%
3A	Fine to Medium Grained Sand Beaches	21,296.51	13.23	31%
1B	Exposed, Solid Man-Made Structures	23.59	0.01	< 1%

Total ESI Shoreline: 69,604.07 Total ESI Shoreline: 43.25
 Total Shoreline: 36,427.32 Total Shoreline: 22.63

Note: A shoreline segment may include multiple shoreline habitats. If any segments include multiple habitats, the combined length of all habitats may exceed the length of the mapped shoreline, and the percent of ESI shoreline values will sum to greater than 100%

All underlying GIS data can be obtained from response.restoration.noaa.gov

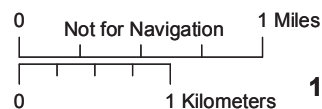




Map 16B
Mass. / Rhode Island



SEE BACK OF MAP
for details about mapped species and
other species that occur in mapped area.
Data Published: November 2016



1:50,000



Map 16B
Massachusetts and Rhode Island

BIOLOGICAL RESOURCES

Note: An asterisk (*) indicates that life stage occurs in this range but not in all months included

DISPLAYED ON MAP

BENTHIC

Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence											
						J	F	M	A	M	J	J	A	S	O	N	D
SAV	Eelgrass	High Ecological Value			Potential												
SAV	Eelgrass	High Ecological Value			Present												
SAV	Rare aquatic/wetland plant	High Ecological Value			Present												

BIRDS

Map ID	Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence										Nest	Mig. (S)	Mig. (F)	Molt
								J	F	M	A	M	J	J	A	S	O				
15	Raptor	Northern harrier	Nesting		T/E		Rare											Mar-Jul	-	-	-
16	Raptor	Northern harrier	Nesting		T/E		Rare											Mar-Jul	-	-	-
21	Wading	Marsh birds	General Distribution		C/C		Common											-	Mar-May	Aug-Nov	Jul-Aug
21	Wading	Marsh birds	General Distribution		C/C		Common											-	Mar-May	Aug-Nov	Jul-Aug
51	Passerine	Vesper sparrow	Nesting		T/-		Rare											May-Aug	-	-	-
153	Gull/Tern	Rare tern	Nesting		C/-		Rare											May-Aug	-	-	-
206	Passerine	Marsh passerines	General Distribution		-/C		Common											Apr-Aug	Apr-May	Aug-Nov	Sep-Oct
Wading	Egrets	Migration			-/C		Common											Apr-Jul	Mar-May	Aug-Sep	-
207	Passerine	Marsh passerines	General Distribution		-/C		Common											Apr-Aug	Apr-May	Aug-Nov	Sep-Oct
Wading	Egrets	Migration			-/C		Common											Apr-Jul	Mar-May	Aug-Sep	-
Wading	Marsh birds	General Distribution			C/C		Common											-	Mar-May	Aug-Nov	Jul-Aug
325	Passerine	Marsh passerines	General Distribution		-/C		Common											Apr-Aug	Apr-May	Aug-Nov	Sep-Oct
Wading	Egrets	Migration			-/C		Common											Apr-Jul	Mar-May	Aug-Sep	-
Wading	Marsh birds	General Distribution			C/C		Common											-	Mar-May	Aug-Nov	Jul-Aug
Waterfowl	Waterfowl	General Distribution			C/C		Common											May-Jul	Apr-May	Aug-Oct	Aug-Sep
488	Waterfowl	Waterfowl	General Distribution		C/C		Common											May-Jul	Apr-May	Aug-Oct	Aug-Sep
489	Raptor	Northern harrier	Nesting		T/E		Rare											Mar-Jul	-	-	-
Wading	Marsh birds	General Distribution			C/C		Common											-	Mar-May	Aug-Nov	Jul-Aug
Waterfowl	Waterfowl	General Distribution			C/C		Common											May-Jul	Apr-May	Aug-Oct	Aug-Sep
491	Wading	Marsh birds	General Distribution		C/C		Common											-	Mar-May	Aug-Nov	Jul-Aug
Waterfowl	Waterfowl	General Distribution			C/C		Common											May-Jul	Apr-May	Aug-Oct	Aug-Sep
500	Gull/Tern	Rare tern	Migration		C/-		Common											May-Aug	Apr-May	Jul-Sep	-
501	Gull/Tern	Rare tern	Migration		C/-		Common											May-Aug	Apr-May	Jul-Sep	-
Gull/Tern	Roseate tern	Migration			E/-	E	Common											-	Apr-May	Jul-Sep	-
503	Gull/Tern	Roseate tern	Migration		E/-	E	Common											-	Apr-May	Jul-Sep	-
505	Waterfowl	Sea ducks	Wintering				Abundant											-	Mar-May	Sep-Oct	-

HABITATS & RARE PLANTS

Map ID	Subelement	Species	Mapping Qualifier	MA/RI S F	Concentration	Monthly Presence											
						J	F	M	A	M	J	J	A	S	O	N	D
638	Plant	Rare plant	Vulnerable Occurrence	T/C	-												
646	Wetland	Vernal pool	Vulnerable Occurrence		-												

REPTILES & AMPHIBIANS

Map ID	Subelement	Species	Mapping Qualifier	MA/RI S F	Concentration	Monthly Presence											
						J	F	M	A	M	J	J	A	S	O	N	D
652	Turtle	Rare reptile	Vulnerable Occurrence		-												

INVERTEBRATES

Map ID	Subelement	Species	Mapping Qualifier	MA/RI S F	Concentration	Monthly Presence											
						J	F	M	A	M	J	J	A	S	O	N	D
666	Crab	Blue crab	Nursery		Common												
687	Crab	Horseshoe crab	Nursery		Abundant												
692	Lobster	Horseshoe crab	Spawning		Abundant												
702	Bivalve	American lobster	Concentration Area		Medium												
		Sea scallop	Concentration Area		Medium												

MARINE MAMMALS

Map ID	Subelement	Species	Mapping Qualifier	MA/RI S F	Concentration	Monthly Presence											
						J	F	M	A	M	J	J	A	S	O	N	D
720	Whale	Humpback whale	General Distribution	E/E E	Common												

WIDESPREAD IN MAPPED AREA (> 10 SQUARE KILOMETERS)

BIRDS

Map ID	Subelement	Species	Mapping Qualifier	MA/RI S F	Concentration	Monthly Presence											
						J	F	M	A	M	J	J	A	S	O	N	D
	Alcid	Razorbill	Wintering		Common												
	Diving	Loons	General Distribution	C/-	Common												
		Loons	Migration	C/-	Common												
	Gull/Tern	Rare tern	General Distribution	C/-	Common												
		Roseate tern	General Distribution	E/- E	Common												
	Shorebird	Piping plover	Nesting	T/E T	Common												
		Red knot	Migration	T	Common												
		Shorebirds	Migration		Common												
	Wading	Wading birds	General Distribution	-/C	Common												

REPTILES & AMPHIBIANS

Map ID	Subelement	Species	Mapping Qualifier	MA/RI S F	Concentration	Monthly Presence											
						J	F	M	A	M	J	J	A	S	O	N	D
	Amphibian	Eastern spadefoot	Vulnerable Occurrence	T/E	-												
	Turtle	Green sea turtle	General Distribution	T/E T	Regular												
		K. ridley sea turtle	General Distribution	E/E E	Regular												
		Leatherback sea turtle	General Distribution	E/E E	Regular												
		Loggerhead sea turtle	General Distribution	T/E T	Regular												

INVERTEBRATES

Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence												Eggs	Larvae	Juveniles	Adults
							J	F	M	A	M	J	J	A	S	O	N	D				
Cephalopod	Longfin squid	Concentration Area				Common													May-Aug	May-Aug	Apr-Nov	Apr-Nov
Crab	Jonah crab	Concentration Area				Low													May-Oct	May-Oct	Apr-Oct	Apr-Oct

MARINE MAMMALS

Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence												Calving	Pupping	Molt
							J	F	M	A	M	J	J	A	S	O	N	D			
Whale	Fin whale	Concentration Area		E/E	E	Common													-	-	-
	Humpback whale	Concentration Area		E/E	E	Common													-	-	-
	N.A. right whale	Concentration Area		E/E	E	Common													-	-	-
	Sei whale	General Distribution		E/-	E	Rare													-	-	-
	Sei whale	General Distribution		E/-	E	Common													-	-	-
	Sperm whale	General Distribution		E/-	E	Rare													-	-	-

TERRESTRIAL MAMMALS

Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence											
							J	F	M	A	M	J	J	A	S	O	N	D
Bat	Northern myotis	General Distribution		E/-	T	Rare												






ALSO PRESENT IN MAPPED AREA (GENERAL DISTRIBUTION)

BIRDS

Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt
							J	F	M	A	M	J	J	A	S	O	N	D				
Alcid	Atlantic puffin																		-	Mar	Sep	-
	Razorbill																		-	May-Jun	-	-
Diving	D. crested cormorant																		-	Mar-Apr	Sep-Oct	-
	D. crested cormorant																		Apr-Jun	-	-	-
Gull/Tern	Gulls																		-	Apr-May	Aug-Nov	-
Pelagic	Northern gannet																		-	Apr-May	Oct-Nov	-
	Shearwaters																		-	May	Oct	-
Shorebird	Red-necked phalarope																		-	May	Oct	-
Waterfowl	American black duck																		Mar-Jul	Sep-Mar	-	-
	Diving ducks																		Mar-Apr	Sep-Apr	-	-
	Geese																		May	Mar-May	Sep-Nov	-
	Sea ducks																		-	Mar-May	Sep-Oct	-

FISH






Monthly Presence

Subelement	Species	J	F	M	A	M	J	J	A	S	O	N	D	Spawn	Eggs	Larvae	Juveniles	Adults
	Alewife													-	-	-	Jan-Dec	Jan-Dec
	American eel													-	-	-	Jan-Dec	Jan-Dec
	American shad													-	-	-	Jan-Dec	Jan-Dec
	Atlantic salmon													Sep-Dec	Sep-Mar	Feb-Jul	Jan-Dec	Jan-Dec
	Blueback herring													-	-	-	Jan-Dec	Jan-Dec
	Striped bass													-	-	-	Apr-Nov	Apr-Nov
	Atlantic herring													Aug-Nov	Aug-Nov	Oct-Dec	Jan-Dec	Jan-Dec
	Bay anchovy													Jun-Aug	Jun-Aug	Jun-Sep	Jan-Dec	Jan-Dec
	Black sea bass													Feb-Jul	Feb-Jul	Mar-Jul	Feb-Jul	Feb-Jul
	Black sea bass													Feb-Jul	Feb-Jul	Mar-Jul	Jan-Dec	Jan-Dec
	Black sea bass													-	-	-	Aug-Jan	Aug-Jan
	Bluefish													-	-	Jun-Aug	May-Nov	May-Nov
	Northern kingfish													Jun-Jul	Jun-Jul	Jun-Aug	May-Nov	May-Nov
	Scup													May-Aug	May-Aug	Jun-Aug	May-Oct	May-Oct
	Summer flounder													Aug-Nov	Aug-Nov	Sep-Nov	Apr-Nov	Apr-Nov
	Winduppane													May-Aug	May-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Winter flounder													May-Aug	May-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Rainbow smelt													Jan-May	Jan-May	Feb-May	Jan-Dec	Jan-Dec
	American plaice													-	-	-	Jan-Dec	Jan-Dec
	Atlantic cod													Feb-Jun	Feb-Jun	Mar-Jul	Jan-Dec	Jan-Dec
	Atlantic halibut													Nov-Mar	Nov-Mar	Dec-Mar	Jan-Dec	Jan-Dec
	Atlantic tomcod													Apr-Sep	Apr-Sep	Apr-Sep	Jan-Dec	Jan-Dec
	Atlantic wolffish													Dec-Feb	Dec-Mar	Dec-Apr	Dec-Jun	Dec-Jun
	Goosefish													Mar-Aug	Mar-Aug	Mar-Sep	Jan-Dec	Jan-Dec
	Goosefish													-	-	-	-	Jan-Dec
	Haddock													Feb-Jun	Feb-Jun	Mar-Jun	Feb-Jul	Feb-Jul
	Haddock													Feb-Jun	Feb-Jun	Mar-Jun	Jan-Dec	Jan-Dec
	Haddock													-	-	-	Aug-Jan	Aug-Jan
	Little skate													Jan-Dec	Jan-Dec	-	Jan-Dec	Jan-Dec
	Longhorn sculpin													Dec-Feb	Dec-Feb	Jan-Jun	Jan-Dec	Jan-Dec
	Ocean pout													Aug-Oct	Aug-Dec	Sep-Feb	Jan-Dec	Jan-Dec
	Pollock													-	-	-	Apr-Oct	Apr-Oct
	Red hake													Jun-Sep	Jun-Sep	Jul-Nov	Jan-Dec	Jan-Dec
	Rock gunnel													Nov-Mar	Nov-Apr	Jan-Jun	Jan-Dec	Jan-Dec
	Searobins													Jun-Sep	Jun-Sep	Jun-Oct	Jan-Dec	Jan-Dec
	Silver hake													Jul-Oct	Jul-Oct	Aug-Oct	Jan-Dec	Jan-Dec
	Tautog													May-Aug	May-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	White hake													Apr-Sep	May-Nov	May-Nov	Jan-Dec	Jan-Dec
	Winter skate													-	-	-	Jan-Dec	Jan-Dec
	Witch flounder													May-Aug	May-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Yellowtail flounder													Mar-Jul	Mar-Jul	Apr-Jul	Jan-Dec	Jan-Dec
	Atlantic mackerel													May-Jul	May-Aug	May-Aug	Mar-Dec	Mar-Dec
	Spiny dogfish													-	-	-	Jan-Dec	Jan-Dec
	Tunas													-	-	-	Jun-Sep	-




REPTILES & AMPHIBIANS

Subelement	Species	Monthly Presence												Nest	Hatch	Internest	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	Eastern box turtle													Jun-Jul	Aug-Oct	-	Jan-Dec	Jan-Dec

INVERTEBRATES

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	Atlantic surfclam													Jun-Aug	Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Bay scallop													Jun-Sep	Jun-Sep	Jun-Sep	Jan-Dec	Jan-Dec
	Blue mussel													May-Nov	May-Nov	May-Nov	Jan-Dec	Jan-Dec
	Eastern oyster													Jun-Aug	Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Northern quahog													Jun-Aug	Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Ocean quahog													Jul-Nov	Jul-Nov	Jul-Dec	Jan-Dec	Jan-Dec
	Sea scallop													Jul-Oct	Jul-Oct	Jul-Oct	Jan-Dec	Jan-Dec
	Softshell clam													Jun-Aug	Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Northern shortfin squid													-	-	-	Apr-Nov	Apr-Nov
	Atlantic rock crab													May-Oct	Jun-Oct	Jun-Oct	Jan-Dec	Jan-Dec
	Blue crab													-	Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Horseshoe crab													May-Jul	May-Jul	-	Jan-Dec	Jan-Dec
	Jonah crab													May-Oct	May-Oct	May-Oct	Jan-Dec	Jan-Dec
	American lobster													Aug-Nov	Jan-Dec	Jun-Oct	Jan-Dec	Jan-Dec
	Db grass shrimp													May-Jul	May-Jul	May-Jul	Jan-Dec	Jan-Dec
	Northern shrimp													-	Dec-Apr	Jan-Dec	Jan-Dec	Dec-Apr
	Sevenspine bay shrimp													May-Jul	May-Jul	May-Jul	Jan-Dec	Jan-Dec

MARINE MAMMALS

Subelement	Species	Monthly Presence												Mating	Calving	Pupping	Molt
		J	F	M	A	M	J	J	A	S	O	N	D				
	Atl. spotted dolphin													-	-	-	-
	Atl. wht.-side dolphin													-	-	-	-
	Bottlenose dolphin													-	-	-	-
	Harbor porpoise													-	-	-	-
	Risso's dolphin													-	-	-	-
	Short-beaked common dolphin													-	-	-	-
	Striped dolphin													-	-	-	-
	White-beaked dolphin													-	-	-	-
	Gray seal													Dec-Feb	Dec-Feb	Dec-Feb	Mar-May
	Harbor seal													-	-	-	-
	Harp seal													-	-	-	-
	Hooded seal													-	-	-	-
	Minke whale													-	-	-	-
	Pilot whales													-	-	-	-
														-	-	-	-

For additional information about species locations and extent, reference the underlying GIS data available from response.restoration.noaa.gov

ESI POLYGON HABITAT TYPES

ESI Rank	Habitat Classification	Area (Acres)	Area (Sq. Miles)
10A	Salt and Brackish Water Marshes	363.14	0.57
10B	Freshwater Marshes	87.86	0.14
10C	Swamps	231.76	0.36
10D	Scrub and Shrub Wetlands	276.45	0.43
9A	Sheltered Tidal Flats	115.85	0.18
7	Exposed Tidal Flats	601.06	0.94

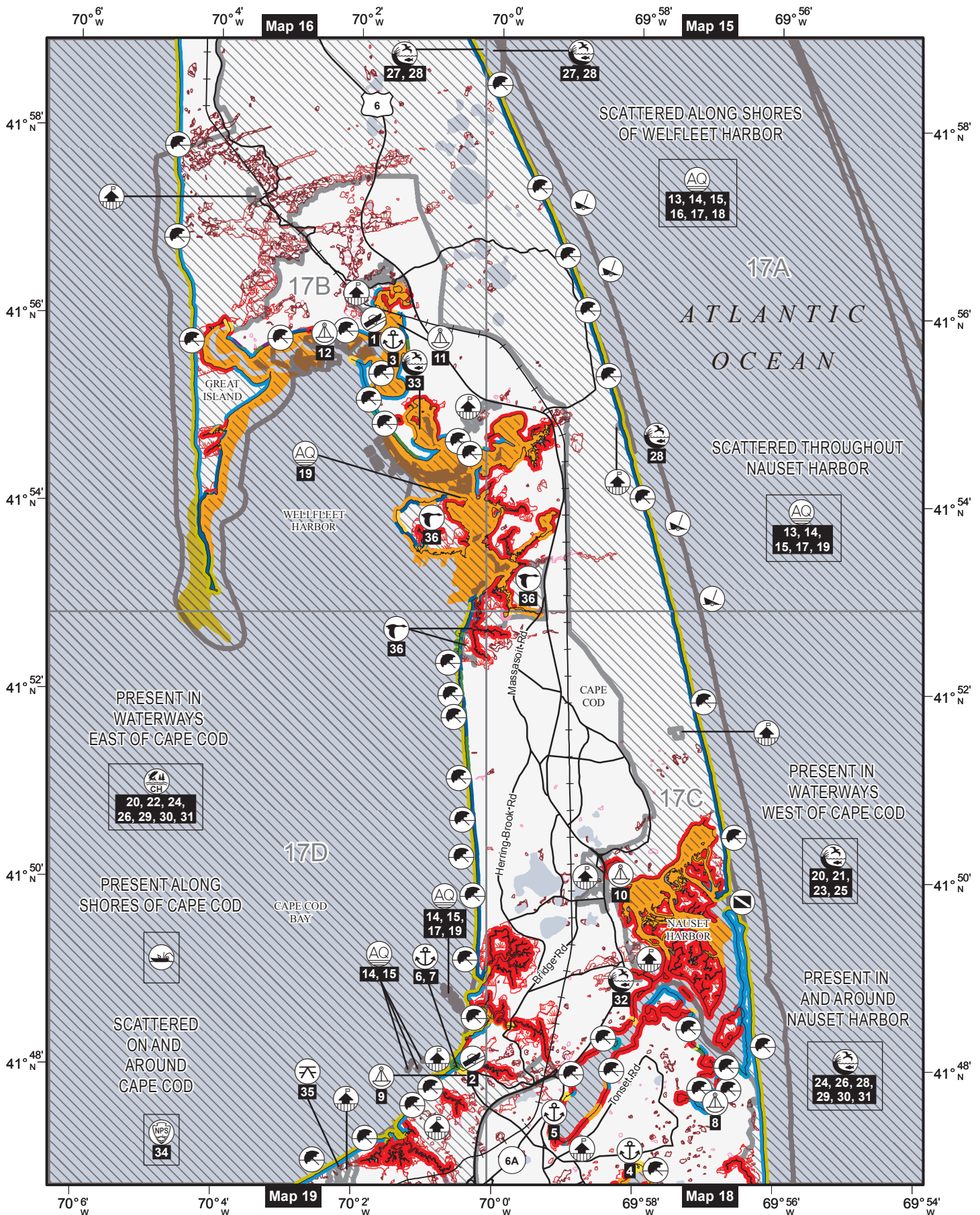
ESI SHORELINE HABITAT TYPES

ESI Rank	Shoreline Habitat Classification	Length (Meters)	Length (Miles)	% of ESI Shoreline
10A	Salt and Brackish Water Marshes	21,835.91	13.57	15%
9A	Sheltered Tidal Flats	16,697.41	10.38	12%
9B	Vegetated Low Banks	781.84	0.49	1%
8C	Sheltered Riprap	83.95	0.05	< 1%
7	Exposed Tidal Flats	49,385.22	30.69	35%
6B	Riprap	5,537.40	3.44	4%
4	Coarse Grained Sand Beaches	13,764.53	8.55	10%
3A	Fine to Medium Grained Sand Beaches	28,071.60	17.44	20%
1B	Exposed, Solid Man-Made Structures	4,847.30	3.01	3%
Total ESI Shoreline:		141,005.15	87.62	
Total Shoreline:		70,129.71	43.58	

Note: A shoreline segment may include multiple shoreline habitats. If any segments include multiple habitats, the combined length of all habitats may exceed the length of the mapped shoreline, and the percent of ESI shoreline values will sum to greater than 100%

All underlying GIS data can be obtained from response.restoration.noaa.gov





Map 17
Mass. / Rhode Island



SEE BACK OF MAP
for details about mapped resources and
other resources that occur in mapped area.
Data Published: November 2016

0 2 Miles
Not for Navigation
0 2 Kilometers

1:100,000



Map 17
Massachusetts and Rhode Island

HUMAN USE RESOURCES

DISPLAYED ON MAP (POINTS)				
Map ID	Type	Name	Contact	Phone
1	BOAT RAMP	WELLFLEET HARBOR	MDFG, OFFICE OF FISHING AND BOATING ACCESS	508-389-7810
2	BOAT RAMP	ROCK HARBOR	MDFG, OFFICE OF FISHING AND BOATING ACCESS	508-389-7810
3	MARINA	TOWN OF WELLFLEET MARINA		
4	MARINA	NAUSET MARINE EAST		
5	MARINA	GOOSE-HUMMOCK MARINE		
6	MARINA	ORLEANS/ROCK HARBOR		
7	MARINA	EASTHAM TOWN MARINA		
8	REPEATED MEASUREMENT SITE	INVASIVES - MILL POND		
9	REPEATED MEASUREMENT SITE	INVASIVES - ROCK HARBOR		
10	REPEATED MEASUREMENT SITE	INVASIVES - SALT POND RIVER		
11	REPEATED MEASUREMENT SITE	INVASIVES - WELLFLEET HARBOR		
12	REPEATED MEASUREMENT SITE	TIDE GAUGE - WELLFLEET		
DISPLAYED ON MAP (POLYGONS)				
Map ID	Type	Name	Contact	Phone
13	AQUACULTURE	BLUE MUSSEL	CHRISTOPHER SCHILLACI, MA DMF, N. BEDFORD, MA	508-990-2860
14	AQUACULTURE	OYSTER	CHRISTOPHER SCHILLACI, MA DMF, N. BEDFORD, MA	508-990-2860
15	AQUACULTURE	PETIT OYSTER	CHRISTOPHER SCHILLACI, MA DMF, N. BEDFORD, MA	508-990-2860
16	AQUACULTURE	PETIT QUAHOG	CHRISTOPHER SCHILLACI, MA DMF, N. BEDFORD, MA	508-990-2860
17	AQUACULTURE	QUAHOG	CHRISTOPHER SCHILLACI, MA DMF, N. BEDFORD, MA	508-990-2860
18	AQUACULTURE	RAZOR CLAM	CHRISTOPHER SCHILLACI, MA DMF, N. BEDFORD, MA	508-990-2860
19	AQUACULTURE	SOFT CLAM	CHRISTOPHER SCHILLACI, MA DMF, N. BEDFORD, MA	508-990-2860
20	CRITICAL HABITAT	CRITICAL HABITAT: NORTH ATLANTIC RIGHT WHALE		
21	MANAGEMENT AREA	NARW SMA - NE U.S. CAPE COD BAY		
22	MANAGEMENT AREA	NARW SMA - NE U.S. OFF RACE POINT		
23	MANAGEMENT AREA	LOBSTER MANAGEMENT AREA 1		
24	MANAGEMENT AREA	OUTER CAPE LOBSTER MANAGEMENT AREA		
25	MANAGEMENT AREA	CAPE COD BAY RESTRICTED AREA		
26	MANAGEMENT AREA	GEORGES BANK SEASONAL CLOSURE AREA		
27	MANAGEMENT AREA	MASSACHUSETTS BAY MANAGEMENT AREA		
28	MANAGEMENT AREA	NORTHERN INSHORE STATE TRAP/POT WATERS AREA		
29	MANAGEMENT AREA	NORTHERN NEARSHORE TRAP/POT WATERS AREA		
30	MANAGEMENT AREA	OTHER NORTHEAST GILLNET WATERS AREA		
31	MANAGEMENT AREA	SEASONAL MANAGEMENT AREA WEST		
32	MANAGEMENT AREA	EASTHAM SALT MARSH WMA	EOEEA, DEPARTMENT OF FISH AND GAME	617-626-1500
33	MANAGEMENT AREA	FOX ISLAND WMA	EOEEA, DEPARTMENT OF FISH AND GAME	617-626-1500
34	NATIONAL PARK	CAPE COD NATIONAL SEASHORE		
35	REGIONAL OR STATE PARK	NICKERSON STATE PARK	EOEEA, DEPT. OF CONSERVATION AND RECREATION	617-626-1250
36	WILDLIFE REFUGE	WELLFLEET BAY WILDLIFE SANCTUARY	MASSACHUSETTS AUDUBON SOCIETY	508-349-2615

ALSO PRESENT IN MAPPED AREA (POINTS)

Type	Name	Contact	Phone
ESSENTIAL HABITAT	FACULTATIVE SPECIES -VERNAL POOL	MA DFW NHESP, WESTBOROUGH, MA	508-389-6375
ESSENTIAL HABITAT	FAIRY SHRIMP -VERNAL POOL	MA DFW NHESP, WESTBOROUGH, MA	508-389-6375
ESSENTIAL HABITAT	OBLIGATE SPECIES -VERNAL POOL	MA DFW NHESP, WESTBOROUGH, MA	508-389-6375
ESSENTIAL HABITAT	OBLIGATE SPECIES, FACULTATIVE SPECIES -VERNAL POOL	MA DFW NHESP, WESTBOROUGH, MA	508-389-6375
ESSENTIAL HABITAT	OBLIGATE SPECIES, FAIRY SHRIMP -VERNAL POOL	MA DFW NHESP, WESTBOROUGH, MA	508-389-6375

ALSO PRESENT IN MAPPED AREA (POLYGONS)

Type	Name	Contact	Phone
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: AMERICAN PLAICE	NORTHEAST FISHERIES MANAGEMENT COUNCIL	
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: ATLANTIC COD	NORTHEAST FISHERIES MANAGEMENT COUNCIL	
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: ATLANTIC HALIBUT	NORTHEAST FISHERIES MANAGEMENT COUNCIL	
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: ATLANTIC HERRING	NORTHEAST FISHERIES MANAGEMENT COUNCIL	
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: ATLANTIC WOLFFISH	NORTHEAST FISHERIES MANAGEMENT COUNCIL	
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: HADDOCK	NORTHEAST FISHERIES MANAGEMENT COUNCIL	
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: LITTLE SKATE	NORTHEAST FISHERIES MANAGEMENT COUNCIL	
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: MONKFISH	NORTHEAST FISHERIES MANAGEMENT COUNCIL	
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: OCEAN POUT	NORTHEAST FISHERIES MANAGEMENT COUNCIL	
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: POLLOCK	NORTHEAST FISHERIES MANAGEMENT COUNCIL	
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: RED HAKE	NORTHEAST FISHERIES MANAGEMENT COUNCIL	
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: REDFISH	NORTHEAST FISHERIES MANAGEMENT COUNCIL	
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: SEA SCALLOP	NORTHEAST FISHERIES MANAGEMENT COUNCIL	
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: SILVER HAKE	NORTHEAST FISHERIES MANAGEMENT COUNCIL	
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: THORNY SKATE	NORTHEAST FISHERIES MANAGEMENT COUNCIL	
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: WHITE HAKE	NORTHEAST FISHERIES MANAGEMENT COUNCIL	
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: WINDOW PANE FLOUNDER	NORTHEAST FISHERIES MANAGEMENT COUNCIL	
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: WINTER FLOUNDER	NORTHEAST FISHERIES MANAGEMENT COUNCIL	
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: WINTER SKATE	NORTHEAST FISHERIES MANAGEMENT COUNCIL	
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: WITCH FLOUNDER	NORTHEAST FISHERIES MANAGEMENT COUNCIL	
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: YELLOWTAIL FLOUNDER	NORTHEAST FISHERIES MANAGEMENT COUNCIL	
MANAGEMENT AREA	PRIORITY HABITAT	MDFW NHESP	508-389-6380

JURISDICTIONS

COUNTY: BARNSTABLE
COAST GUARD: DISTRICT 1, SECTOR SE NEW ENGLAND
USACE: NORTH ATLANTIC DIVISION, NEW ENGLAND DISTRICT

FEMA: REGION I
EPA: REGION 1

SHORELINE RESOURCES

ESI POLYGON HABITAT TYPES

ESI Rank	Habitat Classification	Area (Acres)	Area (Sq. Miles)
10A	Salt and Brackish Water Marshes	2,250.66	3.52
10B	Freshwater Marshes	254.66	0.40
10C	Swamps	601.08	0.94
10D	Scrub and Shrub Wetlands	626.27	0.98
9A	Sheltered Tidal Flats	2,364.78	3.69
7	Exposed Tidal Flats	374.60	0.59



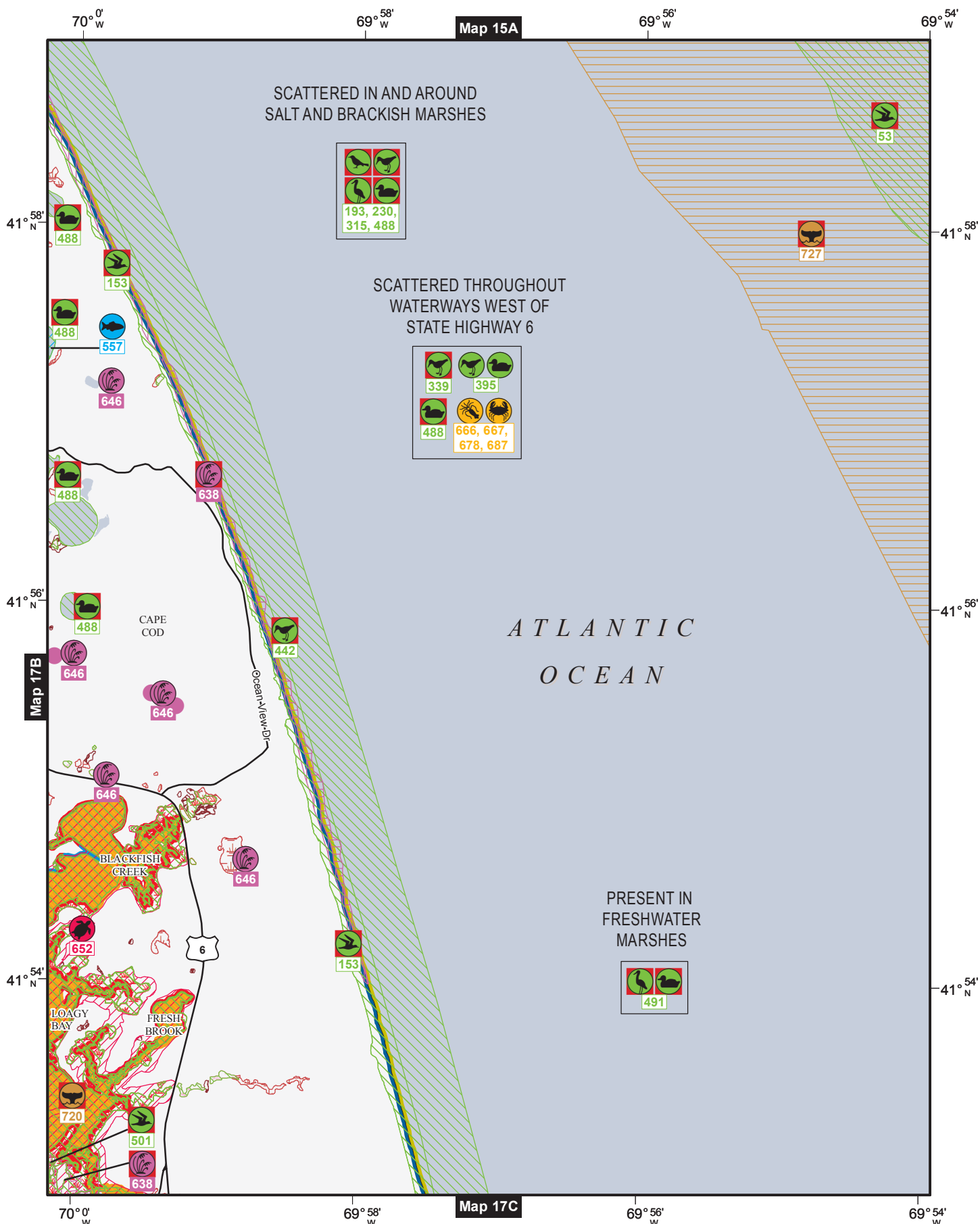
ESI SHORELINE HABITAT TYPES

ESI Rank	Shoreline Habitat Classification	Length (Meters)	Length (Miles)	% of ESI Shoreline
10A	Salt and Brackish Water Marshes	165,666.80	102.94	37%
10B	Freshwater Marshes	363.94	0.23	< 1%
10C	Swamps	45.95	0.03	< 1%
9A	Sheltered Tidal Flats	118,938.26	73.90	27%
9B	Vegetated Low Banks	14,086.03	8.75	3%
8B	Sheltered, Solid Man-Made Structures	1,503.83	0.93	< 1%
8C	Sheltered Riprap	1,875.93	1.17	< 1%
7	Exposed Tidal Flats	57,292.78	35.60	13%
6B	Riprap	5,244.26	3.26	1%
5	Mixed Sand and Gravel Beaches	1,017.86	0.63	< 1%
4	Coarse Grained Sand Beaches	44,159.96	27.44	10%
3A	Fine to Medium Grained Sand Beaches	33,196.77	20.63	7%
1B	Exposed, Solid Man-Made Structures	1,051.28	0.65	< 1%
Total ESI Shoreline:		444,443.66	276.16	
Total Shoreline:		262,845.64	163.32	

Note: A shoreline segment may include multiple shoreline habitats. If any segments include multiple habitats, the combined length of all habitats may exceed the length of the mapped shoreline, and the percent of ESI shoreline values will sum to greater than 100%

All underlying GIS data can be obtained from response.restoration.noaa.gov





Map 17A
Massachusetts and Rhode Island

BIOLOGICAL RESOURCES

Note: An asterisk (*) indicates that life stage occurs in this range but not in all months included

DISPLAYED ON MAP

BENTHIC

Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence
SAV	Rare aquatic/wetland plant	High Ecological Value				Present	J F M A M J J A S O N D

BIRDS

Map ID	Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence	Nest	Mig.(S)	Mig.(F)	Molt
					C/-	E/-		J F M A M J J A S O N D		Apr-May	Jul-Sep	
53	Gull/Tern	Rare tern	General Distribution				Rare		-	Apr-May	Jul-Sep	-
	Gull/Tern	Roseate tern	General Distribution				Rare		-	Apr-May	Jul-Sep	-
153	Gull/Tern	Rare tern	Nesting				Rare		May-Aug	-	-	-
193	Passerine	Marsh passerines	General Distribution				Common		Apr-Aug	Apr-May	Aug-Nov	Sep-Oct
	Passerine	Saltmarsh sparrow	Nesting				Common		May-Jul	May	-	-
	Wading	Egrets	Migration				Common		Apr-Jul	Mar-May	Aug-Sep	-
	Wading	Marsh birds	General Distribution				Common		-	Mar-May	Aug-Nov	Jul-Aug
230	Passerine	Marsh passerines	General Distribution				Common		Apr-Aug	Apr-May	Aug-Nov	Sep-Oct
	Passerine	Saltmarsh sparrow	Nesting				Common		May-Jul	May	-	-
	Shorebird	American oystercatcher	Nesting				Rare		May-Aug	May	-	-
	Shorebird	Willet	Nesting				Common		Apr-May	Apr-May	Aug-Oct	-
	Wading	Egrets	Migration				Common		Apr-Jul	Mar-May	Aug-Sep	-
	Wading	Marsh birds	General Distribution				Common		-	Mar-May	Aug-Nov	Jul-Aug
	Waterfowl	Waterfowl	General Distribution				Common		May-Jul	Apr-May	Aug-Oct	Aug-Sep
315	Passerine	Marsh passerines	General Distribution				Common		Apr-Aug	Apr-May	Aug-Nov	Sep-Oct
	Passerine	Saltmarsh sparrow	Nesting				Common		May-Jul	May	-	-
	Wading	Egrets	Migration				Common		Apr-Jul	Mar-May	Aug-Sep	-
	Wading	Marsh birds	General Distribution				Common		-	Mar-May	Aug-Nov	Jul-Aug
	Waterfowl	Waterfowl	General Distribution				Common		May-Jul	Apr-May	Aug-Oct	Aug-Sep
339	Shorebird	American oystercatcher	Nesting				Rare		May-Aug	May	-	-
	Shorebird	Willet	Nesting				Common		Apr-May	Apr-May	Aug-Oct	-
395	Shorebird	Shorebirds	Migration				Common		-	Mar-Jun	Jul-Nov	Aug
	Waterfowl	American black duck	Wintering				Common		Mar-Apr	Sep-Apr	-	-
	Waterfowl	Diving ducks	Wintering				Common		Mar-Apr	Sep-Apr	-	-
	Waterfowl	Geese	Wintering				Common		May	Mar-May	Sep-Nov	-
	Waterfowl	Sea ducks	Wintering				Abundant		-	Mar-May	Sep-Oct	-
442	Shorebird	Piping plover	Nesting		T/E	T	Common		Mar-Aug	Mar-Apr	Jul-Oct	-
	Shorebird	Red knot	Migration				Common		-	May-Jun	Jul-Sep	-
	Shorebird	Shorebirds	Migration				Common		-	Mar-Jun	Jul-Nov	Aug
488	Waterfowl	Waterfowl	General Distribution			C/C	Common		May-Jul	Apr-May	Aug-Oct	Aug-Sep
491	Wading	Marsh birds	General Distribution			C/C	Common		-	Mar-May	Aug-Nov	Jul-Aug
	Waterfowl	Waterfowl	General Distribution			C/C	Common		May-Jul	Apr-May	Aug-Oct	Aug-Sep

BIRDS (continued)

Map ID	Subelement	Species	Mapping Qualifier	MA/RI		Monthly Presence												Molt						
				S	F	Concentration			J	F	M	A	M	J	J	A	S		O	N	D	Nest	Mig.(S)	Mig.(F)
501	Gull/Tern	Rare tern	Migration	C/-		Common															May-Aug	Apr-May	Jul-Sep	-
	Gull/Tern	Roseate tern	Migration	E/-		Common															-	Apr-May	Jul-Sep	-

FISH

Map ID	Subelement	Species	Mapping Qualifier	MA/RI		Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
				S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N					
557	Diadromous	Alewife	Spawning Area			-												Apr-Jun	Apr-Jun	Apr-Jun	-	Apr-Jun
	Diadromous	American eel	Migration			-												-	-	-	Jan-Dec	Jan-Dec
	Diadromous	Blueback herring	Spawning Area			-												Apr-Jun	Apr-Jun	Apr-Jun	-	Apr-Jun

HABITATS & RARE PLANTS

Map ID	Subelement	Species	Mapping Qualifier	MA/RI		Monthly Presence												Concentration	Mapping Qualifier	Vulnerable Occurrence																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
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REPTILES & AMPHIBIANS

Map ID	Subelement	Species	Mapping Qualifier	MA/RI	Monthly Presence												Concentration	Mapping Qualifier	Vulnerable Occurrence	Nest	Hatch	Interest	Juveniles	Adults
					S	F	J	F	M	A	M	J	J	A	S	O	N	D						
652	Turtle	Rare reptile																		-	Apr-Jul	Jun-Nov	Jan-Dec	Jan-Dec





INVERTEBRATES

Map ID	Subelement	Species	Mapping Qualifier	MA/RI	Monthly Presence												Concentration	Mapping Qualifier	Spawn	Eggs	Larvae	Juveniles	Adults
					S	F	J	F	M	A	M	J	J	A	S	O	N	D					
666	Crab	Blue crab	Nursery																Jun-Aug	-	Jun-Aug	Jan-Dec	Jan-Dec
	Crab	Horseshoe crab	Nursery																May-Jul	May-Jul	-	Jan-Dec	Jan-Dec
667	Cephalopod	Longfin squid	Concentration Area																May-Aug	May-Aug	May-Aug	Apr-Nov	Apr-Nov
	Crab	Blue crab	Nursery																Jun-Aug	-	Jun-Aug	Jan-Dec	Jan-Dec
	Crab	Horseshoe crab	Nursery																May-Jul	May-Jul	-	Jan-Dec	Jan-Dec
678	Cephalopod	Longfin squid	Concentration Area																May-Aug	May-Aug	May-Aug	Apr-Nov	Apr-Nov
687	Crab	Horseshoe crab	Spawning																May-Jul	May-Jul	-	May-Jul	May-Jul



MARINE MAMMALS

Map ID	Subelement	Species	Mapping Qualifier	MA/RI		Monthly Presence												Concentration	Mapping Qualifier	Mating	Calving	Pupping	Molt																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
				S	F	J	F	M	A	M	J	J	A	S	O	N	D																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
720	Whale	Humpback whale	General Distribution	E/E	E																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																</


BIRDS

Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence												Nest	Mig. (S)	Mig. (F)	Molt
							J	F	M	A	M	J	J	A	S	O	N	D				
 Alcids	Razorbill	Wintering				Common													-	-	Oct-Nov	-
	Loons	General Distribution	C/-			Common													-	Mar-Jun	Sep-Dec	Jan-Mar
 Diving	Loons	Migration	C/-			Common													-	Mar-Jun	Sep-Dec	Jan-Mar
	Rare tern	General Distribution	C/-			Common													-	Apr-May	Jul-Sep	-
 Gull/Tern	Roseate tern	General Distribution	E/-			Common													-	Apr-May	Jul-Sep	-
	Vesper sparrow	Nesting	T/-			Rare													May-Aug	-	-	-
 Passerine	Wading birds	General Distribution	-/C			Common													-	Mar-May	Jul-Oct	-


REPTILES & AMPHIBIANS

Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence												Nest	Hatch	Internest	Juveniles	Adults
							J	F	M	A	M	J	J	A	S	O	N	D					
 Amphibian	Eastern spadefoot	Vulnerable Occurrence		T/E		-													Apr-Jun	May-Jul	-	Jan-Dec	Jan-Dec
	Green sea turtle	General Distribution	T/E	T		Regular													-	-	-	May-Nov	May-Nov
 Turtle	K. ridley sea turtle	General Distribution	E/E	E		Regular													-	-	-	May-Nov	May-Nov
	Leatherback sea turtle	General Distribution	E/E	E		Regular													-	-	-	May-Nov	May-Nov
	Loggerhead sea turtle	General Distribution	T/E	T		Regular													-	-	-	May-Nov	May-Nov

MARINE MAMMALS

Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence												Mating	Calving	Pupping	Molt
							J	F	M	A	M	J	J	A	S	O	N	D				
 Whale	Fin whale	General Distribution	E/E	E		Rare													-	-	-	-
	Humpback whale	Concentration Area	E/E	E		Common													-	-	-	-
	N.A. right whale	Concentration Area	E/E	E		Common													-	-	-	-
	Sei whale	General Distribution	E/-	E		Rare													-	-	-	-
	Sei whale	General Distribution	E/-	E		Common													-	-	-	-
	Sperm whale	General Distribution	E/-	E		Rare													-	-	-	-

TERRESTRIAL MAMMALS

Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence											
							J	F	M	A	M	J	J	A	S	O	N	D
 Bat	Northern myotis	General Distribution	E/-	T		Rare												
	New England cottontail	General Distribution	-/C			Rare												

BIRDS

Subelement	Species	Monthly Presence												Nest	Mig. (S)	Mig. (F)	Molt
		J	F	M	A	M	J	J	A	S	O	N	D				
Alcid	Atlantic puffin													-	Mar	Sep	-
	Razorbill													-	May-Jun	-	-
Diving	D. crested cormorant													Apr-Jun	-	-	-
	D. crested cormorant													-	Mar-Apr	Sep-Oct	-
Gull/Tern	Gulls													-	Apr-May	Aug-Nov	-
	Northern gannet													-	Apr-May	Oct-Nov	-
Pelagic	Shearwaters													-	May	Oct	-
	Red-necked phalarope													-	May	Oct	-
Shorebird	American black duck													Mar-Jul	Sep-Mar	-	-
	Waterfowl													Mar-Apr	Sep-Apr	-	-
	Diving ducks													May	Mar-May	Sep-Nov	-
	Geese													-	Mar-May	Sep-Oct	-
	Sea ducks													-	Mar-May	Sep-Oct	-

FISH

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
Diadromous	Alewife													-	-	-	Jan-Dec	Jan-Dec
	American eel													-	-	-	Jan-Dec	Jan-Dec
	American shad													-	-	-	Jan-Dec	Jan-Dec
	Atlantic salmon													Sep-Dec	Sep-Mar	Feb-Jul	Jan-Dec	Jan-Dec
	Blueback herring													-	-	-	Jan-Dec	Jan-Dec
	Striped bass													-	-	-	Apr-Nov	Apr-Nov
Estuarine Nursery	Atlantic herring													Aug-Nov	Aug-Nov	Oct-Dec	Jan-Dec	Jan-Dec
	Bay anchovy													Jun-Aug	Jun-Aug	Jun-Sep	Jan-Dec	Jan-Dec
	Black sea bass													Feb-Jul	Feb-Jul	Mar-Jul	Jan-Dec	Jan-Dec
	Black sea bass													-	-	-	Aug-Jan	Aug-Jan
	Black sea bass													Feb-Jul	Feb-Jul	Mar-Jul	Feb-Jul	Feb-Jul
	Bluefish													Jun-Jul	Jun-Jul	Jun-Aug	May-Nov	May-Nov
	Northern kingfish													May-Aug	May-Aug	Jun-Aug	May-Oct	May-Oct
	Scup													Aug-Nov	Aug-Nov	Sep-Nov	Apr-Nov	Apr-Nov
	Summer flounder													May-Aug	May-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Winduppane													Jan-May	Jan-May	Feb-May	Jan-Dec	Jan-Dec
	Winter flounder													-	-	-	Jan-Dec	Jan-Dec
Freshwater	Rainbow smelt													Feb-Jun	Feb-Jun	Mar-Jul	Jan-Dec	Jan-Dec
Marine Benthic	American plaice													Nov-Mar	Nov-Mar	Dec-Mar	Jan-Dec	Jan-Dec
	Atlantic cod													Apr-Sep	Apr-Sep	Apr-Sep	Jan-Dec	Jan-Dec
	Atlantic halibut													Dec-Feb	Dec-Mar	Dec-Apr	Dec-Jun	Dec-Jun
	Atlantic tomcod													Mar-Aug	Mar-Aug	Mar-Sep	Jan-Dec	Jan-Dec
	Atlantic wolffish													-	-	-	-	-
	Goosefish													-	-	-	-	-
	Goosefish													-	-	-	-	-
	Haddock													Feb-Jun	Feb-Jun	Mar-Jun	Jan-Dec	Jan-Dec

FISH (continued)

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	Haddock													-	-	Mar-Jun	Aug-Jan	Aug-Jan
	Haddock													Feb-Jun	Feb-Jun	Mar-Jun	Feb-Jul	Feb-Jul
	Little skate													Jan-Dec	Jan-Dec	-	Jan-Dec	Jan-Dec
	Longhorn sculpin													Dec-Feb	Dec-Feb	Jan-Jun	Jan-Dec	Jan-Dec
	Ocean pout													Aug-Oct	Aug-Dec	Sep-Feb	Jan-Dec	Jan-Dec
	Pollock													-	-	-	Apr-Oct	Apr-Oct
	Red hake													Jun-Sep	Jun-Sep	Jul-Nov	Jan-Dec	Jan-Dec
	Rock gunnel													Nov-Mar	Nov-Apr	Jan-Jun	Jan-Dec	Jan-Dec
	Searobins													Jun-Sep	Jun-Sep	Jun-Oct	Jan-Dec	Jan-Dec
	Silver hake													Jul-Oct	Jul-Oct	Aug-Oct	Jan-Dec	Jan-Dec
	Tautog													May-Aug	May-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	White hake													Apr-Sep	May-Nov	May-Nov	Jan-Dec	Jan-Dec
	Winter skate													-	-	-	Jan-Dec	Jan-Dec
	Witch flounder													May-Aug	May-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Yellowtail flounder													Mar-Jul	Mar-Jul	Apr-Jul	Jan-Dec	Jan-Dec
	Atlantic mackerel													May-Jul	May-Aug	May-Aug	Mar-Dec	Mar-Dec
	Spiny dogfish													-	-	-	Jan-Dec	Jan-Dec
	Tunas													-	-	-	Jun-Sep	-




REPTILES & AMPHIBIANS

Subelement	Species	Monthly Presence												Nest	Hatch	Interment	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
Turtle	Eastern box turtle													Jun-Jul	Aug-Oct	-	Jan-Dec	Jan-Dec

INVERTEBRATES

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
Bivalve	Atlantic surfclam													Jun-Aug	Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Eastern oyster													Jun-Aug	Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Northern quahog													Jun-Aug	Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Sea scallop													Jul-Oct	Jul-Oct	Jul-Oct	Jan-Dec	Jan-Dec
	Softshell clam													Jun-Aug	Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
Cephalopod	Longfin squid													May-Aug	May-Aug	May-Aug	Apr-Nov	Apr-Nov
	Northern shortfin squid													-	-	-	Apr-Nov	Apr-Nov
Crab	Atlantic rock crab													May-Oct	Jun-Oct	Jun-Oct	Jan-Dec	Jan-Dec
	Blue crab													-	Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Horseshoe crab													May-Jul	May-Jul	-	Jan-Dec	Jan-Dec
	Jonah crab													May-Oct	May-Oct	May-Oct	Jan-Dec	Jan-Dec
Lobster	American lobster													Aug-Nov	Jan-Dec	Jun-Oct	Jan-Dec	Jan-Dec
Shrimp	Db grass shrimp													May-Jul	May-Jul	May-Jul	Jan-Dec	Jan-Dec
	Northern shrimp													-	Dec-Apr	Jan-Dec	Jan-Dec	Dec-Apr
	Sevenspine bay shrimp													May-Jul	May-Jul	May-Jul	Jan-Dec	Jan-Dec

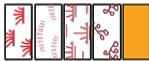
MARINE MAMMALS

	Subelement	Species	Monthly Presence												Mating	Calving	Pupping	Molt
			J	F	M	A	M	J	J	A	S	O	N	D				
	Dolphin	Atl. spotted dolphin													-	-	-	-
		Atl. wht.-side dolphin													-	-	-	-
		Bottlenose dolphin													-	-	-	-
		Harbor porpoise													-	-	-	-
		Risso's dolphin													-	-	-	-
		Short-beaked common dolphin													-	-	-	-
	Pinniped	Striped dolphin													-	-	-	-
		White-beaked dolphin													-	-	-	-
		Gray seal													Dec-Feb	Dec-Feb	Dec-Feb	Mar-May
		Harbor seal													-	-	-	-
		Harp seal													-	-	-	-
		Hooded seal													-	-	-	-
	Whale	Minke whale													-	-	-	-
		Pilot whales													-	-	-	-

For additional information about species locations and extent, reference the underlying GIS data available from response.restoration.noaa.gov

ESI POLYGON HABITAT TYPES

<i>ESI Rank</i>	<i>Habitat Classification</i>	<i>Area (Acres)</i>	<i>Area (Sq. Miles)</i>
10A	Salt and Brackish Water Marshes	286.85	0.45
10B	Freshwater Marshes	10.24	0.02
10C	Swamps	41.95	0.07
10D	Scrub and Shrub Wetlands	19.55	0.03
9A	Sheltered Tidal Flats	302.35	0.47



ESI SHORELINE HABITAT TYPES

<i>ESI Rank</i>	<i>Shoreline Habitat Classification</i>	<i>Length (Meters)</i>	<i>Length (Miles)</i>	<i>% of ESI Shoreline</i>
10A	Salt and Brackish Water Marshes	26,567.35	16.51	33%
9A	Sheltered Tidal Flats	29,212.97	18.15	36%
9B	Vegetated Low Banks	1,811.12	1.13	2%
7	Exposed Tidal Flats	11,326.42	7.04	14%
4	Coarse Grained Sand Beaches	892.72	0.55	1%
3A	Fine to Medium Grained Sand Beaches	11,326.42	7.04	14%

Total ESI Shoreline: 81,137.00 Total ESI Shoreline: 50.42
 Total Shoreline: 40,539.39 Total Shoreline: 25.19

Note: A shoreline segment may include multiple shoreline habitats. If any segments include multiple habitats, the combined length of all habitats may exceed the length of the mapped shoreline, and the percent of ESI shoreline values will sum to greater than 100%

All underlying GIS data can be obtained from response.restoration.noaa.gov



Map 17B
Massachusetts and Rhode Island

BIOLOGICAL RESOURCES

Note: An asterisk (*) indicates that life stage occurs in this range but not in all months included

DISPLAYED ON MAP

BENTHIC

Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence
							J F M A M J J A S O N D
SAV	Eelgrass	High Ecological Value				Present	
SAV	Rare aquatic/wetland plant	High Ecological Value				Present	

BIRDS

Map ID	Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence	Nest	Mig.(S)	Mig.(F)	Molt
								J F M A M J J A S O N D	May-Jul	May	Aug-Nov	Jul-Aug
22	Passerine	Marsh wren	Nesting		-/C		Common		May-Jul	Mar-May	Aug-Nov	Jul-Aug
51	Passerine	Marsh birds	General Distribution		C/C		Common					
153	Passerine	Vesper sparrow	Nesting		T/-		Rare		May-Aug	-	-	-
208	Passerine	Rare tern	Nesting		C/-		Rare		May-Aug	-	-	-
	Passerine	Marsh passerines	General Distribution		-/C		Common		Apr-Aug	Apr-May	Aug-Nov	Sep-Oct
	Passerine	Marsh wren	Nesting		-/C		Common		May-Jul	May	-	-
	Wading	Egrets	Migration		-/C		Common		Apr-Jul	Mar-May	Aug-Sep	-
	Wading	Marsh birds	General Distribution		C/C		Common			Mar-May	Aug-Nov	Jul-Aug
230	Passerine	Marsh passerines	General Distribution		-/C		Common		Apr-Aug	Apr-May	Aug-Nov	Sep-Oct
	Passerine	Saltmarsh sparrow	Nesting		-/C		Common		May-Jul	May	-	-
	Shorebird	American oystercatcher	Nesting		-/C		Rare		May-Aug	May	-	-
	Shorebird	Willet	Nesting		-/C		Common		Apr-May	Apr-May	Aug-Oct	-
	Wading	Egrets	Migration		-/C		Common		Apr-Jul	Mar-May	Aug-Sep	-
	Wading	Marsh birds	General Distribution		C/C		Common			Mar-May	Aug-Nov	Jul-Aug
	Waterfowl	Waterfowl	General Distribution		C/C		Common		May-Jul	Apr-May	Aug-Oct	Aug-Sep
231	Passerine	Marsh passerines	General Distribution		-/C		Common		Apr-Aug	Apr-May	Aug-Nov	Sep-Oct
	Passerine	Marsh wren	Nesting		-/C		Common		May-Jul	May	-	-
	Shorebird	American oystercatcher	Nesting		-/C		Rare		May-Aug	May	-	-
	Shorebird	Willet	Nesting		-/C		Common		Apr-May	Apr-May	Aug-Oct	-
	Wading	Egrets	Migration		-/C		Common		Apr-Jul	Mar-May	Aug-Sep	-
	Wading	Marsh birds	General Distribution		C/C		Common			Mar-May	Aug-Nov	Jul-Aug
	Waterfowl	Waterfowl	General Distribution		C/C		Common		May-Jul	Apr-May	Aug-Oct	Aug-Sep
276	Passerine	Marsh passerines	General Distribution		-/C		Common		Apr-Aug	Apr-May	Aug-Nov	Sep-Oct
	Passerine	Marsh wren	Nesting		-/C		Common		May-Jul	May	-	-
	Shorebird	Willet	Nesting		-/C		Common		Apr-May	Apr-May	Aug-Oct	-
	Wading	Egrets	Migration		-/C		Common		Apr-Jul	Mar-May	Aug-Sep	-
	Wading	Marsh birds	General Distribution		C/C		Common			Mar-May	Aug-Nov	Jul-Aug
	Waterfowl	Waterfowl	General Distribution		C/C		Common		May-Jul	Apr-May	Aug-Oct	Aug-Sep
315	Passerine	Marsh passerines	General Distribution		-/C		Common		Apr-Aug	Apr-May	Aug-Nov	Sep-Oct
	Passerine	Marsh wren	Nesting		-/C		Common		May-Jul	May	-	-
	Shorebird	Willet	Nesting		-/C		Common		Apr-May	Apr-May	Aug-Oct	-
	Wading	Egrets	Migration		-/C		Common		Apr-Jul	Mar-May	Aug-Sep	-
	Wading	Marsh birds	General Distribution		C/C		Common			Mar-May	Aug-Nov	Jul-Aug
	Waterfowl	Waterfowl	General Distribution		C/C		Common		May-Jul	Apr-May	Aug-Oct	Aug-Sep
315	Passerine	Marsh passerines	General Distribution		-/C		Common		Apr-Aug	Apr-May	Aug-Nov	Sep-Oct
	Passerine	Saltmarsh sparrow	Nesting		-/C		Common		May-Jul	May	-	-
	Wading	Egrets	Migration		-/C		Common		Apr-Jul	Mar-May	Aug-Sep	-

BIRDS (continued)

Map ID	Subelement	Species	Mapping Qualifier	MA/RI S F	Concentration	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt
						J	F	M	A	M	J	J	A	S	O	N	D				
	Wading	Marsh birds	General Distribution	C/C	Common													-	Mar-May	Aug-Nov	Jul-Aug
	Waterfowl	Waterfowl	General Distribution	C/C	Common													May-Jul	Apr-May	Aug-Oct	Aug-Sep
317	Passerine	Marsh passerines	General Distribution	-/C	Common													Apr-Aug	Apr-May	Aug-Nov	Sep-Oct
	Passerine	Saltmarsh sparrow	Nesting	-/C	Common													May-Jul	May	-	-
	Passerine	Vesper sparrow	Nesting	T/-	Rare													May-Aug	-	-	-
	Wading	Egrets	Migration	-/C	Common													Apr-Jul	Mar-May	Aug-Sep	-
	Wading	Marsh birds	General Distribution	C/C	Common													-	Mar-May	Aug-Nov	Jul-Aug
	Waterfowl	Waterfowl	General Distribution	C/C	Common													May-Jul	Apr-May	Aug-Oct	Aug-Sep
325	Passerine	Marsh passerines	General Distribution	-/C	Common													Apr-Aug	Apr-May	Aug-Nov	Sep-Oct
	Wading	Egrets	Migration	-/C	Common													Apr-Jul	Mar-May	Aug-Sep	-
	Wading	Marsh birds	General Distribution	C/C	Common													-	Mar-May	Aug-Nov	Jul-Aug
	Waterfowl	Waterfowl	General Distribution	C/C	Common													May-Jul	Apr-May	Aug-Oct	Aug-Sep
326	Passerine	Marsh passerines	General Distribution	-/C	Common													Apr-Aug	Apr-May	Aug-Nov	Sep-Oct
	Passerine	Marsh wren	Nesting	-/C	Common													May-Jul	May	-	-
	Wading	Egrets	Migration	-/C	Common													Apr-Jul	Mar-May	Aug-Sep	-
	Wading	Marsh birds	General Distribution	C/C	Common													-	Mar-May	Aug-Nov	Jul-Aug
	Waterfowl	Waterfowl	General Distribution	C/C	Common													May-Jul	Apr-May	Aug-Oct	Aug-Sep
339	Shorebird	American oystercatcher	Nesting	-/C	Rare													May-Aug	May	-	-
	Shorebird	Willet	Nesting	-/C	Common													Apr-May	Apr-May	Aug-Oct	-
488	Waterfowl	Waterfowl	General Distribution	C/C	Common													May-Jul	Apr-May	Aug-Oct	Aug-Sep
491	Wading	Marsh birds	General Distribution	C/C	Common													-	Mar-May	Aug-Nov	Jul-Aug
	Waterfowl	Waterfowl	General Distribution	C/C	Common													May-Jul	Apr-May	Aug-Oct	Aug-Sep
492	Passerine	Marsh wren	Nesting	-/C	Common													May-Jul	Apr-May	Aug-Oct	Aug-Sep
	Wading	Marsh birds	General Distribution	C/C	Common													May-Jul	May	-	-
	Waterfowl	Waterfowl	General Distribution	C/C	Common													-	Mar-May	Aug-Nov	Jul-Aug
501	Gull/Tern	Rare tern	Migration	C/-	Common													May-Aug	Apr-May	Jul-Sep	-
	Gull/Tern	Roseate tern	Migration	E/-	E													-	Apr-May	Jul-Sep	-
550	Gull/Tern	Rare tern	Nesting	C/-	Rare													May-Aug	Apr-May	Jul-Sep	-

FISH

Map ID	Subelement	Species	Mapping Qualifier	MA/RI S F	Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
						J	F	M	A	M	J	J	A	S	O	N	D					
557	Diadromous	Alewife	Spawning Area		-													Apr-Jun	Apr-Jun	Apr-Jun	-	Apr-Jun
	Diadromous	American eel	Migration		-													-	-	-	Jan-Dec	Jan-Dec
	Diadromous	Blueback herring	Spawning Area		-													Apr-Jun	Apr-Jun	Apr-Jun	-	Apr-Jun

HABITATS & RARE PLANTS

Map ID	Subelement	Species	Mapping Qualifier	MA/RI S F	Concentration	Monthly Presence												Vulnerable Occurrence	Vulnerable Occurrence
						J	F	M	A	M	J	J	A	S	O	N	D		
638	Plant	Rare plant	Vulnerable Occurrence		-														
646	Wetland	Vernal pool	Vulnerable Occurrence		-														

REPTILES & AMPHIBIANS

Map ID	Subelement	Species	Mapping Qualifier	MA/R/I	S	F	Concentration	Monthly Presence												Nest	Hatch	Internest	Juveniles	Adults
652	Turtle	Rare reptile	Vulnerable Occurrence				-	J	F	M	A	M	J	J	A	S	O	N	D	-	Apr-Jul	Jun-Nov	Jan-Dec	Jan-Dec

INVERTEBRATES

Map ID	Subelement	Species	Mapping Qualifier	MA/R/I	S	F	Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
666	Crab	Blue crab	Nursery				Common	J	F	M	A	M	J	J	A	S	O	N	D	Jun-Aug	-	Jun-Aug	Jan-Dec	Jan-Dec
702	Crab	Horseshoe crab	Nursery				Abundant	J	F	M	A	M	J	J	A	S	O	N	D	May-Jul	May-Jul	-	Jan-Dec	Jan-Dec
	Bivalve	Sea scallop	Concentration Area				Medium	J	F	M	A	M	J	J	A	S	O	N	D	Jul-Oct	Jul-Oct	Jul-Oct	May-Oct	May-Oct

MARINE MAMMALS

Map ID	Subelement	Species	Mapping Qualifier	MA/R/I		Monthly Presence												Mating	Calving	Pupping	Molt
			Concentration Area	S	F	J	F	M	A	M	J	J	A	S	O	N	D				
726	Whale	Humpback whale		E/E	E	Common												-	-	-	-

WIDESPREAD IN MAPPED AREA (> 10 SQUARE KILOMETERS)


BENTHIC

Subelement	Species	Mapping Qualifier	MA/R/I		Monthly Presence																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
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SAV	Eelgrass	High Ecological Value																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		



BIRDS

Subelement	Species	Mapping Qualifier	MA/R/I	S	F	Concentration	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
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REPTILES & AMPHIBIANS

Subelement	Species	Mapping Qualifier	MA/R/I		Concentration	Monthly Presence												Nest	Hatch	Internest	Juveniles	Adults																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
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INVERTEBRATES

Subelement	Species	Mapping Qualifier	MA/RI		Concentration	Monthly Presence												Eggs	Larvae	Juveniles	Adults
			S	F		J	F	M	A	M	J	J	A	S	O	N	D				
 Cephalopod	Longfin squid	Concentration Area			Common													May-Aug	May-Aug	Apr-Nov	Apr-Nov
 Crab	Horseshoe crab	Concentration Area			Medium													May-Jul	-	Apr-Oct	Apr-Oct
	Horseshoe crab	Spawning			Abundant													May-Jul	-	May-Jul	May-Jul

MARINE MAMMALS







Subelement	Species	Mapping Qualifier	MA/RI		Concentration	Monthly Presence												Calving	Pupping	Molt
			S	F		J	F	M	A	M	J	J	A	S	O	N	D			
 Whale	Fin whale	Concentration Area	E/E	E	Common													-	-	-
	Fin whale	General Distribution	E/E	E	Rare													-	-	-
	Humpback whale	General Distribution	E/E	E	Common													-	-	-
	N.A. right whale	Concentration Area	E/E	E	Common													-	-	-
	Sei whale	General Distribution	E/-	E	Rare													-	-	-

TERRESTRIAL MAMMALS

Subelement	Species	Mapping Qualifier	MA/RI		Concentration	Monthly Presence											
			S	F		J	F	M	A	M	J	J	A	S	O	N	D
 Bat	Northern myotis	General Distribution	E/-	T	Rare												
 Small Mammal	New England cottontail	General Distribution	-/C		Rare												










ALSO PRESENT IN MAPPED AREA (GENERAL DISTRIBUTION)

BIRDS

Subelement	Species	Mapping Qualifier	MA/RI		Concentration	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt
			S	F		J	F	M	A	M	J	J	A	S	O	N	D				
 Alcid	Atlantic puffin																	-	Mar	Sep	-
 Diving	D. crested cormorant																	-	Mar-Apr	Sep-Oct	-
 Gull/Tern	Gulls																	-	Apr-May	Aug-Nov	-
 Pelagic	Northern gannet																	-	Apr-May	Oct-Nov	-
	Shearwaters																	-	May	Oct	-
 Shorebird	Red-necked phalarope																	-	May	Oct	-
 Waterfowl	American black duck																	-	Sep-Mar	-	-
	Diving ducks																	-	Sep-Apr	-	-
	Geese																	-	May	Sep-Nov	-
	Sea ducks																	-	Mar-May	Sep-Oct	-

FISH





Monthly Presence

Subelement	Species	J	F	M	A	M	J	J	A	S	O	N	D	Spawn	Eggs	Larvae	Juveniles	Adults
	Alewife													-	-	-	Jan-Dec	Jan-Dec
	American eel													-	-	-	Jan-Dec	Jan-Dec
	American shad													-	-	-	Jan-Dec	Jan-Dec
	Atlantic salmon													Sep-Dec	Sep-Mar	Feb-Jul	Jan-Dec	Jan-Dec
	Blueback herring													-	-	-	Jan-Dec	Jan-Dec
	Striped bass													-	-	-	Apr-Nov	Apr-Nov
	Atlantic herring													Aug-Nov	Aug-Nov	Oct-Dec	Jan-Dec	Jan-Dec
	Bay anchovy													Jun-Aug	Jun-Aug	Jun-Sep	Jan-Dec	Jan-Dec
	Black sea bass													-	-	-	Aug-Jan	Aug-Jan
	Black sea bass													Feb-Jul	Feb-Jul	Mar-Jul	Feb-Jul	Feb-Jul
	Black sea bass													Feb-Jul	Feb-Jul	Mar-Jul	Jan-Dec	Jan-Dec
	Bluefish													-	-	Jun-Aug	May-Nov	May-Nov
	Northern kingfish													Jun-Jul	Jun-Jul	Jun-Aug	May-Nov	May-Nov
	Scup													May-Aug	May-Aug	Jun-Aug	May-Oct	May-Oct
	Summer flounder													Aug-Nov	Aug-Nov	Sep-Nov	Apr-Nov	Apr-Nov
	Winduppane													May-Aug	May-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Winter flounder													Jan-May	Jan-May	Feb-May	Jan-Dec	Jan-Dec
	Rainbow smelt													-	-	-	Jan-Dec	Jan-Dec
	American plaice													Feb-Jun	Feb-Jun	Mar-Jul	Jan-Dec	Jan-Dec
	Atlantic cod													Nov-Mar	Nov-Mar	Dec-Mar	Jan-Dec	Jan-Dec
	Atlantic halibut													Apr-Sep	Apr-Sep	Apr-Sep	Jan-Dec	Jan-Dec
	Atlantic tomcod													Dec-Feb	Dec-Mar	Dec-Apr	Dec-Jun	Dec-Jun
	Atlantic wolffish													Mar-Aug	Mar-Aug	Mar-Sep	Jan-Dec	Jan-Dec
	Goosefish													-	-	-	-	Jan-Jun
	Goosefish													-	-	-	-	Jan-Dec
	Haddock													-	-	-	Aug-Jan	Aug-Jan
	Haddock													Feb-Jun	Feb-Jun	Mar-Jun	Jan-Dec	Jan-Dec
	Haddock													Feb-Jun	Feb-Jun	Mar-Jun	Feb-Jul	Feb-Jul
	Little skate													Jan-Dec	Jan-Dec	-	Jan-Dec	Jan-Dec
	Longhorn sculpin													Dec-Feb	Dec-Feb	Jan-Jun	Jan-Dec	Jan-Dec
	Ocean pout													Aug-Oct	Aug-Dec	Sep-Feb	Jan-Dec	Jan-Dec
	Pollock													-	-	-	Apr-Oct	Apr-Oct
	Red hake													Jun-Sep	Jun-Sep	Jul-Nov	Jan-Dec	Jan-Dec
	Rock gunnel													Nov-Mar	Nov-Apr	Jan-Jun	Jan-Dec	Jan-Dec
	Searobins													Jun-Sep	Jun-Sep	Jun-Oct	Jan-Dec	Jan-Dec
	Silver hake													Jul-Oct	Jul-Oct	Aug-Oct	Jan-Dec	Jan-Dec
	Tautog													May-Aug	May-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	White hake													Apr-Sep	May-Nov	May-Nov	Jan-Dec	Jan-Dec
	Winter skate													-	-	-	Jan-Dec	Jan-Dec
	Witch flounder													May-Aug	May-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Yellowtail flounder													Mar-Jul	Mar-Jul	Apr-Jul	Jan-Dec	Jan-Dec
	Atlantic mackerel													May-Jul	May-Aug	May-Aug	Mar-Dec	Mar-Dec
	Spiny dogfish													-	-	-	Jan-Dec	Jan-Dec
	Tunas													-	-	-	Jun-Sep	-




REPTILES & AMPHIBIANS

Subelement	Species	Monthly Presence												Nest	Hatch	Internest	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	Eastern box turtle													Jun-Jul	Aug-Oct	-	Jan-Dec	Jan-Dec

INVERTEBRATES

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	Atl. jackknife clam													Apr-May	Apr-May	Apr-May	Jan-Dec	Jan-Dec
	Atlantic surfclam													Jun-Aug	Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Bay scallop													Jun-Sep	Jun-Sep	Jun-Sep	Jan-Dec	Jan-Dec
	Blue mussel													May-Nov	May-Nov	May-Nov	Jan-Dec	Jan-Dec
	Eastern oyster													Jun-Aug	Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Northern quahog													Jun-Aug	Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Sea scallop													Jul-Oct	Jul-Oct	Jul-Oct	Jan-Dec	Jan-Dec
	Softshell clam													Jun-Aug	Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Longfin squid													May-Aug	May-Aug	May-Aug	Apr-Nov	Apr-Nov
	Northern shortfin squid													-	-	-	Apr-Nov	Apr-Nov
	Atlantic rock crab													May-Oct	Jun-Oct	Jun-Oct	Jan-Dec	Jan-Dec
	Blue crab													-	Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Horseshoe crab													May-Jul	May-Jul	-	Jan-Dec	Jan-Dec
	Jonah crab													May-Oct	May-Oct	May-Oct	Jan-Dec	Jan-Dec
	American lobster													Aug-Nov	Jun-Dec	Jun-Oct	Jan-Dec	Jan-Dec
	Db grass shrimp													May-Jul	May-Jul	May-Jul	Jan-Dec	Jan-Dec
	Sevenspine bay shrimp													May-Jul	May-Jul	May-Jul	Jan-Dec	Jan-Dec

MARINE MAMMALS

Subelement	Species	Monthly Presence												Mating	Calving	Pupping	Molt
		J	F	M	A	M	J	J	A	S	O	N	D				
	Atl. wht.-side dolphin													-	-	-	-
	Bottlenose dolphin													-	-	-	-
	Harbor porpoise													-	-	-	-
	Risso's dolphin													-	-	-	-
	Short-beaked common dolphin													-	-	-	-
	Gray seal													Dec-Feb	Dec-Feb	Dec-Feb	Mar-May
	Harbor seal													-	-	-	-
	Harp seal													-	-	-	-
	Hooded seal													-	-	-	-
	Minke whale													-	-	-	-
	Pilot whales													-	-	-	-
														-	-	-	-

For additional information about species locations and extent, reference the underlying GIS data available from response.restoration.noaa.gov

SHORELINE RESOURCES

ESI POLYGON HABITAT TYPES

ESI Rank	Habitat Classification	Area (Acres)	Area (Sq. Miles)
10A	Salt and Brackish Water Marshes	353.52	0.55
10B	Freshwater Marshes	180.71	0.28
10C	Swamps	427.95	0.67
10D	Scrub and Shrub Wetlands	416.84	0.65
9A	Sheltered Tidal Flats	1,575.65	2.46
7	Exposed Tidal Flats	197.80	0.31

ESI SHORELINE HABITAT TYPES

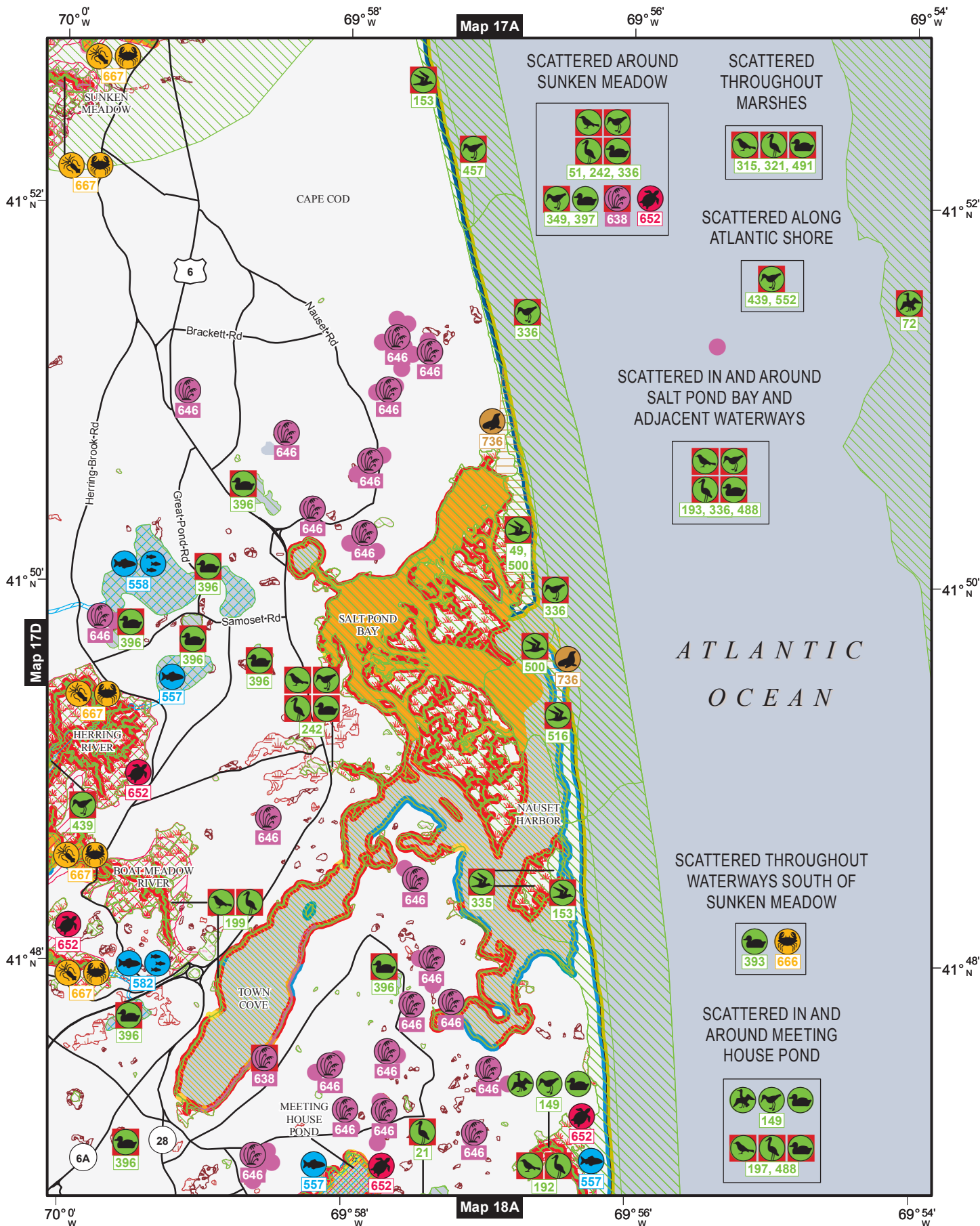
ESI Rank	Shoreline Habitat Classification	Length (Meters)	Length (Miles)	% of ESI Shoreline
10A	Salt and Brackish Water Marshes	17,934.47	11.14	16%
10B	Freshwater Marshes	41.11	0.03	< 1%
9A	Sheltered Tidal Flats	40,797.96	25.35	35%
9B	Vegetated Low Banks	5,521.76	3.43	5%
8B	Sheltered, Solid Man-Made Structures	554.16	0.34	< 1%
8C	Sheltered Riprap	1,497.28	0.93	1%
7	Exposed Tidal Flats	12,925.06	8.03	11%
6B	Riprap	3,057.16	1.90	3%
5	Mixed Sand and Gravel Beaches	280.85	0.17	< 1%
4	Coarse Grained Sand Beaches	22,813.14	14.18	20%
3A	Fine to Medium Grained Sand Beaches	8,707.07	5.41	8%
1B	Exposed, Solid Man-Made Structures	1,051.28	0.65	1%

Total ESI Shoreline: 115,181.31 Total ESI Shoreline: 71.57
 Total Shoreline: 58,745.73 Total Shoreline: 36.50

Note: A shoreline segment may include multiple shoreline habitats. If any segments include multiple habitats, the combined length of all habitats may exceed the length of the mapped shoreline, and the percent of ESI shoreline values will sum to greater than 100%

All underlying GIS data can be obtained from response.restoration.noaa.gov

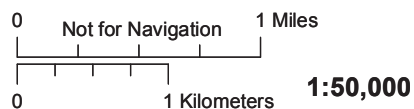




Map 17C
Mass. / Rhode Island



SEE BACK OF MAP
for details about mapped species and
other species that occur in mapped area.
Data Published: November 2016



Map 17C
Massachusetts and Rhode Island

BIOLOGICAL RESOURCES

Note: An asterisk (*) indicates that life stage occurs in this range but not in all months included

DISPLAYED ON MAP

BENTHIC

Subelement	Species	Mapping Qualifier	MA/RI	Monthly Presence											
				S	F	Concentration	J	F	M	A	M	J	J	A	S
SAV	Rare aquatic/wetland plant	High Ecological Value				Present									
Algae	Macroalgae	High Ecological Value				Med									

BIRDS

Map ID	Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence											
								J	F	M	A	M	J	J	A	S	N	D	
21	Wading	Marsh birds	General Distribution				Common												
49	Gull/Tern	Roseate tern	Nesting		E/-		Rare												
51	Passerine	Vesper sparrow	Nesting		TL/-		Rare												
72	Diving	Loons	General Distribution		C/-		Common												
149	Diving	Great cormorant	Wintering				Common												
	Shorebird	Purple sandpiper	Wintering				Common												
	Waterfowl	American black duck	Wintering				Common												
	Waterfowl	Diving ducks	Wintering				Common												
	Waterfowl	Geese	Wintering				Common												
	Waterfowl	Harlequin duck	Wintering				Rare												
	Waterfowl	Sea ducks	Wintering				Abundant												
153	Gull/Tern	Rare tern	Nesting		C/-		Rare												
192	Passerine	Marsh passerines	General Distribution		-C		Common												
	Passerine	Saltmarsh sparrow	Nesting		-C		Common												
	Wading	Egrets	Migration		-C		Common												
193	Passerine	Marsh passerines	General Distribution		-C		Common												
	Passerine	Saltmarsh sparrow	Nesting		-C		Common												
	Wading	Egrets	Migration		-C		Common												
	Wading	Marsh birds	General Distribution		C/C		Common												
197	Passerine	Marsh passerines	General Distribution		-C		Common												
	Passerine	Saltmarsh sparrow	Nesting		-C		Common												
	Wading	Egrets	General Distribution		-C		Common												
	Wading	Marsh birds	General Distribution		-C		Common												
199	Passerine	Marsh passerines	General Distribution		C/C		Common												
	Passerine	Saltmarsh sparrow	General Distribution		-C		Common												
	Wading	Egrets	Nesting		-C		Common												
242	Passerine	Marsh passerines	General Distribution		-C		Common												
	Passerine	Saltmarsh sparrow	General Distribution		-C		Common												
	Shorebird	American oystercatcher	Nesting		-C		Rare												
	Wading	Egrets	Migration		-C		Common												
	Wading	Marsh birds	General Distribution		C/C		Common												

BIRDS (continued)

Map ID	Subelement	Species	Mapping Qualifier	MA/RI		Concentration	Monthly Presence												Nest	Mig. (S)	Mig. (F)	Molt	
				S	F		J	F	M	A	M	J	J	A	S	O	N	D					
315	Waterfowl	Waterfowl	General Distribution	C/C		Common												May-Jul	Apr-May	Aug-Oct	Aug-Sep	-	
	Passerine	Marsh passerines	General Distribution	-/C		Common												Apr-Aug	Apr-May	Aug-Nov	Sep-Oct	-	
	Passerine	Saltmarsh sparrow	Nesting	-/C		Common												May-Jul	May	-	-	-	
	Wading	Egrets	Migration	-/C		Common												Apr-Jul	Mar-May	Aug-Sep	-	-	
321	Wading	Marsh birds	General Distribution	C/C		Common												-	Mar-May	Aug-Nov	Jul-Aug	-	
	Waterfowl	Waterfowl	General Distribution	C/C		Common												May-Jul	Apr-May	Aug-Oct	Aug-Sep	-	
	Passerine	Marsh passerines	General Distribution	-/C		Common												Apr-Aug	Apr-May	Aug-Nov	Sep-Oct	-	
	Passerine	Saltmarsh sparrow	Nesting	-/C		Common												May-Jul	May	-	-	-	
	Wading	Egrets	General Distribution	-/C		Common												Apr-Jul	Mar-May	Aug-Sep	-	-	
	Wading	Marsh birds	General Distribution	C/C		Common												-	Mar-May	Aug-Nov	Jul-Aug	-	
335	Waterfowl	Waterfowl	General Distribution	C/C		Common												May-Jul	Apr-May	Aug-Oct	Aug-Sep	-	
	Gull/Tern	Roseate tern	Nesting	E/-	E	Rare												May-Aug	-	-	-	-	
336	Shorebird	American oystercatcher	Nesting	-/C		Rare												May-Aug	May	-	-	-	
349	Shorebird	American oystercatcher	Nesting	-/C		Rare												May-Aug	May	-	-	-	
	Waterfowl	American black duck	Wintering			Common												Mar-Apr	Sep-Apr	-	-	-	
393	Waterfowl	Diving ducks	Wintering			Common												Mar-Apr	Sep-Apr	-	-	-	
	Waterfowl	Geese	Wintering			Common												May	Mar-May	Sep-Nov	-	-	
	Waterfowl	American black duck	Wintering			Common												Mar-Apr	Sep-Apr	-	-	-	
	Waterfowl	Diving ducks	Wintering			Common												Mar-Apr	Sep-Apr	-	-	-	
	Waterfowl	Geese	Wintering			Common												May	Mar-May	Sep-Nov	-	-	
	Waterfowl	Sea ducks	Wintering			Abundant												-	Mar-May	Sep-Oct	-	-	
396	Waterfowl	American black duck	Wintering			Common												Mar-Apr	Sep-Apr	-	-	-	
	Waterfowl	Diving ducks	Wintering			Common												Mar-Apr	Sep-Apr	-	-	-	
	Waterfowl	Geese	Wintering			Common												May	Mar-May	Sep-Nov	-	-	
	Waterfowl	Sea ducks	Wintering			Common												Mar-Apr	Sep-Apr	-	-	-	
	Waterfowl	Waterfowl	General Distribution	C/C		Common												May-Jul	Apr-May	Aug-Oct	Aug-Sep	-	
	Waterfowl	American black duck	Wintering			Common												Mar-Apr	Sep-Apr	-	-	-	
397	Waterfowl	Diving ducks	Wintering			Common												Mar-Apr	Sep-Apr	-	-	-	
	Waterfowl	Geese	Wintering			Common												May	Mar-May	Sep-Nov	-	-	
	Waterfowl	Sea ducks	Wintering			Abundant												-	Mar-May	Sep-Oct	-	-	
	Shorebird	Piping plover	Nesting	T/E	T	Common												Mar-Aug	Mar-Apr	Jul-Oct	-	-	
	Shorebird	Red knot	Migration			Common												-	May-Jun	Jul-Sep	-	-	
	Waterfowl	Waterfowl	General Distribution	C/C		Common												May-Jul	Apr-May	Aug-Oct	Aug-Sep	-	
439	Wading	Marsh birds	General Distribution	C/C		Common											-	Mar-May	Aug-Nov	Jul-Aug	Jul-Sep	-	
457	Waterfowl	Waterfowl	General Distribution	C/C		Common												May-Jul	Apr-May	Aug-Oct	Aug-Sep	-	
488	Waterfowl	Marsh birds	General Distribution	C/C		Common												-	Mar-May	Aug-Nov	Jul-Aug	Jul-Sep	-
491	Waterfowl	Waterfowl	General Distribution	C/C		Common												May-Jul	Apr-May	Aug-Oct	Aug-Sep	-	
500	Gull/Tern	Rare tern	Migration	C/-		Common												May-Aug	Apr-May	Jul-Sep	-	-	
516	Gull/Tern	Roseate tern	Migration	E/-	E	Common												May-Aug	Apr-May	Jul-Sep	-	-	
552	Shorebird	Red knot	Migration		T	Abundant												-	May-Jun	Jul-Sep	-	-	

FISH

[illegible]

345

FISH (continued)

Map ID	Subelement	Species	Mapping Qualifier	MA/RI S F	Concentration	Monthly Presence												Larvae	Eggs	Spawn	Juveniles	Adults
						J	F	M	A	M	J	J	A	S	O	N	D					
558	Diadromous	Alewife	Spawning Area		-													Apr-Jun	Apr-Jun	Apr-Jun	-	Apr-Jun
	Diadromous	American eel	Migration		-													-	-	-	Jan-Dec	Jan-Dec
	Diadromous	Blueback herring	Spawning Area		-													Apr-Jun	Apr-Jun	Apr-Jun	-	Apr-Jun
	Estuarine Nursery	White perch	Spawning Area		-													Apr-Aug	Apr-Aug	Apr-Aug	Jan-Dec	Jan-Dec
582	Diadromous	Alewife	Spawning Area		-													Apr-Jun	Apr-Jun	Apr-Jun	-	Apr-Jun
	Diadromous	Blueback herring	Spawning Area		-													Apr-Jun	Apr-Jun	Apr-Jun	-	Apr-Jun
	Estuarine Nursery	White perch	Spawning Area		-													Apr-Aug	Apr-Aug	Apr-Aug	Jan-Dec	Jan-Dec

HABITATS & RARE PLANTS

Map ID	Subelement	Species	Mapping Qualifier	MA/RI S F	Concentration	Monthly Presence											
						J	F	M	A	M	J	J	A	S	O	N	D
638	Plant	Rare plant	Vulnerable Occurrence	T/C	-												
646	Wetland	Vernal pool	Vulnerable Occurrence		-												

REPTILES & AMPHIBIANS

Map ID	Subelement	Species	Mapping Qualifier	MA/RI S F	Concentration	Monthly Presence												Hatch	Interest	Nest	Juveniles	Adults
						J	F	M	A	M	J	J	A	S	O	N	D					
652	Turtle	Rare reptile	Vulnerable Occurrence		-													Apr-Jul	Jun-Nov	-	Jan-Dec	Jan-Dec

INVERTEBRATES

Map ID	Subelement	Species	Mapping Qualifier	MA/RI S F	Concentration	Monthly Presence												Eggs	Larvae	Spawn	Juveniles	Adults
						J	F	M	A	M	J	J	A	S	O	N	D					
666	Crab	Blue crab	Nursery		Common													-	Jun-Aug	Jun-Aug	Jun-Aug	Jan-Dec
667	Crab	Horseshoe crab	Nursery		Abundant													May-Jul	-	May-Jul	Jan-Dec	Jan-Dec
	Cephalopod	Longfin squid	Concentration Area		Common													May-Aug	May-Aug	May-Aug	Apr-Nov	Apr-Nov
	Crab	Blue crab	Nursery		Common													Jun-Aug	Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Crab	Horseshoe crab	Nursery		Abundant													May-Jul	-	May-Jul	Jan-Dec	Jan-Dec

MARINE MAMMALS

Map ID	Subelement	Species	Mapping Qualifier	MA/RI S F	Concentration	Monthly Presence												Calving	Pupping	Mating	Molt
						J	F	M	A	M	J	J	A	S	O	N	D				
736	Pinniped	Gray seal	Haul Out		Med													-	-	-	-

WIDESPREAD IN MAPPED AREA (> 10 SQUARE KILOMETERS)

BIRDS

Map ID	Subelement	Species	Mapping Qualifier	MA/RI S F	Concentration	Monthly Presence												Mig.(S)	Mig.(F)	Nest	Molt
						J	F	M	A	M	J	J	A	S	O	N	D				
	Aldid	Razorbill	Wintering		Common													-	Oct-Nov	-	-
	Diving	Loons	Migration	C/-	Common													Mar-Jun	Sep-Dec	-	Jan-Mar
	Gull/Tern	Rare tern	General Distribution	C/-	Common													Apr-May	Jul-Sep	-	-
	Shorebird	Roseate tern	General Distribution	E/- E	Common													Apr-May	Jul-Sep	-	-
		Shorebirds	Migration		Common													Mar-Jun	Jul-Nov	-	Aug
		Willet	Nesting	-/C	Common													Apr-May	Aug-Oct	-	-
	Wading	Wading birds	General Distribution	-/C	Common													Mar-May	Jul-Oct	-	-


REPTILES & AMPHIBIANS

Subelement	Species	Mapping Qualifier	MA/RI	Monthly Presence												Nest	Hatch	Internest	Juveniles	Adults
				S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N	D		
Amphibian	Eastern spadefoot	Vulnerable Occurrence	T/E			-													Apr-Jun	May-Jul
Turtle	Green sea turtle	General Distribution	T/E			Regular													May-Nov	May-Nov
	K. ridley sea turtle	General Distribution	E/E			Regular													May-Nov	May-Nov
	Leatherback sea turtle	General Distribution	E/E			Regular													May-Nov	May-Nov
	Loggerhead sea turtle	General Distribution	T/E			Regular													May-Nov	May-Nov



INVERTEBRATES

Subelement	Species	Mapping Qualifier	MA/RI	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
				S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N	D		
Bivalve	Sea scallop	Concentration Area				Medium													Jul-Oct	May-Oct
Crab	Jonah crab	Concentration Area				Low													May-Oct	Apr-Oct

MARINE MAMMALS







Subelement	Species	Mapping Qualifier	MA/RI		Concentration	Monthly Presence												Mating	Calving	Pupping	Molt
			S	F		J	F	M	A	M	J	J	A	S	O	N	D				
 Whale	Fin whale	General Distribution	E/E	E	Rare												-	-			
	Humpback whale	Concentration Area	E/E	E	Common												-	-			
	N.A. right whale	Concentration Area	E/E	E	Common												-	-			
	Sei whale	General Distribution	E/-	E	Common												-	-			
	Sei whale	General Distribution	E/-	E	Rare												-	-			
	Sperm whale	General Distribution	E/-	E	Rare												-	-			

TERRESTRIAL MAMMALS

Subelement	Species	Mapping Qualifier	MA/RI		Concentration	Monthly Presence												
			S	F		J	F	M	A	M	J	J	A	S	O	N	D	
 Bat	Northern myotis	General Distribution	E/-	T	Rare													
 Small Mammal	New England cottontail	General Distribution	-/C		Rare													

ALSO PRESENT IN MAPPED AREA (GENERAL DISTRIBUTION)

BIRDS


Subelement	Species	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt
		J	F	M	A	M	J	J	A	S	O	N	D				
	Atlantic puffin													-	Mar	Sep	-
	D. crested cormorant													-	Mar-Apr	Sep-Oct	-
	D. crested cormorant													Apr-Jun	-	-	-
	Gulls													-	Apr-May	Aug-Nov	-
	Northern gannet													-	Apr-May	Oct-Nov	-
	Shearwaters													-	May	Oct	-
	Red-necked phalarope													-	May	Oct	-
	American black duck													Mar-Jul	Sep-Mar	-	-
	Diving ducks													Mar-Apr	Sep-Apr	-	-
	Geese													May	Mar-May	Sep-Nov	-
	Sea ducks													-	Mar-May	Sep-Oct	-

FISH

Monthly Presence

Subelement	Species	J	F	M	A	M	J	J	A	S	O	N	D	Spawn	Eggs	Larvae	Juveniles	Adults
Diadromous	Alewife													-	-	-	Jan-Dec	Jan-Dec
	American eel													-	-	-	Jan-Dec	Jan-Dec
	American shad													-	-	-	Jan-Dec	Jan-Dec
	Atlantic salmon													Sep-Dec	Sep-Mar	Feb-Jul	Jan-Dec	Jan-Dec
	Blueback herring													-	-	-	Jan-Dec	Jan-Dec
	Striped bass													-	-	-	Apr-Nov	Apr-Nov
Estuarine Nursery	Atlantic herring													Aug-Nov	Aug-Nov	Oct-Dec	Jan-Dec	Jan-Dec
	Bay anchovy													Jun-Aug	Jun-Aug	Jun-Sep	Jan-Dec	Jan-Dec
	Black sea bass													Feb-Jul	Feb-Jul	Mar-Jul	Feb-Jul	Feb-Jul
	Black sea bass													-	-	-	Aug-Jan	Aug-Jan
	Black sea bass													Feb-Jul	Feb-Jul	Mar-Jul	Jan-Dec	Jan-Dec
	Bluefish													Jun-Jul	Jun-Jul	Jun-Aug	May-Nov	May-Nov
	Northern kingfish													May-Aug	May-Aug	Jun-Aug	May-Oct	May-Oct
	Scup													Aug-Nov	Aug-Nov	Sep-Nov	Apr-Nov	Apr-Nov
	Summer flounder													May-Aug	May-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Windowpane													May-Aug	May-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Winter flounder													Jan-May	Jan-May	Feb-May	Jan-Dec	Jan-Dec
Freshwater	Rainbow smelt													-	-	-	Jan-Dec	Jan-Dec
Marine Benthic	American plaice													Feb-Jun	Feb-Jun	Mar-Jul	Jan-Dec	Jan-Dec
	Atlantic cod													-	-	-	Apr-Aug	Apr-Aug
	Atlantic cod													Nov-Mar	Nov-Mar	Dec-Mar	Jan-Dec	Jan-Dec
	Atlantic halibut													Apr-Sep	Apr-Sep	Apr-Sep	Jan-Dec	Jan-Dec
	Atlantic tomcod													Dec-Feb	Dec-Mar	Dec-Apr	Dec-Jun	Dec-Jun
	Atlantic wolffish													Mar-Aug	Mar-Aug	Mar-Sep	Jan-Dec	Jan-Dec
	Goosefish													-	-	-	-	Jan-Dec
	Goosefish													-	-	-	-	Jan-Jun
	Haddock													Feb-Jun	Feb-Jun	Mar-Jun	Feb-Jul	Feb-Jul
	Haddock													-	-	-	Aug-Jan	Aug-Jan
	Haddock													Feb-Jun	Feb-Jun	Mar-Jun	Jan-Dec	Jan-Dec
	Little skate													Jan-Dec	Jan-Dec	-	Jan-Dec	Jan-Dec
	Longhorn sculpin													Dec-Feb	Dec-Feb	Jan-Jun	Jan-Dec	Jan-Dec
	Ocean pout													Aug-Oct	Aug-Dec	Sep-Feb	Jan-Dec	Jan-Dec
	Pollock													-	-	-	Apr-Oct	Apr-Oct
	Red hake													-	-	-	Dec-May	Dec-May
	Red hake													Jun-Sep	Jun-Sep	Jul-Nov	Jun-Nov	Jun-Nov
	Red hake													Jun-Sep	Jun-Sep	Jul-Nov	Jan-Dec	Jan-Dec
	Rock gunnel													Nov-Mar	Nov-Apr	Jan-Jun	Jan-Dec	Jan-Dec
	Searobins													Jun-Sep	Jun-Sep	Jun-Oct	Jan-Dec	Jan-Dec
	Silver hake													Jul-Oct	Jul-Oct	Aug-Oct	Jul-Dec	Jul-Dec
	Silver hake													-	-	-	Jan-Jun	Jan-Jun
	Silver hake													Jul-Oct	Jul-Oct	Aug-Oct	Jan-Dec	Jan-Dec
	Tautog													May-Aug	May-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	White hake													Apr-Sep	May-Nov	May-Nov	Jan-Dec	Jan-Dec
	Winter skate													-	-	-	Jan-Dec	Jan-Dec






FISH (continued)

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	Witch flounder													May-Aug	May-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Yellowtail flounder													Mar-Jul	Mar-Jul	Apr-Jul	Jan-Dec	Jan-Dec
	Atlantic mackerel													May-Jul	May-Aug	May-Aug	Mar-Dec	Mar-Dec
	Spiny dogfish													-	-	-	Jan-Dec	Jan-Dec
	Tunas													-	-	-	Jun-Sep	-


REPTILES & AMPHIBIANS

Subelement	Species	Monthly Presence												Nest	Hatch	Internest	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	Eastern box turtle													Jun-Jul	Aug-Oct	-	Jan-Dec	Jan-Dec



INVERTEBRATES

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	Atl. jackknife clam													Apr-May	Apr-May	Apr-May	Jan-Dec	Jan-Dec
	Atlantic surfclam													Jun-Aug	Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Bay scallop													Jun-Sep	Jun-Sep	Jun-Sep	Jan-Dec	Jan-Dec
	Blue mussel													May-Nov	May-Nov	May-Nov	Jan-Dec	Jan-Dec
	Eastern oyster													Jun-Aug	Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	European flat oyster													Aug-Sep	Aug-Sep	Aug-Sep	Jan-Dec	Jan-Dec
	Mussel bed													-	-	-	-	-
	Northern quahog													Jun-Aug	Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Sea scallop													Jul-Oct	Jul-Oct	Jul-Oct	Jan-Dec	Jan-Dec
	Softshell clam													Jun-Aug	Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Longfin squid													May-Aug	May-Aug	May-Aug	Apr-Nov	Apr-Nov
	Northern shortfin squid													-	-	-	Apr-Nov	Apr-Nov
	Atlantic rock crab													May-Oct	Jun-Oct	Jun-Oct	Jan-Dec	Jan-Dec
	Blue crab													-	Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Horseshoe crab													May-Jul	May-Jul	-	Jan-Dec	Jan-Dec
	Jonah crab													May-Oct	May-Oct	May-Oct	Jan-Dec	Jan-Dec
	American lobster													Aug-Nov	Jan-Dec	Jun-Oct	Jan-Dec	Jan-Dec
	Db grass shrimp													May-Jul	May-Jul	May-Jul	Jan-Dec	Jan-Dec
	Northern shrimp													-	Dec-Apr	Jan-Dec	Jan-Dec	Dec-Apr
	Sevenspine bay shrimp													May-Jul	May-Jul	May-Jul	Jan-Dec	Jan-Dec

MARINE MAMMALS

Subelement	Species	Monthly Presence												Mating	Calving	Pupping	Molt
		J	F	M	A	M	J	J	A	S	O	N	D				
	Atl. spotted dolphin													-	-	-	-
	Atl. wht.-side dolphin													-	-	-	-
	Bottlenose dolphin													-	-	-	-
	Harbor porpoise													-	-	-	-
	Risso's dolphin													-	-	-	-
	Short-beaked common dolphin													-	-	-	-

MARINE MAMMALS (continued)

Subelement	Species	Monthly Presence												Mating	Calving	Pupping	Molt
		J	F	M	A	M	J	J	A	S	O	N	D				
	Striped dolphin													-	-	-	-
	White-beaked dolphin													-	-	-	-
	Gray seal													Dec-Feb	Dec-Feb	Dec-Feb	Mar-May
	Harbor seal													-	-	-	-
	Harp seal													-	-	-	-
	Hooded seal													-	-	-	-
	Minke whale													-	-	-	-
	Pilot whales													-	-	-	-
														-	-	-	-

For additional information about species locations and extent, reference the underlying GIS data available from response.restoration.noaa.gov

SHORELINE RESOURCES

ESI POLYGON HABITAT TYPES

ESI Rank	Habitat Classification	Area (Acres)	Area (Sq. Miles)
10A	Salt and Brackish Water Marshes	1,222.45	1.91
10B	Freshwater Marshes	53.84	0.08
10C	Swamps	102.77	0.16
10D	Scrub and Shrub Wetlands	156.30	0.24
9A	Sheltered Tidal Flats	480.61	0.75
7	Exposed Tidal Flats	1.48	0.00

ESI SHORELINE HABITAT TYPES

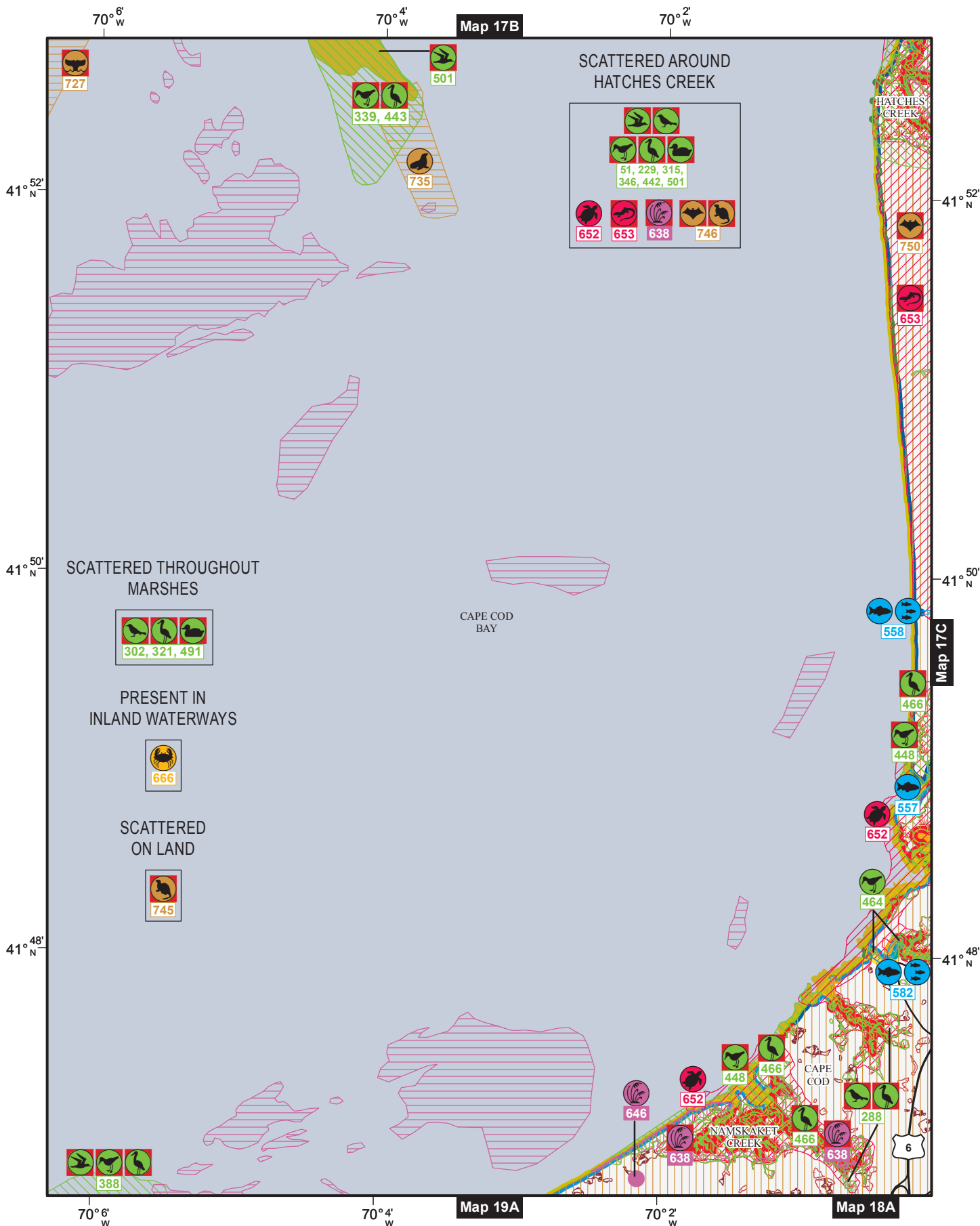
ESI Rank	Shoreline Habitat Classification	Length (Meters)	Length (Miles)	% of ESI Shoreline
10A	Salt and Brackish Water Marshes	95,948.93	59.62	52%
10B	Freshwater Marshes	322.83	0.20	< 1%
10C	Swamps	45.95	0.03	< 1%
9A	Sheltered Tidal Flats	46,627.11	28.97	25%
9B	Vegetated Low Banks	5,690.87	3.54	3%
8B	Sheltered, Solid Man-Made Structures	616.40	0.38	< 1%
8C	Sheltered Riprap	350.45	0.22	< 1%
7	Exposed Tidal Flats	12,189.91	7.57	7%
6B	Riprap	247.06	0.15	< 1%
5	Mixed Sand and Gravel Beaches	617.17	0.38	< 1%
4	Coarse Grained Sand Beaches	14,091.72	8.76	8%
3A	Fine to Medium Grained Sand Beaches	6,196.61	3.85	3%

Total ESI Shoreline: 182,945.01
Total Shoreline: 122,536.21
Total ESI Shoreline: 113.68
Total Shoreline: 76.14

Note: A shoreline segment may include multiple shoreline habitats. If any segments include multiple habitats, the combined length of all habitats may exceed the length of the mapped shoreline, and the percent of ESI shoreline values will sum to greater than 100%

All underlying GIS data can be obtained from response.restoration.noaa.gov





Map 17D
Massachusetts and Rhode Island

BIOLOGICAL RESOURCES

Note: An asterisk (*) indicates that life stage occurs in this range but not in all months included

DISPLAYED ON MAP

BENTHIC

Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence											
							J	F	M	A	M	J	J	A	S	O	N	D
SAV	Eelgrass	High Ecological Value				Present												
SAV	Rare aquatic/wetland plant	High Ecological Value				Present												

BIRDS

Map ID	Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence											
								J	F	M	A	M	J	J	A	S	O	N	D
51	Passerine	Vesper sparrow	Nesting		TI/-		Rare												
229	Passerine	Marsh passerines	General Distribution		-/C		Common												
	Passerine	Saltmarsh sparrow	Nesting		-/C		Common												
	Shorebird	American oystercatcher	Nesting		-/C		Rare												
	Shorebird	Willet	Nesting		-/C		Common												
	Wading	Egrets	Migration		-/C		Common												
	Wading	Marsh birds	General Distribution		C/C		Common												
	Wading	Wading birds	General Distribution		-/C		Common												
	Waterfowl	Waterfowl	General Distribution		C/C		Common												
288	Passerine	Marsh passerines	General Distribution		-/C		Common												
	Passerine	Saltmarsh sparrow	Nesting		-/C		Common												
	Wading	Egrets	General Distribution		-/C		Common												
	Wading	Wading birds	General Distribution		-/C		Common												
302	Passerine	Marsh passerines	General Distribution		-/C		Common												
	Passerine	Saltmarsh sparrow	Nesting		-/C		Common												
	Wading	Egrets	General Distribution		-/C		Common												
	Wading	Marsh birds	General Distribution		-/C		Common												
	Wading	Wading birds	General Distribution		-/C		Common												
	Waterfowl	Waterfowl	General Distribution		C/C		Common												
315	Passerine	Marsh passerines	General Distribution		-/C		Common												
	Passerine	Saltmarsh sparrow	Nesting		-/C		Common												
	Wading	Egrets	Migration		-/C		Common												
	Wading	Marsh birds	General Distribution		C/C		Common												
	Waterfowl	Waterfowl	General Distribution		C/C		Common												
321	Passerine	Marsh passerines	General Distribution		-/C		Common												
	Passerine	Saltmarsh sparrow	Nesting		-/C		Common												
	Wading	Egrets	General Distribution		-/C		Common												
	Wading	Marsh birds	General Distribution		C/C		Common												
	Waterfowl	Waterfowl	General Distribution		C/C		Common												
339	Shorebird	American oystercatcher	Nesting		-/C		Rare												
	Shorebird	Willet	Nesting		-/C		Common												

BIRDS (continued)

Map ID	Subelement	Species	Mapping Qualifier	MA/RI		Concentration	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt
				S	F		J	F	M	A	M	J	J	A	S	O	N	D				
346	Shorebird	American oystercatcher	Nesting	-/C		Rare												May-Aug	May	-	-	
	Shorebird	Willet	Nesting	-/C		Common												Apr-May	Apr-May	Aug-Oct	-	
388	Wading	Wading birds	General Distribution	-/C		Common												-	Mar-May	Jul-Oct	-	
	Gull/Tern	Rare tern	Migration	C/-		Common												-	Apr-May	Jul-Sep	-	
	Gull/Tern	Roseate tern	Migration	E/-		Common												-	Apr-May	Jul-Sep	-	
	Shorebird	Red knot	Migration	T		Common												-	May-Jun	Jul-Sep	-	
	Shorebird	Shorebirds	Migration			Common												-	Mar-Jun	Jul-Nov	Aug	
	Shorebird	Willet	Nesting	-/C		Common												Apr-May	Apr-May	Aug-Oct	-	
	Wading	Wading birds	General Distribution	-/C		Common												-	Mar-May	Jul-Oct	-	
	Shorebird	Piping plover	Nesting	T/E	T	Common												Mar-Aug	Mar-Apr	Jul-Oct	-	
442	Shorebird	Red knot	Migration	T		Common												-	May-Jun	Jul-Sep	-	
	Shorebird	Shorebirds	Migration			Common												-	Mar-Jun	Jul-Nov	Aug	
	Shorebird	Piping plover	Nesting	T/E	T	Common												Mar-Aug	Mar-Apr	Jul-Oct	-	
	Shorebird	Red knot	Migration	T		Common												-	May-Jun	Jul-Sep	-	
	Shorebird	Shorebirds	Migration			Common												-	Mar-Jun	Jul-Nov	Aug	
	Wading	Wading birds	General Distribution	-/C		Common												-	Mar-May	Jul-Oct	-	
	Shorebird	Piping plover	Nesting	T/E	T	Common												Mar-Aug	Mar-Apr	Jul-Oct	-	
	Shorebird	Shorebirds	Migration			Common												-	Mar-Jun	Jul-Nov	Aug	
464	Shorebird	Shorebirds	Migration			Common												-	Mar-Jun	Jul-Nov	Aug	
466	Wading	Wading birds	General Distribution	-/C		Common												-	Mar-May	Jul-Oct	-	
491	Wading	Marsh birds	General Distribution	C/C		Common												-	Mar-May	Aug-Nov	Jul-Aug	
501	Waterfowl	Waterfowl	General Distribution	C/C		Common												May-Jul	Apr-May	Aug-Oct	Aug-Sep	
	Gull/Tern	Rare tern	Migration	C/-		Common												May-Aug	Apr-May	Jul-Sep	-	
	Gull/Tern	Roseate tern	Migration	E/-	E	Common												-	Apr-May	Jul-Sep	-	

FISH

Map ID	Subelement	Species	Mapping Qualifier	MA/RI	Monthly Presence												Larvae	Eggs	Spawn	Juveniles	Adults
					S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N	D		
557	Diadromous	Alewife	Spawning Area				-												Apr-Jun	Apr-Jun	Apr-Jun
	Diadromous	American eel	Migration				-												-	Jan-Dec	Jan-Dec
558	Diadromous	Blueback herring	Spawning Area				-												Apr-Jun	Apr-Jun	Apr-Jun
	Diadromous	Alewife	Spawning Area				-												Apr-Jun	Apr-Jun	Apr-Jun
	Diadromous	American eel	Migration				-												-	Jan-Dec	Jan-Dec
	Diadromous	Blueback herring	Spawning Area				-												Apr-Jun	Apr-Jun	Apr-Jun
582	Estuarine Nursery	White perch	Spawning Area				-												Apr-Aug	Apr-Aug	May-Sep
	Diadromous	Alewife	Spawning Area				-												Apr-Jun	Apr-Jun	Apr-Jun
	Diadromous	Blueback herring	Spawning Area				-												Apr-Jun	Apr-Jun	Apr-Jun
	Estuarine Nursery	White perch	Spawning Area				-												Apr-Aug	Apr-Aug	May-Sep

HABITATS & RARE PLANTS

Map ID	Subelement	Species	Mapping Qualifier	MA/RI		Concentration	Monthly Presence												
				S	F		J	F	M	A	M	J	J	A	S	O	N	D	
638	Plant	Rare plant	Vulnerable Occurrence			-													
646	Wetland	Vernal pool	Vulnerable Occurrence			-													

REPTILES & AMPHIBIANS

Map ID	Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence												Nest	Hatch	Internest	Juveniles	Adults
								J	F	M	A	M	J	J	A	S	O	N	D					
652	Turtle	Rare reptile	Vulnerable Occurrence				-													-	Apr-Jul	Jun-Nov	Jan-Dec	Jan-Dec
653	Amphibian	Eastern spadefoot	Vulnerable Occurrence				-													Apr-Jun	May-Jul	-	Jan-Dec	Jan-Dec

INVERTEBRATES

Map ID	Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
								J	F	M	A	M	J	J	A	S	O	N	D					
666	Crab	Blue crab	Nursery				Common													Jun-Aug	-	Jun-Aug	Jan-Dec	Jan-Dec
	Crab	Horseshoe crab	Nursery				Abundant													May-Jul	May-Jul	-	Jan-Dec	Jan-Dec

MARINE MAMMALS

Map ID	Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence												Mating	Calving	Pupping	Molt
								J	F	M	A	M	J	J	A	S	O	N	D				
727	Whale	Fin whale	Concentration Area				Common													-	-	-	-
735	Pinniped	Gray seal	Haul Out				Med													-	-	-	-
	Pinniped	Harbor seal	Haul Out				High													-	-	-	-

TERRESTRIAL MAMMALS

Map ID	Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence												Mating	Calving	Pupping	Molt
								J	F	M	A	M	J	J	A	S	O	N	D				
745	Small Mammal	New England cottontail	General Distribution				Rare													-	-	-	-
746	Bat	Northern myotis	General Distribution				Rare													-	-	-	-
	Small Mammal	New England cottontail	General Distribution				Rare													-	-	-	-
750	Bat	Northern myotis	General Distribution				Rare													-	-	-	-

WIDESPREAD IN MAPPED AREA (> 10 SQUARE KILOMETERS)


BENTHIC

Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt
							J	F	M	A	M	J	J	A	S	O	N	D				
SAV	Elgrass	High Ecological Value				Potential													-	-	Oct-Nov	-



BIRDS

Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt
							J	F	M	A	M	J	J	A	S	O	N	D				
Alcid	Razorbill	Wintering				Common													-	-	Oct-Nov	-
Diving	Loons	Migration				Common													-	Mar-Jun	Sep-Dec	Jan-Mar
Gull/Tern	Rare tern	General Distribution				Common													-	Apr-May	Jul-Sep	-
	Roseate tern	General Distribution				Common													-	Apr-May	Jul-Sep	-
	American black duck	Wintering				Common													Mar-Apr	Sep-Apr	-	-
	Diving ducks	Wintering				Common													Mar-Apr	Sep-Apr	-	-
	Geese	Wintering				Common													May	Mar-May	Sep-Nov	-
	Sea ducks	Wintering				Abundant													-	Mar-May	Sep-Oct	-


REPTILES & AMPHIBIANS

Subelement	Species	Mapping Qualifier	MA/RI		Monthly Presence												Nest	Hatch	Internest	Juveniles	Adults
			S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N	D				
	Green sea turtle	General Distribution	T/E	T	Regular												-	-	-	May-Nov	May-Nov
	K. ridley sea turtle	General Distribution	E/E	E	Regular												-	-	-	May-Nov	May-Nov
	Leatherback sea turtle	General Distribution	E/E	E	Regular												-	-	-	May-Nov	May-Nov
	Loggerhead sea turtle	General Distribution	T/E	T	Regular												-	-	-	May-Nov	May-Nov

INVERTEBRATES






Subelement	Species	Mapping Qualifier	MA/RI		Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
			S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N	D				
	Longfin squid	Concentration Area			Common												May-Aug	May-Aug	May-Aug	Apr-Nov	Apr-Nov
	Horseshoe crab	Concentration Area			Medium												May-Jul	May-Jul	-	Apr-Oct	Apr-Oct
	Horseshoe crab	Spawning			Abundant												May-Jul	May-Jul	-	May-Jul	May-Jul
	Channeled whelk	Concentration Area			High												Jun-Jul	Aug-Oct	-	May-Oct	May-Oct

MARINE MAMMALS





Subelement	Species	Mapping Qualifier	MA/RI		Concentration	Monthly Presence												Mating	Calving	Pupping	Molt
			S	F		J	F	M	A	M	J	J	A	S	O	N	D				
	Fin whale	General Distribution	E/E	E	Rare												-	-			
	Humpback whale	General Distribution	E/E	E	Common												-	-			
	N.A. right whale	Concentration Area	E/E	E	Common												-	-			
	Sei whale	General Distribution	E/-	E	Rare												-	-			

ALSO PRESENT IN MAPPED AREA (GENERAL DISTRIBUTION)

BIRDS

Subelement	Species	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt
		J	F	M	A	M	J	J	A	S	O	N	D				
	Atlantic puffin													-	Mar	Sep	-
	D. crested cormorant													-	Mar-Apr	Sep-Oct	-
	Gulls													-	Apr-May	Aug-Nov	-
	Northern gannet													-	Apr-May	Oct-Nov	-
	Shearwaters													-	May	Oct	-
	Red-necked phalarope													-	May	Oct	-
	American black duck													Mar-Jul	Sep-Mar	-	-
	Diving ducks													Mar-Apr	Sep-Apr	-	-
	Geese													May	Mar-May	Sep-Nov	-
	Sea ducks													-	Mar-May	Sep-Oct	-

FISH






		Monthly Presence																
Subelement	Species	J	F	M	A	M	J	J	A	S	O	N	D	Spawn	Eggs	Larvae	Juveniles	Adults
	Alewife													-	-	-	Jan-Dec	Jan-Dec
	American eel													-	-	-	Jan-Dec	Jan-Dec
	American shad													-	-	-	Jan-Dec	Jan-Dec
	Atlantic salmon													Sep-Dec	Sep-Mar	Feb-Jul	Jan-Dec	Jan-Dec
	Blueback herring													-	-	-	Jan-Dec	Jan-Dec
	Striped bass													-	-	-	Apr-Nov	Apr-Nov
	Atlantic herring													Aug-Nov	Aug-Nov	Oct-Dec	Jan-Dec	Jan-Dec
	Bay anchovy													Jun-Aug	Jun-Aug	Jun-Sep	Jan-Dec	Jan-Dec
	Black sea bass													Feb-Jul	Feb-Jul	Mar-Jul	Jan-Dec	Jan-Dec
	Bluefish													-	-	Jun-Aug	May-Nov	May-Nov
	Northern kingfish													Jun-Jul	Jun-Jul	Jun-Aug	May-Nov	May-Nov
	Scup													May-Aug	May-Aug	Jun-Aug	May-Oct	May-Oct
	Summer flounder													Aug-Nov	Aug-Nov	Sep-Nov	Apr-Nov	Apr-Nov
	Windowpane													May-Aug	May-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Winter flounder													Jan-May	Jan-May	Feb-May	Jan-Dec	Jan-Dec
	Rainbow smelt													-	-	-	Jan-Dec	Jan-Dec
	American plaice													Feb-Jun	Feb-Jun	Mar-Jul	Jan-Dec	Jan-Dec
	Atlantic cod													Nov-Mar	Nov-Mar	Dec-Mar	Jan-Dec	Jan-Dec
	Atlantic halibut													Apr-Sep	Apr-Sep	Apr-Sep	Jan-Dec	Jan-Dec
	Atlantic tomcod													Dec-Feb	Dec-Mar	Dec-Apr	Dec-Jun	Dec-Jun
	Atlantic wolffish													Mar-Aug	Mar-Aug	Mar-Sep	Jan-Dec	Jan-Dec
	Goosefish													-	-	-	-	Jan-Dec
	Haddock													Feb-Jun	Feb-Jun	Mar-Jun	Jan-Dec	Jan-Dec
	Little skate													Jan-Dec	Jan-Dec	-	Jan-Dec	Jan-Dec
	Longhorn sculpin													Dec-Feb	Dec-Feb	Jan-Jun	Jan-Dec	Jan-Dec
	Ocean pout													Aug-Oct	Aug-Dec	Sep-Feb	Jan-Dec	Jan-Dec
	Pollock													-	-	-	Apr-Oct	Apr-Oct
	Red hake													Jun-Sep	Jun-Sep	Jul-Nov	Jan-Dec	Jan-Dec
	Rock gunnel													Nov-Mar	Nov-Apr	Jan-Jun	Jan-Dec	Jan-Dec
	Searobins													Jun-Sep	Jun-Sep	Jun-Oct	Jan-Dec	Jan-Dec
	Silver hake													Jul-Oct	Jul-Oct	Aug-Oct	Jan-Dec	Jan-Dec
	Tautog													May-Aug	May-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	White hake													Apr-Sep	May-Nov	May-Nov	Jan-Dec	Jan-Dec
	Winter skate													-	-	-	Jan-Dec	Jan-Dec
	Witch flounder													May-Aug	May-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Yellowtail flounder													Mar-Jul	Mar-Jul	Apr-Jul	Jan-Dec	Jan-Dec
	Atlantic mackerel													May-Jul	May-Aug	May-Aug	Mar-Dec	Mar-Dec
	Spiny dogfish													-	-	-	Jan-Dec	Jan-Dec
	Tunas													-	-	-	Jun-Sep	-

REPTILES & AMPHIBIANS




		Monthly Presence																
Subelement	Species	J	F	M	A	M	J	J	A	S	O	N	D	Nest	Hatch	Interest	Juveniles	Adults
	Eastern box turtle													Jun-Jul	Aug-Oct	-	Jan-Dec	Jan-Dec

Massachusetts and Rhode Island: Map 17D

INVERTEBRATES

Subelement	Species	Monthly Presence												Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D				
	Atl. jackknife clam													Apr-May	Apr-May	Jan-Dec	Jan-Dec
	Atlantic surfclam													Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Bay scallop													Jun-Sep	Jun-Sep	Jan-Dec	Jan-Dec
	Blue mussel													May-Nov	May-Nov	Jan-Dec	Jan-Dec
	Eastern oyster													Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Northern quahog													Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Sea scallop													Jul-Oct	Jul-Oct	Jan-Dec	Jan-Dec
	Softshell clam													Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Northern shortfin squid													-	-	Apr-Nov	Apr-Nov
	Atlantic rock crab													May-Oct	Jun-Oct	Jan-Dec	Jan-Dec
	Blue crab													-	Jun-Aug	Jan-Dec	Jan-Dec
	Horseshoe crab													May-Jul	May-Jul	Jan-Dec	Jan-Dec
	Jonah crab													May-Oct	May-Oct	Jan-Dec	Jan-Dec
	American lobster													Aug-Nov	Jan-Dec	Jan-Dec	Jan-Dec
	Db grass shrimp													May-Jul	May-Jul	Jan-Dec	Jan-Dec
	Sevenspine bay shrimp													May-Jul	May-Jul	Jan-Dec	Jan-Dec

MARINE MAMMALS

Subelement	Species	Monthly Presence												Mating	Calving	Pupping	Molt
		J	F	M	A	M	J	J	A	S	O	N	D				
	Atl. wht.-side dolphin													-	-	-	-
	Bottlenose dolphin													-	-	-	-
	Harbor porpoise													-	-	-	-
	Risso's dolphin													-	-	-	-
	Short-beaked common dolphin													-	-	-	-
	Gray seal													Dec-Feb	Dec-Feb	Dec-Feb	Mar-May
	Harbor seal													-	-	-	-
	Harp seal													-	-	-	-
	Hooded seal													-	-	-	-
	Minke whale													-	-	-	-
	Pilot whales													-	-	-	-

For additional information about species locations and extent, reference the underlying GIS data available from response.restoration.noaa.gov

ESI POLYGON HABITAT TYPES

<i>ESI Rank</i>	<i>Habitat Classification</i>	<i>Area (Acres)</i>	<i>Area (Sq. Miles)</i>
10A	Salt and Brackish Water Marshes	387.79	0.61
10B	Freshwater Marshes	9.85	0.02
10C	Swamps	28.40	0.04
10D	Scrub and Shrub Wetlands	33.58	0.05
9A	Sheltered Tidal Flats	6.17	0.01
7	Exposed Tidal Flats	175.32	0.27

ESI SHORELINE HABITAT TYPES

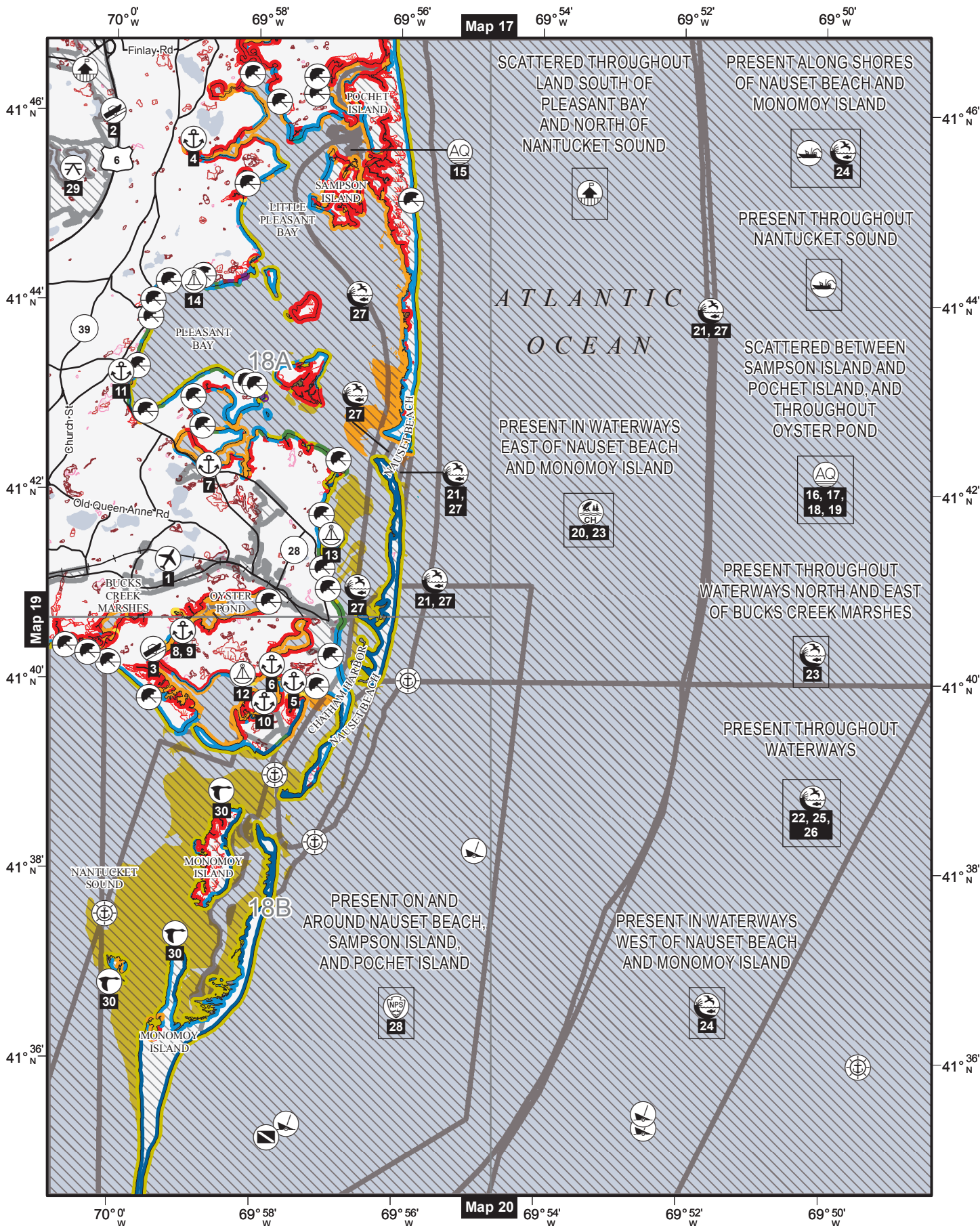
<i>ESI Rank</i>	<i>Shoreline Habitat Classification</i>	<i>Length (Meters)</i>	<i>Length (Miles)</i>	<i>% of ESI Shoreline</i>
10A	Salt and Brackish Water Marshes	25,195.80	15.66	39%
9A	Sheltered Tidal Flats	2,296.61	1.43	4%
9B	Vegetated Low Banks	1,058.65	0.66	2%
8B	Sheltered, Solid Man-Made Structures	333.27	0.21	1%
8C	Sheltered Riprap	28.19	0.02	< 1%
7	Exposed Tidal Flats	20,852.31	12.96	32%
6B	Riprap	1,940.04	1.21	3%
5	Mixed Sand and Gravel Beaches	119.84	0.07	< 1%
4	Coarse Grained Sand Beaches	6,361.61	3.95	10%
3A	Fine to Medium Grained Sand Beaches	6,968.38	4.33	11%

Total ESI Shoreline: 65,154.71 Total ESI Shoreline: 40.49
 Total Shoreline: 41,001.38 Total Shoreline: 25.48

Note: A shoreline segment may include multiple shoreline habitats. If any segments include multiple habitats, the combined length of all habitats may exceed the length of the mapped shoreline, and the percent of ESI shoreline values will sum to greater than 100%

All underlying GIS data can be obtained from response.restoration.noaa.gov





Map 18
Massachusetts and Rhode Island

HUMAN USE RESOURCES

DISPLAYED ON MAP (POINTS)				
Map ID	Type	Name	Contact	Phone
1	AIRPORT	CHATHAM MUNICIPAL AIRPORT	MDFG, OFFICE OF FISHING AND BOATING ACCESS	508-389-7810
2	BOAT RAMP	BAKER POND		
3	BOAT RAMP	BARN HILL BOAT RAMP		
4	MARINA	AREY'S POND BOAT YARD		
5	MARINA	OUTERMOST HARBOR MARINE		
6	MARINA	STAGE HARBOR MARINE		
7	MARINA	RYDERS COVE BOATYARD		
8	MARINA	CHATHAM YACHT BASIN		
9	MARINA	OYSTER RIVER BOAT YARD		
10	MARINA	CHATHAM TOWN DOCK		
11	MARINA	ROUND COVE TOWN DOCK		
12	REPEATED MEASUREMENT SITE	TIDE GAUGE - CHATHAM, STAGE HARBOR		
13	REPEATED MEASUREMENT SITE	TIDE GAUGE - CHATHAM HARBOR, AUNT LYDIAS COVE		
14	REPEATED MEASUREMENT SITE	TIDE GAUGE - PLEASANT BAY		
DISPLAYED ON MAP (POLYGONS)				

Map ID	Type	Name	Contact	Phone
15	AQUACULTURE	BLUE MUSSEL	CHRISTOPHER SCHILLACI, MA DMF, N. BEDFORD, MA	508-990-2860
16	AQUACULTURE	OYSTER	CHRISTOPHER SCHILLACI, MA DMF, N. BEDFORD, MA	508-990-2860
17	AQUACULTURE	PETIT OYSTER	CHRISTOPHER SCHILLACI, MA DMF, N. BEDFORD, MA	508-990-2860
18	AQUACULTURE	QUAHOG	CHRISTOPHER SCHILLACI, MA DMF, N. BEDFORD, MA	508-990-2860
19	AQUACULTURE	SOFT CLAM	CHRISTOPHER SCHILLACI, MA DMF, N. BEDFORD, MA	508-990-2860
20	CRITICAL HABITAT	CRITICAL HABITAT: NORTH ATLANTIC RIGHT WHALE		
21	MANAGEMENT AREA	NARW SMA - NE U.S. OFF RACE POINT		
22	MANAGEMENT AREA	OUTER CAPE LOBSTER MANAGEMENT AREA		
23	MANAGEMENT AREA	GEORGES BANK SEASONAL CLOSURE AREA		
24	MANAGEMENT AREA	NORTHERN INSHORE STATE TRAP/POT WATERS AREA		
25	MANAGEMENT AREA	NORTHERN NEARSHORE TRAP/POT WATERS AREA		
26	MANAGEMENT AREA	OTHER NORTHEAST GILLNET WATERS AREA		
27	MANAGEMENT AREA	SEASONAL MANAGEMENT AREA WEST		
28	NATIONAL PARK	CAPE COD NATIONAL SEASHORE		
29	REGIONAL OR STATE PARK	NICKERSON STATE PARK		
30	WILDLIFE REFUGE	MONOMOY NATIONAL WILDLIFE REFUGE		
		EOEEA, DEPT. OF CONSERVATION AND RECREATION		
		MATTHEW HILLMANN, USFWS, E. MA NWR COMPLEX		
		617-626-1250		
		978-579-4001		

ALSO PRESENT IN MAPPED AREA (POINTS)			
Type	Name	Contact	Phone
COAST GUARD	STA CHATHAM	USCG	508-945-3830
ESSENTIAL HABITAT	FAIRY SHRIMP -VERNAL POOL	MA DFW NHESP, WESTBOROUGH, MA	508-389-6375
ESSENTIAL HABITAT	OBLIGATE SPECIES -VERNAL POOL	MA DFW NHESP, WESTBOROUGH, MA	508-389-6375
ESSENTIAL HABITAT	OBLIGATE SPECIES, FACULTATIVE SPECIES -VERNAL POOL	MA DFW NHESP, WESTBOROUGH, MA	508-389-6375
ESSENTIAL HABITAT	OBLIGATE SPECIES, FAIRY SHRIMP -VERNAL POOL	MA DFW NHESP, WESTBOROUGH, MA	508-389-6375

ALSO PRESENT IN MAPPED AREA (POLYGONS)

Type	Name	Contact	Phone
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: AMERICAN PLAICE	NORTHEAST FISHERIES MANAGEMENT COUNCIL	
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: ATLANTIC COD	NORTHEAST FISHERIES MANAGEMENT COUNCIL	
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: ATLANTIC HALIBUT	NORTHEAST FISHERIES MANAGEMENT COUNCIL	
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: ATLANTIC HERRING	NORTHEAST FISHERIES MANAGEMENT COUNCIL	
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: ATLANTIC WOLFFISH	NORTHEAST FISHERIES MANAGEMENT COUNCIL	
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: HADDOCK	NORTHEAST FISHERIES MANAGEMENT COUNCIL	
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: LITTLE SKATE	NORTHEAST FISHERIES MANAGEMENT COUNCIL	
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: MONKFISH	NORTHEAST FISHERIES MANAGEMENT COUNCIL	
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: OCEAN POUT	NORTHEAST FISHERIES MANAGEMENT COUNCIL	
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: POLLOCK	NORTHEAST FISHERIES MANAGEMENT COUNCIL	
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: RED HAKE	NORTHEAST FISHERIES MANAGEMENT COUNCIL	
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: REDFISH	NORTHEAST FISHERIES MANAGEMENT COUNCIL	
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: SEA SCALLOP	NORTHEAST FISHERIES MANAGEMENT COUNCIL	
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: SILVER HAKE	NORTHEAST FISHERIES MANAGEMENT COUNCIL	
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: THORNY SKATE	NORTHEAST FISHERIES MANAGEMENT COUNCIL	
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: WHITE HAKE	NORTHEAST FISHERIES MANAGEMENT COUNCIL	
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: WINDOW PANE FLOUNDER	NORTHEAST FISHERIES MANAGEMENT COUNCIL	
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: WINTER FLOUNDER	NORTHEAST FISHERIES MANAGEMENT COUNCIL	
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: WINTER SKATE	NORTHEAST FISHERIES MANAGEMENT COUNCIL	
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: WITCH FLOUNDER	NORTHEAST FISHERIES MANAGEMENT COUNCIL	
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: YELLOWTAIL FLOUNDER	NORTHEAST FISHERIES MANAGEMENT COUNCIL	
MANAGEMENT AREA	PRIORITY HABITAT	MDFW NHESP	508-389-6380

JURISDICTIONS

COUNTY: BARNSTABLE
COAST GUARD: DISTRICT 1, SECTOR SE NEW ENGLAND
USACE: NORTH ATLANTIC DIVISION, NEW ENGLAND DISTRICT

FEMA: REGION I
EPA: REGION 1

SHORELINE RESOURCES

ESI POLYGON HABITAT TYPES

<i>ESI Rank</i>	<i>Habitat Classification</i>	<i>Area (Acres)</i>	<i>Area (Sq. Miles)</i>
10A	Salt and Brackish Water Marshes	1,294.17	2.02
10B	Freshwater Marshes	78.29	0.12
10C	Swamps	175.69	0.27
10D	Scrub and Shrub Wetlands	256.50	0.40
9A	Sheltered Tidal Flats	703.64	1.10
7	Exposed Tidal Flats	3,178.85	4.97
5	Mixed Sand and Gravel Beaches	0.16	0.00



ESI SHORELINE HABITAT TYPES

<i>ESI Rank</i>	<i>Shoreline Habitat Classification</i>	<i>Length (Meters)</i>	<i>Length (Miles)</i>	<i>% of ESI Shoreline</i>
10A	Salt and Brackish Water Marshes	108,629.17	67.50	25%
10B	Freshwater Marshes	383.57	0.24	< 1%
10D	Scrub and Shrub Wetlands	278.14	0.17	< 1%
9A	Sheltered Tidal Flats	79,272.95	49.26	18%
9B	Vegetated Low Banks	10,063.11	6.25	2%
8B	Sheltered, Solid Man-Made Structures	2,811.64	1.75	1%
8C	Sheltered Riprap	539.39	0.34	< 1%
7	Exposed Tidal Flats	103,966.50	64.60	24%
6B	Riprap	5,813.53	3.61	1%
5	Mixed Sand and Gravel Beaches	360.62	0.22	< 1%
4	Coarse Grained Sand Beaches	78,320.66	48.67	18%
3A	Fine to Medium Grained Sand Beaches	40,405.54	25.11	9%
1B	Exposed, Solid Man-Made Structures	922.49	0.57	< 1%

Total ESI Shoreline: 431,767.31 Total ESI Shoreline: 268.29
Total Shoreline: 229,118.87 Total Shoreline: 142.37

Note: A shoreline segment may include multiple shoreline habitats. If any segments include multiple habitats, the combined length of all habitats may exceed the length of the mapped shoreline, and the percent of ESI shoreline values will sum to greater than 100%

All underlying GIS data can be obtained from response.restoration.noaa.gov



Map 18A
Massachusetts and Rhode Island

BIOLOGICAL RESOURCES

Note: An asterisk (*) indicates that life stage occurs in this range but not in all months included

DISPLAYED ON MAP

BENTHIC

Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence											
						J	F	M	A	M	J	J	A	S	O	N	D



BIRDS

Map ID	Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N	D	Nest	Mig.(S)	Mig.(F)	Molt
21	Wading	Marsh birds	General Distribution		C/C		Common													-	Mar-May	Aug-Nov	Jul-Aug
72	Diving	Loons	General Distribution		C/-		Common													-	Mar-Jun	Sep-Dec	Jan-Mar
153	Gull/Tern	Rare tern	Nesting		C/-		Rare													May-Aug	-	-	-
197	Passerine	Marsh passerines	General Distribution		-C		Common													Apr-Aug	Apr-May	Aug-Nov	Sep-Oct
	Passerine	Saltmarsh sparrow	Nesting		-C		Common													May-Jul	May	-	-
	Wading	Egrets	General Distribution		-C		Common													Apr-Jul	Mar-May	Aug-Sep	-
	Wading	Marsh birds	General Distribution		C/C		Common													-	Mar-May	Aug-Nov	Jul-Aug
206	Passerine	Marsh passerines	General Distribution		-C		Common													Apr-Aug	Apr-May	Aug-Nov	Sep-Oct
	Wading	Egrets	Migration		-C		Common													Apr-Jul	Mar-May	Aug-Sep	-
207	Passerine	Marsh passerines	General Distribution		-C		Common													Apr-Aug	Apr-May	Aug-Nov	Sep-Oct
	Wading	Egrets	Migration		-C		Common													Apr-Jul	Mar-May	Aug-Sep	-
	Wading	Marsh birds	General Distribution		C/C		Common													-	Mar-May	Aug-Nov	Jul-Aug
209	Passerine	Marsh passerines	General Distribution		-C		Common													Apr-Aug	Apr-May	Aug-Nov	Sep-Oct
	Wading	Egrets	General Distribution		-C		Common													Apr-Jul	Mar-May	Aug-Sep	-
	Wading	Marsh birds	General Distribution		C/C		Common													-	Mar-May	Aug-Nov	Jul-Aug
315	Passerine	Marsh passerines	General Distribution		-C		Common													Apr-Aug	Apr-May	Aug-Nov	Sep-Oct
	Passerine	Saltmarsh sparrow	Nesting		-C		Common													May-Jul	May	-	-
	Wading	Egrets	Migration		-C		Common													Apr-Jul	Mar-May	Aug-Sep	-
	Wading	Marsh birds	General Distribution		C/C		Common													-	Mar-May	Aug-Nov	Jul-Aug
	Waterfowl	Waterfowl	General Distribution		C/C		Common													May-Jul	Apr-May	Aug-Oct	Aug-Sep
321	Passerine	Marsh passerines	General Distribution		-C		Common													Apr-Aug	Apr-May	Aug-Nov	Sep-Oct
	Passerine	Saltmarsh sparrow	Nesting		-C		Common													May-Jul	May	-	-
	Wading	Egrets	General Distribution		-C		Common													Apr-Jul	Mar-May	Aug-Sep	-
	Wading	Marsh birds	General Distribution		C/C		Common													-	Mar-May	Aug-Nov	Jul-Aug
	Wading	Marsh birds	General Distribution		C/C		Common													-	Mar-May	Aug-Nov	Jul-Aug
	Waterfowl	Waterfowl	General Distribution		C/C		Common													May-Jul	Apr-May	Aug-Oct	Aug-Sep
325	Passerine	Marsh passerines	General Distribution		-C		Common													Apr-Aug	Apr-May	Aug-Nov	Sep-Oct
	Wading	Egrets	Migration		-C		Common													Apr-Jul	Mar-May	Aug-Sep	-
	Wading	Marsh birds	General Distribution		C/C		Common													-	Mar-May	Aug-Nov	Jul-Aug
	Waterfowl	Waterfowl	General Distribution		C/C		Common													May-Jul	Apr-May	Aug-Oct	Aug-Sep
329	Passerine	Marsh passerines	General Distribution		-C		Common													Apr-Aug	Apr-May	Aug-Nov	Sep-Oct
	Wading	Egrets	General Distribution		-C		Common													Apr-Jul	Mar-May	Aug-Sep	-
	Wading	Marsh birds	General Distribution		C/C		Common													-	Mar-May	Aug-Nov	Jul-Aug

BIRDS (continued)

Map ID	Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Juveniles	Adults
								J	F	M	A	M	J	J	A	S	O	N	D					
336	Waterfowl	Waterfowl	General Distribution	C/C			Common													May-Jul	Apr-May	Aug-Oct	Aug-Sep	-
	Shorebird	American oystercatcher	Nesting	-/C			Rare													May-Aug	May	-	-	-
488	Waterfowl	Waterfowl	General Distribution	C/C			Common													May-Jul	Apr-May	Aug-Oct	Aug-Sep	-
491	Wading	Marsh birds	General Distribution	C/C			Common													-	Mar-May	Aug-Nov	Jul-Aug	-
	Waterfowl	Waterfowl	General Distribution	C/C			Common													May-Jul	Apr-May	Aug-Oct	Aug-Sep	-
501	Gull/Tern	Rare tern	Migration	C/-			Common													May-Aug	Apr-May	Jul-Sep	-	-
	Gull/Tern	Roseate tern	Migration	E/-			Common													-	Apr-May	Jul-Sep	-	-

HABITATS & RARE PLANTS

Map ID	Subelement	Species	Mapping Qualifier	MA/RI	Monthly Presence														
					S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N	D
646	Wetland	Vernal pool	Vulnerable Occurrence				-												

REPTILES & AMPHIBIANS

Map ID	Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence												Nest	Hatch	Internest	Juveniles	Adults
								J	F	M	A	M	J	J	A	S	O	N	D					
652	Turtle	Rare reptile	Vulnerable Occurrence				-													-	Apr-Jul	Jun-Nov	Jan-Dec	Jan-Dec

INVERTEBRATES





Map ID	Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
								J	F	M	A	M	J	J	A	S	O	N	D					
684	Gastropod	Channeled whelk	Concentration Area				Med-Low													Jun-Jul	Aug-Oct	-	May-Oct	May-Oct
	Gastropod	Knobbed whelk	Concentration Area				Medium													Jun-Jul	Aug-Oct	-	May-Oct	May-Oct

MARINE MAMMALS

Map ID	Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence												Mating	Calving	Pupping	Molt
								J	F	M	A	M	J	J	A	S	O	N	D				
720	Whale	Humpback whale	General Distribution	E/E			Common													-	-	-	-
737	Pinniped	Gray seal	Haul Out				High													-	-	-	-
	Pinniped	Harbor seal	Haul Out				High													-	-	-	-

WIDESPREAD IN MAPPED AREA (> 10 SQUARE KILOMETERS)

BIRDS

Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt
							J	F	M	A	M	J	J	A	S	O	N	D				
 Alcids	Razorbill	Wintering				Common													-	-	Oct-Nov	-
 Diving	Great cormorant	Wintering				Common													-	Feb-Mar	Nov	-
	Loons	Migration				Common													-	Mar-Jun	Sep-Dec	Jan-Mar
 Gull/Tern	Rare tern	General Distribution	C/-			Common													-	Apr-May	Jul-Sep	-
	Roseate tern	General Distribution	E/-			Common													-	Apr-May	Jul-Sep	-
 Shorebird	Piping plover	Nesting	T/E			Common													Mar-Aug	Mar-Apr	Jul-Oct	-
	Purple sandpiper	Wintering				Common													-	Mar	Oct	-
	Red knot	Migration				Abundant													-	May-Jun	Jul-Sep	-

BIRDS (continued)

Map ID	Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence												Molt
								J	F	M	A	M	J	J	A	S	O	N	D	
		Shorebirds	Migration				Common													
		Willet	Nesting			-IC	Common													
	Wading	Wading birds	General Distribution			-IC	Common													
	Waterfowl	American black duck	Wintering				Common													
		Diving ducks	Wintering				Common													
		Geese	Wintering				Common													
		Harlequin duck	Wintering				Rare													
		Sea ducks	Wintering				Abundant													

FISH

Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence												Eggs	Larvae	Juveniles	Adults
							J	F	M	A	M	J	J	A	S	O	N	D				
	Diadromous	Alewife	Spawning Area			-																
		American eel	Migration			-																
		Blueback herring	Spawning Area			-																

REPTILES & AMPHIBIANS

Subelement	Species	Mapping Qualifier	MA/RI	S	F	T	Concentration	Monthly Presence												Hatch	Interest	Juveniles	Adults
								J	F	M	A	M	J	J	A	S	O	N	D				
	Turtle	Green sea turtle	General Distribution			T/E	Regular																
		K. ridley sea turtle	General Distribution			E/E	Regular																
		Leatherback sea turtle	General Distribution			E/E	Regular																
		Loggerhead sea turtle	General Distribution			T/E	Regular																

INVERTEBRATES

Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence												Eggs	Larvae	Juveniles	Adults
							J	F	M	A	M	J	J	A	S	O	N	D				
	Crab	Blue crab	Nursery			Common																
		Horseshoe crab	Nursery			Abundant																







MARINE MAMMALS

Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence												Calving	Pupping	Molt
							J	F	M	A	M	J	J	A	S	O	N	D			
	Whale	Fin whale	General Distribution			E/E															
		Humpback whale	Concentration Area			E/E															
		N.A. right whale	Concentration Area			E/E															
		Sei whale	General Distribution			E/-															





TERRESTRIAL MAMMALS

Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence											
							J	F	M	A	M	J	J	A	S	O	N	D
	Small Mammal	New England cottontail	General Distribution			-IC												

BIRDS

Subelement	Species	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt
		J	F	M	A	M	J	J	A	S	O	N	D				
 Alcid	Atlantic puffin													-	Mar	Sep	-
 Diving	D. crested cormorant													Apr-Jun	-	-	-
	D. crested cormorant													-	Mar-Apr	Sep-Oct	-
 Gull/Tern	Gulls													-	Apr-May	Aug-Nov	-
 Pelagic	Northern gannet													-	Apr-May	Oct-Nov	-
	Shearwaters													-	May	Oct	-
 Shorebird	Red-necked phalarope													-	May	Oct	-
	Shorebirds													Apr-Aug	Mar-Dec	-	Aug
 Waterfowl	American black duck													Mar-Jul	Sep-Mar	-	-
	Diving ducks													Mar-Apr	Sep-Apr	-	-
	Geese													May	Mar-May	Sep-Nov	-
	Sea ducks													-	Mar-May	Sep-Oct	-

FISH

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
 Diadromous	Alewife													-	-	-	Jan-Dec	Jan-Dec
	American eel													-	-	-	Jan-Dec	Jan-Dec
	American shad													-	-	-	Jan-Dec	Jan-Dec
	Atlantic salmon													Sep-Dec	Sep-Mar	Feb-Jul	Jan-Dec	Jan-Dec
	Blueback herring													-	-	-	Jan-Dec	Jan-Dec
	Striped bass													-	-	-	Apr-Nov	Apr-Nov
 Estuarine Nursery	Atlantic herring													Aug-Nov	Aug-Nov	Oct-Dec	Jan-Dec	Jan-Dec
	Bay anchovy													Jun-Aug	Jun-Aug	Jun-Sep	Jan-Dec	Jan-Dec
	Black sea bass													Feb-Jul	Feb-Jul	Mar-Jul	Jan-Dec	Jan-Dec
	Black sea bass													Feb-Jul	Feb-Jul	Mar-Jul	Feb-Jul	Feb-Jul
	Black sea bass													-	-	-	Aug-Jan	Aug-Jan
	Bluefish													-	-	Jun-Aug	May-Nov	May-Nov
	Northern kingfish													Jun-Jul	Jun-Jul	Jun-Aug	May-Nov	May-Nov
	Scup													May-Aug	May-Aug	Jun-Aug	May-Oct	May-Oct
	Summer flounder													Aug-Nov	Aug-Nov	Sep-Nov	Apr-Nov	Apr-Nov
	Winduppane													May-Aug	May-Aug	Jun-Aug	Jan-Dec	Jan-Dec
 Estuarine Resident	Winter flounder													Jan-May	Jan-May	Feb-May	Jan-Dec	Jan-Dec
	Atlantic silverside													May-Aug	May-Aug	May-Sep	Jan-Dec	Jan-Dec
	Fourspine stickleback													May-Jul	May-Jul	May-Aug	Jan-Dec	Jan-Dec
	Mummichog													May-Aug	Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
 Marine Benthic	American plaice													Feb-Jun	Feb-Jun	Mar-Jul	Jan-Dec	Jan-Dec
	Atlantic cod													Nov-Mar	Nov-Mar	Dec-Mar	Jan-Dec	Jan-Dec
	Atlantic cod													-	-	-	Apr-Aug	Apr-Aug
	Atlantic halibut													Apr-Sep	Apr-Sep	Apr-Sep	Jan-Dec	Jan-Dec
	Atlantic tomcod													Dec-Feb	Dec-Mar	Dec-Apr	Dec-Jun	Dec-Jun
	Atlantic wolffish													Mar-Aug	Mar-Aug	Mar-Sep	Jan-Dec	Jan-Dec




FISH (continued)

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	Goosefish													-	-	-	-	Jan-Jun
	Goosefish													-	-	-	-	Jan-Dec
	Haddock													-	-	-	Aug-Jan	Aug-Jan
	Haddock													Feb-Jun	Feb-Jun	Mar-Jun	Feb-Jul	Feb-Jul
	Little skate													Feb-Jun	Feb-Jun	Mar-Jun	Jan-Dec	Jan-Dec
	Longhorn sculpin													Jan-Dec	Jan-Dec	-	Jan-Dec	Jan-Dec
	Ocean pout													Dec-Feb	Dec-Feb	Jan-Jun	Jan-Dec	Jan-Dec
	Pollock													Aug-Oct	Aug-Dec	Sep-Feb	Jan-Dec	Jan-Dec
	Red hake													-	-	-	Apr-Oct	Apr-Oct
	Red hake													-	-	-	Dec-May	Dec-May
	Red hake													Jun-Sep	Jun-Sep	Jul-Nov	Jan-Dec	Jan-Dec
	Rock gunnel													Jun-Sep	Jun-Sep	Jul-Nov	Jun-Nov	Jun-Nov
	Searobins													Nov-Mar	Nov-Apr	Jan-Jun	Jan-Dec	Jan-Dec
	Silver hake													Jun-Sep	Jun-Sep	Jun-Oct	Jan-Dec	Jan-Dec
	Silver hake													-	-	-	Jan-Jun	Jan-Jun
	Silver hake													Jul-Oct	Jul-Oct	Aug-Oct	Jan-Dec	Jan-Dec
	Tautog													Jul-Oct	Jul-Oct	Aug-Oct	Jul-Dec	Jul-Dec
	White hake													May-Aug	May-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Winter skate													Apr-Sep	May-Nov	May-Nov	Jan-Dec	Jan-Dec
	Witch flounder													-	-	-	Jan-Dec	Jan-Dec
	Yellowtail flounder													May-Aug	May-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Atlantic mackerel													May-Aug	May-Aug	May-Aug	Mar-Dec	Mar-Dec
	Spiny dogfish													May-Jul	May-Aug	May-Aug	Jan-Dec	Jan-Dec
	Tunas													-	-	-	Jan-Dec	Jan-Dec



REPTILES & AMPHIBIANS

Subelement	Species	Monthly Presence												Nest	Hatch	Interest	Juveniles	Adults
Turtle	Eastern box turtle	J	F	M	A	M	J	J	A	S	O	N	D	Jun-Jul	Aug-Oct	-	Jan-Dec	Jan-Dec




INVERTEBRATES

Subelement		Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
	Bivalve	Atl. jackknife clam													Apr-May	Apr-May	Apr-May	Jan-Dec	Jan-Dec
		Bay scallop													Jun-Sep	Jun-Sep	Jun-Sep	Jan-Dec	Jan-Dec
		Blue mussel													May-Nov	May-Nov	May-Nov	Jan-Dec	Jan-Dec
		Eastern oyster													Jun-Aug	Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Cephalopod	Northern quahog													Jun-Aug	Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
		Sea scallop													Jul-Oct	Jul-Oct	Jul-Oct	Jan-Dec	Jan-Dec
		Softshell clam													Jun-Aug	Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
		Longfin squid													May-Aug	May-Aug	May-Aug	Apr-Nov	Apr-Nov
	Crab	Atlantic rock crab												May-Oct	Jun-Oct	Jun-Oct	Jun-Oct	Jan-Dec	Jan-Dec
		Blue crab												-		Jun-Aug	Jun-Aug	Jun-Aug	Jan-Dec

INVERTEBRATES (continued)

Subelement	Species	Monthly Presence												Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D				
Lobster 	Horseshoe crab													May-Jul	-	Jan-Dec	Jan-Dec
	Jonah crab													May-Oct	May-Oct	Jan-Dec	Jan-Dec
Shrimp 	American lobster													Aug-Nov	Jun-Oct	Jan-Dec	Jan-Dec
	Db grass shrimp													May-Jul	May-Jul	Jan-Dec	Jan-Dec
	Northern shrimp													-	Jan-Dec	Jan-Dec	Dec-Apr
	Sevenspine bay shrimp													May-Jul	May-Jul	Jan-Dec	Jan-Dec

MARINE MAMMALS

Subelement	Species	Monthly Presence												Mating	Calving	Pupping	Molt
		J	F	M	A	M	J	J	A	S	O	N	D				
Dolphin 	Atl. wht.-side dolphin													-	-	-	-
	Bottlenose dolphin													-	-	-	-
	Harbor porpoise													-	-	-	-
	Risso's dolphin													-	-	-	-
Pinniped 	Short-beaked common dolphin													-	-	-	-
	Gray seal													Dec-Feb	Dec-Feb	Dec-Feb	Mar-May
	Harbor seal													-	-	-	-
	Harp seal													-	-	-	-
Whale 	Hooded seal													-	-	-	-
	Minke whale													-	-	-	-
	Pilot whales													-	-	-	-

For additional information about species locations and extent, reference the underlying GIS data available from response.restoration.noaa.gov

SHORELINE RESOURCES

ESI POLYGON HABITAT TYPES

ESI Rank	Habitat Classification	Area (Acres)	Area (Sq. Miles)
10A	Salt and Brackish Water Marshes	855.19	1.34
10B	Freshwater Marshes	70.27	0.11
10C	Swamps	125.02	0.20
10D	Scrub and Shrub Wetlands	215.81	0.34
9A	Sheltered Tidal Flats	491.51	0.77
7	Exposed Tidal Flats	378.98	0.59
5	Mixed Sand and Gravel Beaches	0.16	0.00

ESI SHORELINE HABITAT TYPES

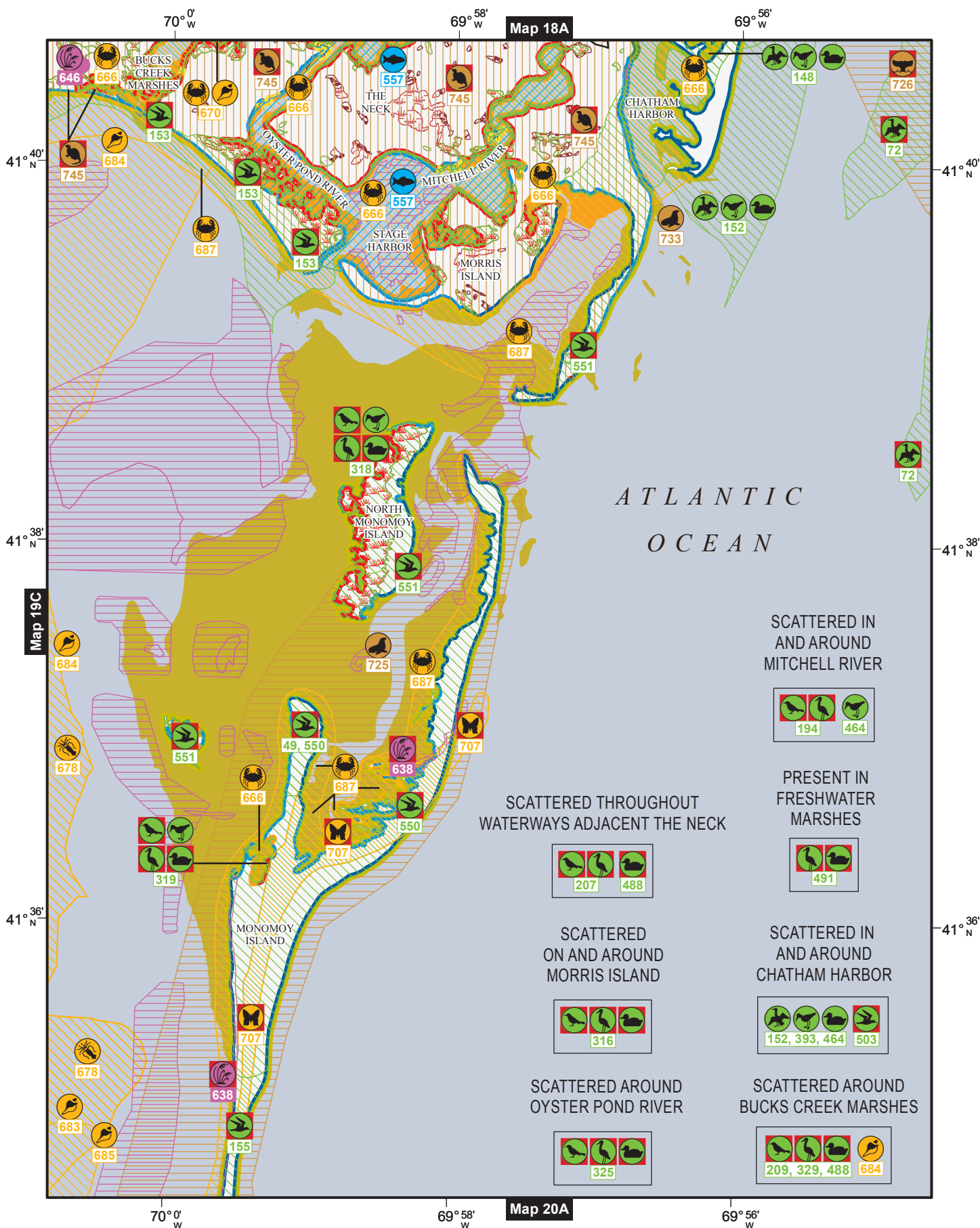
ESI Rank	Shoreline Habitat Classification	Length (Meters)	Length (Miles)	% of ESI Shoreline
10A	Salt and Brackish Water Marshes	72,258.39	44.90	31%
10B	Freshwater Marshes	383.57	0.24	< 1%
10D	Scrub and Shrub Wetlands	198.77	0.12	< 1%
9A	Sheltered Tidal Flats	47,653.29	29.61	20%
9B	Vegetated Low Banks	7,558.07	4.70	3%
8B	Sheltered, Solid Man-Made Structures	841.58	0.52	< 1%
8C	Sheltered Riprap	140.10	0.09	< 1%
7	Exposed Tidal Flats	42,795.43	26.59	18%
6B	Riprap	5,075.08	3.15	2%
5	Mixed Sand and Gravel Beaches	342.54	0.21	< 1%
4	Coarse Grained Sand Beaches	46,549.07	28.92	20%
3A	Fine to Medium Grained Sand Beaches	9,994.56	6.21	4%
1B	Exposed, Solid Man-Made Structures	922.49	0.57	< 1%

Total ESI Shoreline: 234,712.96 Total ESI Shoreline: 145.84
 Total Shoreline: 128,325.01 Total Shoreline: 79.74

Note: A shoreline segment may include multiple shoreline habitats. If any segments include multiple habitats, the combined length of all habitats may exceed the length of the mapped shoreline, and the percent of ESI shoreline values will sum to greater than 100%

All underlying GIS data can be obtained from response.restoration.noaa.gov

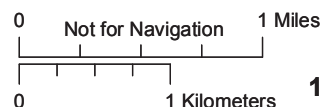




Map 18B
Mass. / Rhode Island



SEE BACK OF MAP
for details about mapped species and
other species that occur in mapped area.
Data Published: November 2016



1:50,000



Map 18B
Massachusetts and Rhode Island

BIOLOGICAL RESOURCES

Note: An asterisk (*) indicates that life stage occurs in this range but not in all months included

DISPLAYED ON MAP

BENTHIC

Subelement	Species	Mapping Qualifier	MA/RI S F	Concentration	Monthly Presence											
					J	F	M	A	M	J	J	A	S	O	N	D
SAV	Eelgrass	High Ecological Value		Potential												
SAV	Eelgrass	High Ecological Value		Present												
SAV	Rare aquatic/wetland plant	High Ecological Value		Present												

BIRDS

Map ID	Subelement	Species	Mapping Qualifier	MA/RI S F E	Concentration	Monthly Presence												Nest	Mig. (S)	Mig. (F)	Molt
						J	F	M	A	M	J	J	A	S	O	N	D				
49	Gull/Tern	Roseate tern	Nesting	E/-	Rare													May-Aug	Apr-May	Jul-Sep	-
72	Diving	Loons	General Distribution	C/-	Common													-	Mar-Jun	Sep-Dec	Jan-Mar
148	Diving	Great cormorant	Wintering		Common													-	Feb-Mar	Nov	-
	Shorebird	Purple sandpiper	Wintering		Common													-	Mar	Oct	-
	Waterfowl	American black duck	Wintering		Common													Mar-Apr	Sep-Apr	-	-
	Waterfowl	Diving ducks	Wintering		Common													Mar-Apr	Sep-Apr	-	-
	Waterfowl	Geese	Wintering		Common													May	Mar-May	Sep-Nov	-
	Waterfowl	Harlequin duck	Wintering		Rare													-	Mar-Apr	Nov	-
152	Diving	Great cormorant	Wintering		Common													-	Feb-Mar	Nov	-
	Shorebird	Purple sandpiper	Wintering		Common													-	Mar	Oct	-
	Waterfowl	Harlequin duck	Wintering		Rare													-	Mar-Apr	Nov	-
153	Gull/Tern	Rare tern	Nesting	C/-	Rare													May-Aug	-	-	-
155	Gull/Tern	Laughing gull	Nesting		Common													May-Jul	Apr	Oct-Nov	-
	Gull/Tern	Rare tern	Nesting		Rare													May-Aug	-	-	-
194	Passerine	Marsh passerines	General Distribution	-C	Common													Apr-Aug	Apr-May	Aug-Nov	Sep-Oct
	Passerine	Saltmarsh sparrow	Nesting	-C	Common													May-Jul	May	-	-
	Passerine	Seaside sparrow	Nesting		Rare													May-Aug	May	Aug	-
	Wading	Egrets	Migration	-C	Common													Apr-Jul	Mar-May	Aug-Sep	-
	Wading	Marsh birds	General Distribution	C/C	Common													-	Mar-May	Aug-Nov	Jul-Aug
207	Passerine	Marsh passerines	General Distribution	-C	Common													Apr-Aug	Apr-May	Aug-Nov	Sep-Oct
	Wading	Egrets	Migration	-C	Common													Apr-Jul	Mar-May	Aug-Sep	-
	Wading	Marsh birds	General Distribution	C/C	Common													-	Mar-May	Aug-Nov	Jul-Aug
209	Passerine	Marsh passerines	General Distribution	-C	Common													Apr-Aug	Apr-May	Aug-Nov	Sep-Oct
	Wading	Egrets	General Distribution	-C	Common													Apr-Jul	Mar-May	Aug-Sep	-
	Wading	Marsh birds	General Distribution	C/C	Common													-	Mar-May	Aug-Nov	Jul-Aug
316	Passerine	Marsh passerines	General Distribution	-C	Common													Apr-Aug	Apr-May	Aug-Nov	Sep-Oct
	Passerine	Saltmarsh sparrow	Nesting	-C	Common													May-Jul	May	-	-
	Passerine	Seaside sparrow	Nesting		Rare													May-Aug	May	Aug	-
	Wading	Egrets	Migration	-C	Common													Apr-Jul	Mar-May	Aug-Sep	-
	Wading	Marsh birds	General Distribution	C/C	Common													-	Mar-May	Aug-Nov	Jul-Aug

BIRDS (continued)

Map ID	Subelement	Species	Mapping Qualifier	MA/RI		Concentration	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt	
				S	F		J	F	M	A	M	J	J	A	S	O	N	D					
318	Waterfowl	Waterfowl	General Distribution	C/C		Common													May-Jul	Apr-May	Aug-Oct	Aug-Sep	-
	Passerine	Marsh passerines	General Distribution	-C		Common													Apr-Aug	Apr-May	Aug-Nov	Sep-Oct	-
	Passerine	Saltmarsh sparrow	Nesting	-C		Common													May-Jul	May	-	-	-
	Passerine	Seaside sparrow	Nesting			Rare													May-Aug	May	Aug	-	-
	Shorebird	Hudsonian godwit	Migration			Rare													-	-	Jul-Aug	-	-
319	Wading	Egrets	Nesting	-C		Common													Apr-Jul	Mar-May	Aug-Sep	-	-
	Wading	Marsh birds	General Distribution	C/C		Common													-	Mar-May	Aug-Nov	Jul-Aug	-
	Waterfowl	Waterfowl	General Distribution	C/C		Common													May-Jul	Apr-May	Aug-Oct	Aug-Sep	-
	Passerine	Marsh passerines	General Distribution	-C		Common													Apr-Aug	Apr-May	Aug-Nov	Sep-Oct	-
	Passerine	Saltmarsh sparrow	Nesting	-C		Common													May-Jul	May	-	-	-
325	Shorebird	Hudsonian godwit	Migration			Rare													-	-	Jul-Aug	-	-
	Wading	Egrets	Nesting	-C		Common													Apr-Jul	Mar-May	Aug-Sep	-	-
	Wading	Marsh birds	General Distribution	C/C		Common													-	Mar-May	Aug-Nov	Jul-Aug	-
	Waterfowl	Waterfowl	General Distribution	C/C		Common													May-Jul	Apr-May	Aug-Oct	Aug-Sep	-
	Passerine	Marsh passerines	General Distribution	-C		Common													Apr-Aug	Apr-May	Aug-Nov	Sep-Oct	-
329	Wading	Egrets	General Distribution	-C		Common													Apr-Jul	Mar-May	Aug-Sep	-	-
	Wading	Marsh birds	General Distribution	C/C		Common													Apr-Jul	Mar-May	Aug-Nov	Jul-Aug	-
	Waterfowl	Waterfowl	General Distribution	C/C		Common													May-Jul	Apr-May	Aug-Oct	Aug-Sep	-
	Passerine	Marsh passerines	General Distribution	-C		Common													Apr-Aug	Apr-May	Aug-Nov	Sep-Oct	-
	Wading	Egrets	General Distribution	-C		Common													Apr-Jul	Mar-May	Aug-Sep	-	-
393	Wading	Marsh birds	General Distribution	C/C		Common													-	Mar-May	Aug-Nov	Jul-Aug	-
	Waterfowl	Waterfowl	General Distribution	C/C		Common													May-Jul	Apr-May	Aug-Oct	Aug-Sep	-
	Waterfowl	American black duck	Wintering			Common													Mar-Apr	Sep-Apr	-	-	-
	Waterfowl	Diving ducks	Wintering			Common													Mar-Apr	Sep-Apr	-	-	-
	Waterfowl	Geese	Wintering			Common													May	Mar-May	Sep-Nov	-	-
464	Shorebird	Shorebirds	Migration			Common													-	Mar-Jun	Jul-Nov	Aug	-
488	Waterfowl	Waterfowl	General Distribution	C/C		Common													May-Jul	Apr-May	Aug-Oct	Aug-Sep	-
491	Wading	Marsh birds	General Distribution	C/C		Common													-	Mar-May	Aug-Nov	Jul-Aug	-
503	Waterfowl	Waterfowl	General Distribution	C/C		Common													May-Jul	Apr-May	Aug-Oct	Aug-Sep	-
503	Gull/Tern	Roseate tern	Migration	E/-	E	Common													-	Apr-May	Jul-Sep	-	-
550	Gull/Tern	Rare tern	Nesting	C/-		Rare													May-Aug	Apr-May	Jul-Sep	-	-
551	Gull/Tern	Rare tern	Nesting	C/-		Rare													May-Aug	Apr-May	Jul-Sep	-	-
	Gull/Tern	Roseate tern	Nesting	E/-	E	Rare													May-Aug	Apr-May	Jul-Sep	-	-

FISH

Map ID	Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
								J	F	M	A	M	J	J	A	S	O	N	D					
557	Diadromous	Alewife	Spawning Area				-													Apr-Jun	Apr-Jun	Apr-Jun	-	Apr-Jun
	Diadromous	American eel	Migration				-													-	-	-	Jan-Dec	Jan-Dec
	Diadromous	Blueback herring	Spawning Area				-													Apr-Jun	Apr-Jun	Apr-Jun	-	Apr-Jun

HABITATS & RARE PLANTS

Map ID	Subelement	Species	Mapping Qualifier	MA/RI		Concentration	Monthly Presence												
				S	F		J	F	M	A	M	J	J	A	S	O	N	D	
638	Plant	Rare plant	Vulnerable Occurrence	T/C		-													
646	Wetland	Vernal pool	Vulnerable Occurrence			-													

INVERTEBRATES

Map ID	Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence												Eggs	Larvae	Juveniles	Adults
								J	F	M	A	M	J	J	A	S	O	N	D				
666	Crab	Blue crab	Nursery				Common													Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Crab	Horseshoe crab	Nursery				Abundant													May-Jul	May-Jul	Jan-Dec	Jan-Dec
670	Crab	Blue crab	Nursery				Common													Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Crab	Horseshoe crab	Nursery				Abundant													May-Jul	May-Jul	Jan-Dec	Jan-Dec
	Gastropod	Channeled whelk	Concentration Area				Med-Low													Jun-Jul	Aug-Oct	May-Oct	May-Oct
	Gastropod	Knobbed whelk	Concentration Area				Medium													Jun-Jul	Aug-Oct	May-Oct	May-Oct
678	Cephalopod	Longfin squid	Concentration Area				Common													May-Aug	May-Aug	Apr-Nov	Apr-Nov
683	Gastropod	Channeled whelk	Concentration Area				Med-Low													Jun-Jul	Aug-Oct	May-Oct	May-Oct
684	Gastropod	Channeled whelk	Concentration Area				Med-Low													Jun-Jul	Aug-Oct	May-Oct	May-Oct
	Gastropod	Knobbed whelk	Concentration Area				Medium													Jun-Jul	Aug-Oct	May-Oct	May-Oct
685	Gastropod	Knobbed whelk	Concentration Area				Medium													Jun-Jul	Aug-Oct	May-Oct	May-Oct
687	Crab	Horseshoe crab	Spawning				Abundant													May-Jul	May-Jul	May-Jul	May-Jul
707	Insect	Rare insect	Vulnerable Occurrence	E/C	T		-													Jul-Aug	Jul-Aug	-	Jan-Dec

MARINE MAMMALS

Map ID	Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence												Mating	Calving	Pupping	Molt
								J	F	M	A	M	J	J	A	S	O	N	D				
725	Pinniped	Gray seal	Haul Out				High													Dec-Feb	Dec-Feb	Dec-Feb	Mar-May
	Pinniped	Harbor seal	Haul Out				Low													-	-	-	-
726	Whale	Humpback whale	Concentration Area	E/E	E		Common													-	-	-	-
733	Pinniped	Gray seal	Haul Out				Med													-	-	-	-
	Pinniped	Harbor seal	Haul Out				Low													-	-	-	-

TERRESTRIAL MAMMALS



Map ID	Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence											
								J	F	M	A	M	J	J	A	S	O	N	D
745	Small Mammal	New England cottontail	General Distribution	-/C			Rare												

WIDESPREAD IN MAPPED AREA (> 10 SQUARE KILOMETERS)


BIRDS

Map ID	Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt
								J	F	M	A	M	J	J	A	S	O	N	D				
	Alcid	Razorbill	Wintering				Common													-	-	Oct-Nov	-
	Diving	Loons	Migration	C/-			Common													-	Mar-Jun	Sep-Dec	Jan-Mar
	Gull/Tern	Rare tern	General Distribution	C/-			Common													-	Apr-May	Jul-Sep	-
		Rare tern	Migration	C/-			Common													May-Aug	Apr-May	Jul-Sep	-
		Roseate tern	General Distribution	E/-	E		Common													-	Apr-May	Jul-Sep	-
		Roseate tern	Migration	E/-	E		Abundant													May-Aug	Apr-May	Jul-Sep	-

BIRDS (continued)

Subelement	Species	Mapping Qualifier	MA/RI	Monthly Presence												Nest	Hatch	Internest	Juveniles	Adults
				S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N	D		
	Shorebird	Nesting	-/C			Rare														
	Piping plover	Nesting	T/E			Common														
	Red knot	Migration	T			Abundant														
	Shorebirds	Migration	-/C			Abundant														
	Wading	Nesting	-/C			Common														
	BC night-heron	Nesting	-/C			Common														
	Wading birds	General Distribution	-/C			Common														
	Waterfowl	Wintering				Abundant														


REPTILES & AMPHIBIANS

Subelement	Species	Mapping Qualifier	MA/RI	Monthly Presence												Nest	Hatch	Internest	Juveniles	Adults
				S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N	D		
	Turtle	General Distribution	T/E			Regular														
	Green sea turtle	General Distribution	E/E			Regular														
	K. ridley sea turtle	General Distribution	E/E			Regular														
	Leatherback sea turtle	General Distribution	E/E			Regular														
	Loggerhead sea turtle	General Distribution	T/E			Regular														

INVERTEBRATES

Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N	D	Spawn	Eggs	Larvae	Juveniles	Adults
	Crab	Concentration Area				High													May-Jul			Apr-Oct	Apr-Oct

MARINE MAMMALS

Subelement	Species	Mapping Qualifier	MA/RI		Concentration	Monthly Presence												Mating	Calving	Pupping	Molt																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
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ALSO PRESENT IN MAPPED AREA (GENERAL DISTRIBUTION)





BIRDS

Subelement	Species	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt
		J	F	M	A	M	J	J	A	S	O	N	D				
	Alcid																
	Atlantic puffin																
	D. crested cormorant																
	D. crested cormorant																
	Gulls																
	Pelagic																
		Northern gannet															
	Shearwaters																
	Shorebird																
		Red-necked phalarope															
		Shorebirds															


BIRDS (continued)

Subelement	Species	Mapping Qualifier	MA/RI	Monthly Presence											
				J	F	M	A	M	J	J	A	S	O	N	D
	American black duck														
	Diving ducks														
	Geese														
	Sea ducks														

FISH

Subelement	Species	Mapping Qualifier	MA/RI	Monthly Presence											
				J	F	M	A	M	J	J	A	S	O	N	D
	Alewife														
	American eel														
	American shad														
	Atlantic salmon														
	Blueback herring														
	Striped bass														
	Atlantic herring														
	Bay anchovy														
	Black sea bass														
	Black sea bass														
	Bluefish														
	Northern kingfish														
	Scup														
	Summer flounder														
	Windowpane														
	Winter flounder														
	Atlantic silverside														
	Forspine stickleback														
	Mummichog														
	Atlantic cod														
	Atlantic cod														
	Atlantic halibut														
	Atlantic tomcod														
	Atlantic wolffish														
	Goosefish														
	Goosefish														
	Haddock														
	Little skate														
	Pollock														
	Red hake														
	Red hake														
	Rock gunnel														
	Searobins														
	Silver hake														




FISH (continued)

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	Silver hake													-	-	-	Jan-Jun	Jan-Jun
	Tautog													Jul-Oct	Jul-Oct	Aug-Oct	Jul-Dec	Jul-Dec
	White hake													May-Aug	May-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Winter skate													Apr-Sep	May-Nov	May-Nov	Jan-Dec	Jan-Dec
	Yellowtail flounder													-	-	-	Jan-Dec	Jan-Dec
	Atlantic mackerel													Mar-Jul	Mar-Jul	Apr-Jul	Jan-Dec	Jan-Dec
	Spiny dogfish													May-Jul	May-Aug	May-Aug	Mar-Dec	Mar-Dec
	Tunas													-	-	-	Jan-Dec	Jan-Dec
														-	-	-	Jun-Sep	-


REPTILES & AMPHIBIANS

Subelement	Species	Monthly Presence												Nest	Hatch	Interest	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	Eastern box turtle													Jun-Jul	Aug-Oct	-	Jan-Dec	Jan-Dec



INVERTEBRATES

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	Atl. jackknife clam													Apr-May	Apr-May	Apr-May	Jan-Dec	Jan-Dec
	Atlantic surfclam													Jun-Aug	Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Bay scallop													Jun-Sep	Jun-Sep	Jun-Sep	Jan-Dec	Jan-Dec
	Blue mussel													May-Nov	May-Nov	May-Nov	Jan-Dec	Jan-Dec
	Eastern oyster													Jun-Aug	Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Northern quahog													Jun-Aug	Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Sea scallop													Jul-Oct	Jul-Oct	Jul-Oct	Jan-Dec	Jan-Dec
	Softshell clam													Jun-Aug	Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Longfin squid													May-Aug	May-Aug	May-Aug	Apr-Nov	Apr-Nov
	Atlantic rock crab													May-Oct	Jun-Oct	Jun-Oct	Jan-Dec	Jan-Dec
	Blue crab													-	Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Horseshoe crab													May-Jul	May-Jul	-	Jan-Dec	Jan-Dec
	Jonah crab													May-Oct	May-Oct	May-Oct	Jan-Dec	Jan-Dec
	American lobster													Aug-Nov	Jan-Dec	Jun-Oct	Jan-Dec	Jan-Dec
	Db grass shrimp													May-Jul	May-Jul	May-Jul	Jan-Dec	Jan-Dec
	Northern shrimp													-	Dec-Feb	Nov-Feb	Nov-Feb	Dec-Feb
	Northern shrimp													-	Dec-Apr	Jan-Dec	Jan-Dec	Dec-Apr
	Sevenspine bay shrimp													May-Jul	May-Jul	May-Jul	Jan-Dec	Jan-Dec

MARINE MAMMALS

Subelement	Species	Monthly Presence												Mating	Calving	Pupping	Molt
		J	F	M	A	M	J	J	A	S	O	N	D				
	Atl. wht.-side dolphin													-	-	-	-
	Bottlenose dolphin													-	-	-	-
	Harbor porpoise													-	-	-	-
	Risso's dolphin													-	-	-	-

MARINE MAMMALS (continued)

Subelement	Species	Monthly Presence												Mating	Calving	Pupping	Molt
		J	F	M	A	M	J	J	A	S	O	N	D				
	Short-beaked common dolphin													-	-	-	-
	Gray seal													Dec-Feb	Dec-Feb	Dec-Feb	Mar-May
	Harbor seal													-	-	-	-
	Harp seal													-	-	-	-
	Hooded seal													-	-	-	-
	Minke whale													-	-	-	-
	Pilot whales													-	-	-	-
														-	-	-	-

For additional information about species locations and extent, reference the underlying GIS data available from response.restoration.noaa.gov

SHORELINE RESOURCES

ESI POLYGON HABITAT TYPES

ESI Rank	Habitat Classification	Area (Acres)	Area (Sq. Miles)
10A	Salt and Brackish Water Marshes	439.02	0.69
10B	Freshwater Marshes	8.03	0.01
10C	Swamps	50.69	0.08
10D	Scrub and Shrub Wetlands	40.69	0.06
9A	Sheltered Tidal Flats	212.14	0.33
7	Exposed Tidal Flats	2,799.87	4.37

ESI SHORELINE HABITAT TYPES

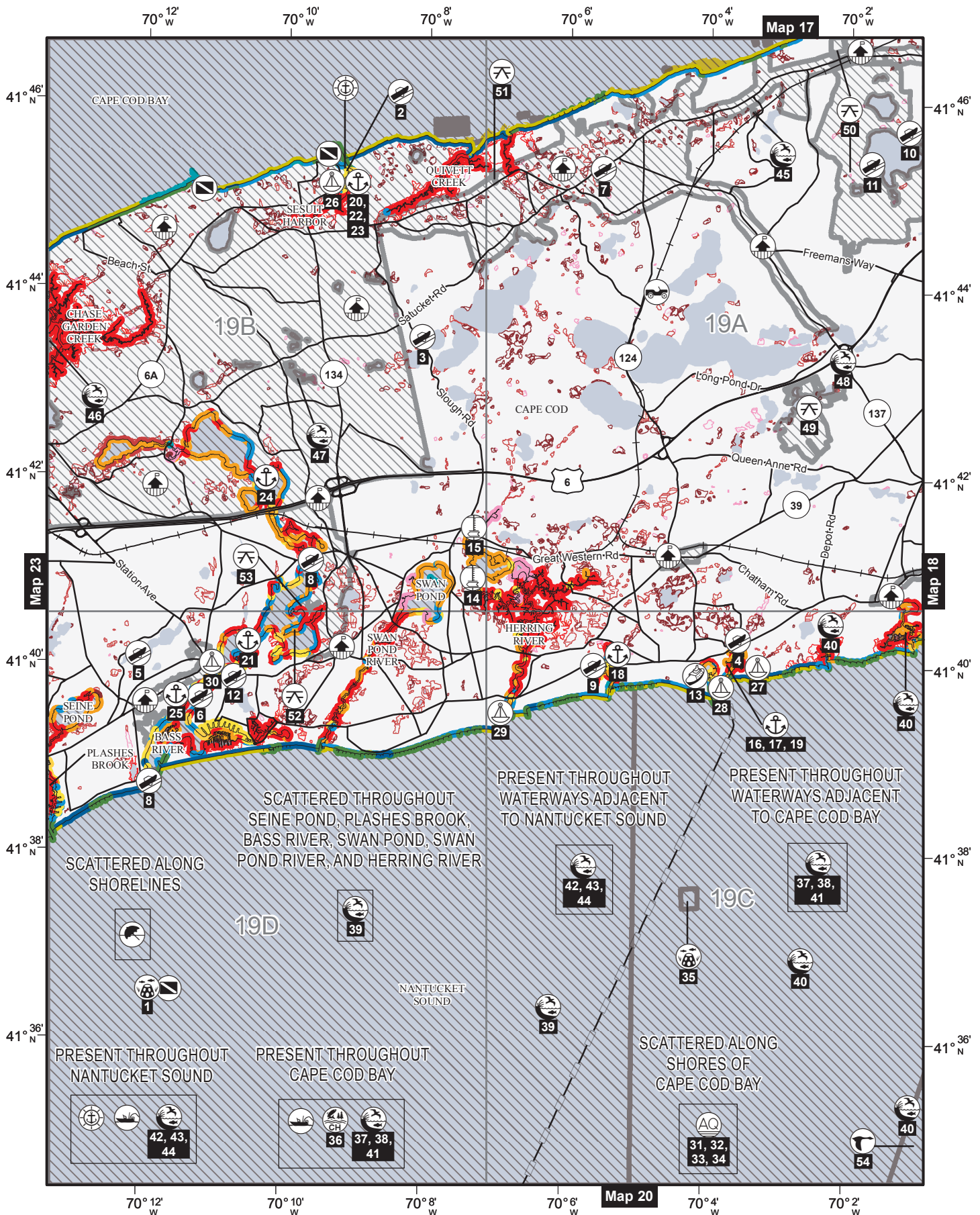
ESI Rank	Shoreline Habitat Classification	Length (Meters)	Length (Miles)	% of ESI Shoreline
10A	Salt and Brackish Water Marshes	36,391.01	22.61	18%
10D	Scrub and Shrub Wetlands	79.36	0.05	< 1%
9A	Sheltered Tidal Flats	31,623.28	19.65	16%
9B	Vegetated Low Banks	2,508.65	1.56	1%
8B	Sheltered, Solid Man-Made Structures	1,970.06	1.22	1%
8C	Sheltered Riprap	399.29	0.25	< 1%
7	Exposed Tidal Flats	61,169.39	38.01	31%
6B	Riprap	738.12	0.46	< 1%
5	Mixed Sand and Gravel Beaches	18.09	0.01	< 1%
4	Coarse Grained Sand Beaches	31,772.38	19.74	16%
3A	Fine to Medium Grained Sand Beaches	30,408.84	18.90	15%

Total ESI Shoreline: 197,078.47 Total ESI Shoreline: 122.46
Total Shoreline: 100,816.03 Total Shoreline: 62.64

Note: A shoreline segment may include multiple shoreline habitats. If any segments include multiple habitats, the combined length of all habitats may exceed the length of the mapped shoreline, and the percent of ESI shoreline values will sum to greater than 100%

All underlying GIS data can be obtained from response.restoration.noaa.gov





Map 19
Mass. / Rhode Island



SEE BACK OF MAP
for details about mapped resources and
other resources that occur in mapped area.
Data Published: November 2016

0 2 Miles
Not for Navigation
0 2 Kilometers

1:100,000

Map 19
Massachusetts and Rhode Island

HUMAN USE RESOURCES

DISPLAYED ON MAP (POINTS)				
Map ID	Type	Name	Contact	Phone
1	ARTIFICIAL REEF	YARMOUTH - SITE BUOY	KATHRYN FORD, MA DMF, NEW BEDFORD, MA	508-990-2860
2	BOAT RAMP	SESUIT HARBOR	MDFG, OFFICE OF FISHING AND BOATING ACCESS	508-389-7810
3	BOAT RAMP	SLOUGH POND	MDFG, OFFICE OF FISHING AND BOATING ACCESS	508-389-7810
4	BOAT RAMP	SAQUATUCKET HARBOR	MDFG, OFFICE OF FISHING AND BOATING ACCESS	508-389-7810
5	BOAT RAMP	LONG POND	MDFG, OFFICE OF FISHING AND BOATING ACCESS	508-389-7810
6	BOAT RAMP	BASS RIVER(UNC. FREEMAN'S LANDING)	MDFG, OFFICE OF FISHING AND BOATING ACCESS	508-389-7810
7	BOAT RAMP	SCHOOLHOUSE POND	MDFG, OFFICE OF FISHING AND BOATING ACCESS	508-389-7810
8	BOAT RAMP	BASS RIVER	MDFG, OFFICE OF FISHING AND BOATING ACCESS	508-389-7810
9	BOAT RAMP	ALLEN HARBOR	MDFG, OFFICE OF FISHING AND BOATING ACCESS	508-389-7810
10	BOAT RAMP	LITTLE CLIFF POND	MDFG, OFFICE OF FISHING AND BOATING ACCESS	508-389-7810
11	BOAT RAMP	CLIFF POND	MDFG, OFFICE OF FISHING AND BOATING ACCESS	508-389-7810
12	BOAT RAMP	HORSEFOOT COVE	MDFG, OFFICE OF FISHING AND BOATING ACCESS	508-389-7810
13	FERRY	HARWICH PORT FERRY	MDFG, OFFICE OF FISHING AND BOATING ACCESS	508-389-7810
14	LOCK AND DAM	NORTH HARWICH RESERVOIR DAM		
15	LOCK AND DAM	HERRING RIVER DAM		
16	MARINA	SAQUATUCKET MUNICIPAL MARINA		
17	MARINA	HARWICH PORT BOAT WORKS, INC.		
18	MARINA	ALLEN HARBOR TOWN LANDING		
19	MARINA	WYCHMERE HARBOR FISH PIER		
20	MARINA	SESHUIT/DENNIS MUNICIPAL MARINA		
21	MARINA	BASS RIVER MARINA		
22	MARINA	TOWN OF DENNIS MARINA		
23	MARINA	NORTHSIDE MARINA		
24	MARINA	MAYFAIR BOAT YARD & MARINA		
25	MARINA	SHIP SHOPS, INC.		
26	REPEATED MEASUREMENT SITE	TIDE GAUGE - SESUIT HARBOR, EAST DENNIS		
27	REPEATED MEASUREMENT SITE	TIDE GAUGE - SAQUATUCKET HARBOR		
28	REPEATED MEASUREMENT SITE	TIDE GAUGE - WYCHMERE HARBOR		
29	REPEATED MEASUREMENT SITE	TIDE GAUGE - DENNISPORT		
30	REPEATED MEASUREMENT SITE	TIDE GAUGE - SOUTH YARMOUTH, BASS RIVER		

DISPLAYED ON MAP (POLYGONS)				
Map ID	Type	Name	Contact	Phone
31	AQUACULTURE	OYSTER	CHRISTOPHER SCHILLACI, MA DMF, N. BEDFORD, MA	508-990-2860
32	AQUACULTURE	PETIT OYSTER	CHRISTOPHER SCHILLACI, MA DMF, N. BEDFORD, MA	508-990-2860
33	AQUACULTURE	QUAHOG	CHRISTOPHER SCHILLACI, MA DMF, N. BEDFORD, MA	508-990-2860
34	AQUACULTURE	SOFT CLAM	CHRISTOPHER SCHILLACI, MA DMF, N. BEDFORD, MA	508-990-2860
35	ARTIFICIAL REEF	OFF THE COAST OF HARWICH		
36	CRITICAL HABITAT	CRITICAL HABITAT: NORTH ATLANTIC RIGHT WHALE		
37	MANAGEMENT AREA	NARW SMA - NE U.S. CAPE COD BAY		

DISPLAYED ON MAP (POLYGONS) (continued)				
Map ID	Type	Name	Contact	Phone
38	MANAGEMENT AREA	LOBSTER MANAGEMENT AREA 1		
39	MANAGEMENT AREA	LOBSTER MANAGEMENT AREA 2		
40	MANAGEMENT AREA	OUTER CAPE LOBSTER MANAGEMENT AREA		
41	MANAGEMENT AREA	CAPE COD BAY RESTRICTED AREA		
42	MANAGEMENT AREA	NORTHERN INSHORE STATE TRAP/POT WATERS AREA		
43	MANAGEMENT AREA	NORTHERN NEARSHORE TRAP/POT WATERS AREA		
44	MANAGEMENT AREA	OTHER NORTHEAST GILLNET WATERS AREA		
45	MANAGEMENT AREA	BLUEBERRY POND WMA	EOEEA; DEPARTMENT OF FISH AND GAME	617-626-1500
46	MANAGEMENT AREA	CHASE GARDEN CREEK WMA	EOEEA; DEPARTMENT OF FISH AND GAME	617-626-1500
47	MANAGEMENT AREA	DENNIS GRASSY POND WMA	EOEEA; DEPARTMENT OF FISH AND GAME	617-626-1500
48	MANAGEMENT AREA	OLIVERS POND WMA	EOEEA; DEPARTMENT OF FISH AND GAME	617-626-1500
49	REGIONAL OR STATE PARK	HAWKSNEST STATE PARK	EOEEA, DEPT. OF CONSERVATION AND RECREATION	617-626-1250
50	REGIONAL OR STATE PARK	NICKERSON STATE PARK	EOEEA, DEPT. OF CONSERVATION AND RECREATION	617-626-1250
51	REGIONAL OR STATE PARK	CEDAR RIDGE PRESERVE	EOEEA; DEPT. OF CONSERVATION AND RECREATION	617-626-1250
52	REGIONAL OR STATE PARK	WILBUR PRESERVE SOUTH	EOEEA; DEPT. OF CONSERVATION AND RECREATION	617-626-1250
53	REGIONAL OR STATE PARK	WILBUR PRESERVE NORTH	EOEEA, DEPT. OF CONSERVATION AND RECREATION	617-626-1250
54	WILDLIFE REFUGE	MONOMOY NATIONAL WILDLIFE REFUGE	MATTHEW HILLMANN, USFWS, E. MA NWR COMPLEX	978-579-4001
ALSO PRESENT IN MAPPED AREA (POINTS)				
Type	Name		Contact	Phone
ESSENTIAL HABITAT	FAIRY SHRIMP -VERNAL POOL		MA DFW NHESP, WESTBOROUGH, MA	508-389-6375
ESSENTIAL HABITAT	OBLIGATE SPECIES -VERNAL POOL		MA DFW NHESP, WESTBOROUGH, MA	508-389-6375
ESSENTIAL HABITAT	OBLIGATE SPECIES, FACULTATIVE SPECIES -VERNAL POOL		MA DFW NHESP, WESTBOROUGH, MA	508-389-6375
ESSENTIAL HABITAT	OBLIGATE SPECIES, FAIRY SHRIMP -VERNAL POOL		MA DFW NHESP, WESTBOROUGH, MA	508-389-6375
ALSO PRESENT IN MAPPED AREA (POLYGONS)				
Type	Name		Contact	Phone
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: AMERICAN PLAICE		NORTHEAST FISHERIES MANAGEMENT COUNCIL	
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: ATLANTIC COD		NORTHEAST FISHERIES MANAGEMENT COUNCIL	
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: ATLANTIC HALIBUT		NORTHEAST FISHERIES MANAGEMENT COUNCIL	
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: ATLANTIC HERRING		NORTHEAST FISHERIES MANAGEMENT COUNCIL	
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: ATLANTIC WOLFFISH		NORTHEAST FISHERIES MANAGEMENT COUNCIL	
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: HADDOCK		NORTHEAST FISHERIES MANAGEMENT COUNCIL	
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: LITTLE SKATE		NORTHEAST FISHERIES MANAGEMENT COUNCIL	
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: OCEAN POUT		NORTHEAST FISHERIES MANAGEMENT COUNCIL	
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: POLLOCK		NORTHEAST FISHERIES MANAGEMENT COUNCIL	
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: RED HAKE		NORTHEAST FISHERIES MANAGEMENT COUNCIL	
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: SEA SCALLOP		NORTHEAST FISHERIES MANAGEMENT COUNCIL	
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: SILVER HAKE		NORTHEAST FISHERIES MANAGEMENT COUNCIL	
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: WHITE HAKE		NORTHEAST FISHERIES MANAGEMENT COUNCIL	
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: WINDOW PANE FLOUNDER		NORTHEAST FISHERIES MANAGEMENT COUNCIL	
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: WINTER FLOUNDER		NORTHEAST FISHERIES MANAGEMENT COUNCIL	
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: WINTER SKATE		NORTHEAST FISHERIES MANAGEMENT COUNCIL	
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: YELLOWTAIL FLOUNDER		NORTHEAST FISHERIES MANAGEMENT COUNCIL	
MANAGEMENT AREA	PRIORITY HABITAT		MDFW NHESP	508-389-6380
STATE PROTECTED AREA	BREWSTER STATE FOREST		EOEEA; DEPT. OF CONSERVATION AND RECREATION	617-626-1250

JURISDICTIONS

COUNTY: BARNSTABLE
COAST GUARD: DISTRICT 1, SECTOR SE NEW ENGLAND
USACE: NORTH ATLANTIC DIVISION, NEW ENGLAND DISTRICT

FEMA: REGION I
EPA: REGION 1

SHORELINE RESOURCES

ESI POLYGON HABITAT TYPES

ESI Rank	Habitat Classification	Area (Acres)	Area (Sq. Miles)
10A	Salt and Brackish Water Marshes	1,686.87	2.64
10B	Freshwater Marshes	221.97	0.35
10C	Swamps	1,039.13	1.62
10D	Scrub and Shrub Wetlands	1,171.91	1.83
9A	Sheltered Tidal Flats	81.46	0.13
7	Exposed Tidal Flats	159.09	0.25
5	Mixed Sand and Gravel Beaches	35.14	0.05

ESI SHORELINE HABITAT TYPES

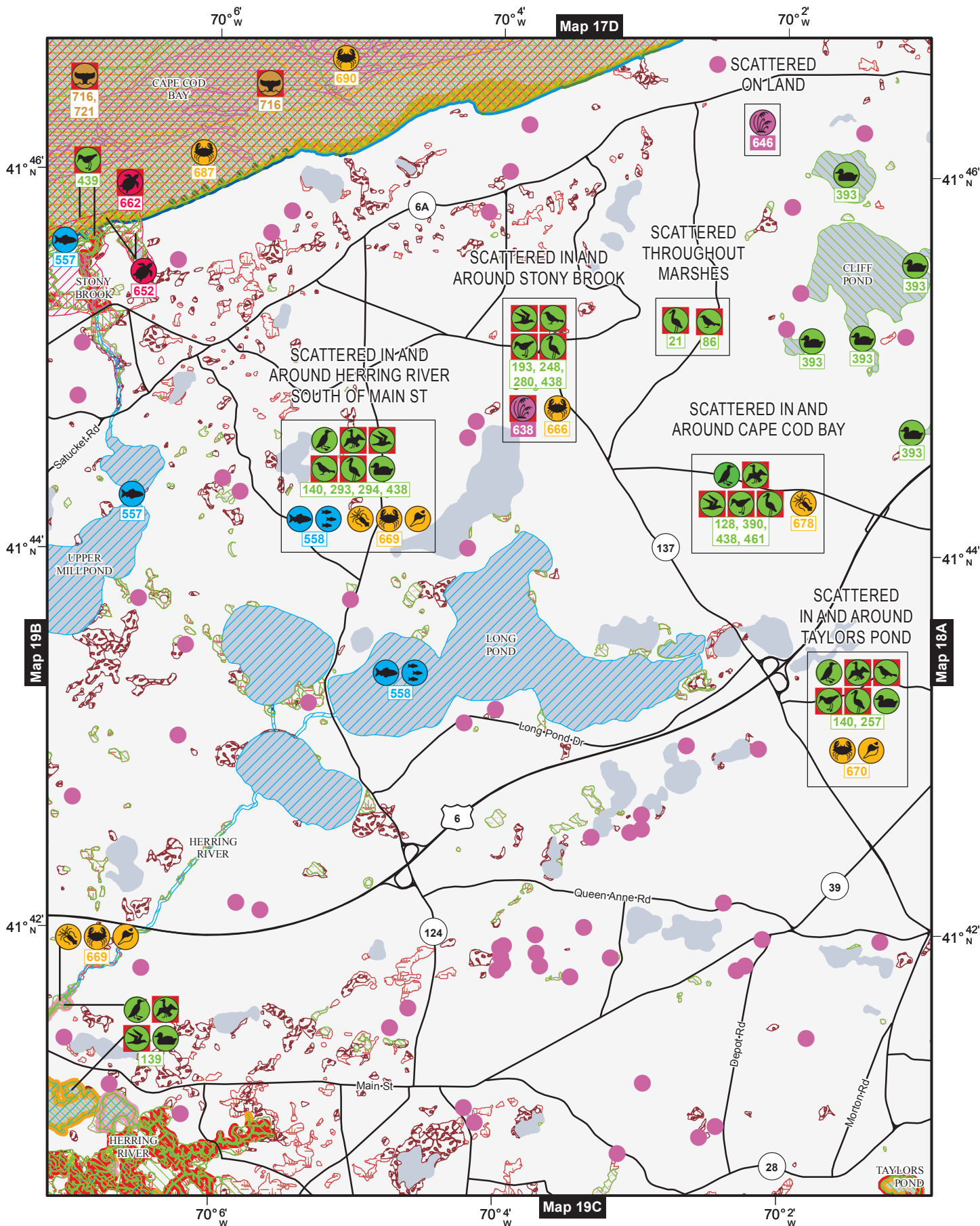
ESI Rank	Shoreline Habitat Classification	Length (Meters)	Length (Miles)	% of ESI Shoreline
10A	Salt and Brackish Water Marshes	148,630.60	92.36	46%
10B	Freshwater Marshes	5,044.60	3.13	2%
10C	Swamps	3,540.49	2.20	1%
10D	Scrub and Shrub Wetlands	880.93	0.55	< 1%
9A	Sheltered Tidal Flats	29,044.22	18.05	9%
9B	Vegetated Low Banks	27,612.00	17.16	9%
8B	Sheltered, Solid Man-Made Structures	14,509.16	9.02	5%
8C	Sheltered Riprap	3,470.21	2.16	1%
7	Exposed Tidal Flats	26,086.20	16.21	8%
6B	Riprap	14,084.10	8.75	4%
5	Mixed Sand and Gravel Beaches	2,989.04	1.86	1%
4	Coarse Grained Sand Beaches	28,447.27	17.68	9%
3A	Fine to Medium Grained Sand Beaches	16,952.82	10.53	5%
1B	Exposed, Solid Man-Made Structures	50.12	0.03	< 1%

Total ESI Shoreline: 321,341.78 Total ESI Shoreline: 199.67
 Total Shoreline: 251,542.21 Total Shoreline: 156.30

Note: A shoreline segment may include multiple shoreline habitats. If any segments include multiple habitats, the combined length of all habitats may exceed the length of the mapped shoreline, and the percent of ESI shoreline values will sum to greater than 100%

All underlying GIS data can be obtained from response.restoration.noaa.gov

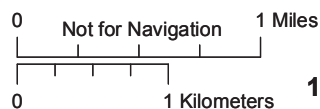




Map 19A
Mass. / Rhode Island



SEE BACK OF MAP
for details about mapped species and
other species that occur in mapped area.
Data Published: November 2016



1:50,000



Map 19A
Massachusetts and Rhode Island

BIOLOGICAL RESOURCES

Note: An asterisk (*) indicates that life stage occurs in this range but not in all months included

DISPLAYED ON MAP

BENTHIC

Subelement	Species	Mapping Qualifier	MA/RI	Monthly Presence											
				S	F	Concentration	J	F	M	A	M	J	J	A	S
SAV	Eelgrass	High Ecological Value				Potential									
SAV	Eelgrass	High Ecological Value				Present									
SAV	Rare aquatic/wetland plant	High Ecological Value				Present									

BIRDS

Map ID	Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence												Nest	Mig. (S)	Mig. (F)	Molt
								J	F	M	A	M	J	J	A	S	O	N	D				
21	Wading	Marsh birds	General Distribution		C/C	-/T	Common													-	Mar-May	Aug-Nov	Jul-Aug
86	Passerine	Northern parula	Nesting				Rare													May-Jun	-	-	-
128	Acid	Razorbill	Wintering				Common													-	-	Oct-Nov	-
	Diving	Loons	Migration		C/-		Common													-	Mar-Jun	Sep-Dec	Jan-Mar
139	Acid	Razorbill	Wintering				Common													-	-	Oct-Nov	-
	Diving	Loons	Migration		C/-		Common													-	Mar-Jun	Sep-Dec	Jan-Mar
	Gull/Tern	Rare tern	General Distribution		C/-		Common													-	Apr-May	Jul-Sep	-
	Gull/Tern	Roseate tern	General Distribution		E/-	E	Common													-	Apr-May	Jul-Sep	-
	Waterfowl	Sea ducks	Wintering				Abundant													-	Mar-May	Sep-Oct	-
140	Acid	Razorbill	Wintering				Common													-	-	Oct-Nov	-
	Diving	Loons	Migration		C/-		Common													-	Mar-Jun	Sep-Dec	Jan-Mar
	Waterfowl	Sea ducks	Wintering				Abundant													-	Mar-May	Sep-Oct	-
193	Passerine	Marsh passerines	General Distribution		-/C		Common													Apr-Aug	Apr-May	Aug-Nov	Sep-Oct
	Passerine	Saltmarsh sparrow	Nesting		-/C		Common													May-Jul	May	-	-
	Wading	Egrets	Migration		-/C		Common													Apr-Jul	Mar-May	Aug-Sep	-
	Wading	Marsh birds	General Distribution		-/C		Common													Apr-Jul	Mar-May	Aug-Sep	-
248	Passerine	Marsh passerines	General Distribution		C/C		Common													-	Mar-May	Aug-Nov	Jul-Aug
	Passerine	Saltmarsh sparrow	Nesting		-/C		Common													Apr-Aug	Apr-May	Aug-Nov	Sep-Oct
	Shorebird	Willet	Nesting		-/C		Common													May-Jul	May	-	-
	Wading	Egrets	Migration		-/C		Common													Apr-May	Apr-May	Aug-Oct	-
	Wading	Wading birds	General Distribution		-/C		Common													Apr-Jul	Mar-May	Aug-Sep	-
257	Passerine	Marsh passerines	General Distribution		-/C		Common													-	Mar-May	Jul-Oct	-
	Shorebird	Willet	Nesting		-/C		Common													Apr-Aug	Apr-May	Aug-Nov	Sep-Oct
	Wading	Egrets	General Distribution		-/C		Common													Apr-May	Apr-May	Aug-Oct	-
	Wading	Marsh birds	General Distribution		-/C		Common													Apr-Jul	Mar-May	Aug-Sep	-
	Wading	Wading birds	General Distribution		C/C		Common													-	Mar-May	Aug-Nov	Jul-Aug
	Wading	Wading birds	General Distribution		-/C		Common													-	Mar-May	Jul-Oct	-
280	Gull/Tern	Rare tern	General Distribution		C/-		Common													-	Apr-May	Jul-Sep	-
	Gull/Tern	Roseate tern	General Distribution		E/-	E	Common													-	Apr-May	Jul-Sep	-
	Passerine	Marsh passerines	General Distribution		-/C		Common													Apr-Aug	Apr-May	Aug-Nov	Sep-Oct
	Passerine	Saltmarsh sparrow	Nesting		-/C		Common													May-Jul	May	-	-
	Wading	Egrets	Migration		-/C		Common													Apr-Jul	Mar-May	Aug-Sep	-

BIRDS (continued)

Map ID	Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt
								J	F	M	A	M	J	J	A	S	O	N	D				
293	Wading	Marsh birds	General Distribution	C/C	-	-	Common													-	Mar-May	Aug-Nov	Jul-Aug
	Passerine	Marsh passerines	General Distribution	-C	-	-	Common													Apr-Aug	Apr-May	Aug-Nov	Sep-Oct
	Wading	Egrets	Migration	-C	-	-	Common													Apr-Jul	Mar-May	Aug-Sep	-
294	Wading	Wading birds	General Distribution	-C	-	-	Common													-	Mar-May	Jul-Oct	-
	Passerine	Marsh passerines	General Distribution	-C	-	-	Common													Apr-Aug	Apr-May	Aug-Nov	Sep-Oct
	Wading	Egrets	Migration	-C	-	-	Common													Apr-Jul	Mar-May	Aug-Sep	-
390	Wading	Marsh birds	General Distribution	C/C	-	-	Common													-	Mar-May	Aug-Nov	Jul-Aug
	Wading	Wading birds	General Distribution	-C	-	-	Common													-	Mar-May	Jul-Oct	-
	Shorebird	Willet	Nesting	-C	-	-	Common													Apr-May	Apr-May	Aug-Oct	-
393	Wading	Wading birds	General Distribution	-C	-	-	Common													-	Mar-May	Jul-Oct	-
	Waterfowl	American black duck	Wintering	-C	-	-	Common													Mar-Apr	Sep-Apr	-	-
	Waterfowl	Diving ducks	Wintering	-C	-	-	Common													Mar-Apr	Sep-Apr	-	-
438	Waterfowl	Geese	Wintering	-C	-	-	Common													May	Mar-May	Sep-Nov	-
	Gull/Tern	Rare tern	General Distribution	C/-	-	-	Common													-	Apr-May	Jul-Sep	-
	Gull/Tern	Roseate tern	General Distribution	E/-	E	-	Common													-	Apr-May	Jul-Sep	-
439	Shorebird	Piping plover	Nesting	T/E	T	-	Common													Mar-Aug	Mar-Apr	Jul-Oct	-
461	Gull/Tern	Rare tern	Migration	C/-	-	-	Common													-	Apr-May	Jul-Sep	-
	Gull/Tern	Roseate tern	Migration	E/-	E	-	Common													-	Apr-May	Jul-Sep	-
	Shorebird	Red knot	Migration	T	-	-	Common													-	May-Jun	Jul-Sep	-
	Shorebird	Shorebirds	Migration	-	-	-	Common													-	Mar-Jun	Jul-Nov	Aug

FISH

Map ID	Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
								J	F	M	A	M	J	J	A	S	O	N	D					
557	Diadromous	Alewife	Spawning Area	-	-	-	-													Apr-Jun	Apr-Jun	Apr-Jun	-	Apr-Jun
	Diadromous	American eel	Migration	-	-	-	-													-	-	-	Jan-Dec	Jan-Dec
	Diadromous	Blueback herring	Spawning Area	-	-	-	-													Apr-Jun	Apr-Jun	Apr-Jun	-	Apr-Jun
558	Diadromous	Alewife	Spawning Area	-	-	-	-													Apr-Jun	Apr-Jun	Apr-Jun	-	Apr-Jun
	Diadromous	American eel	Migration	-	-	-	-													-	-	-	Jan-Dec	Jan-Dec
	Diadromous	Blueback herring	Spawning Area	-	-	-	-													Apr-Jun	Apr-Jun	Apr-Jun	-	Apr-Jun
	Estuarine Nursery	White perch	Spawning Area	-	-	-	-													Apr-Aug	Apr-Aug	May-Sep	Jan-Dec	Jan-Dec

HABITATS & RARE PLANTS

Map ID	Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence											
								J	F	M	A	M	J	J	A	S	O	N	D
638	Plant	Rare plant	Vulnerable Occurrence	T/C	-	-	-												
646	Wetland	Vernal pool	Vulnerable Occurrence	-	-	-	-												

REPTILES & AMPHIBIANS

Map ID	Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence												Nest	Hatch	Internest	Juveniles	Adults
								J	F	M	A	M	J	J	A	S	O	N	D					
652	Turtle	Rare reptile	Vulnerable Occurrence	T/E	T	-	Regular													-	Apr-Jul	Jun-Nov	Jan-Dec	Jan-Dec
662	Turtle	Green sea turtle	General Distribution	E/E	E	-	Regular													-	-	-	May-Nov	May-Nov
	Turtle	K. ridley sea turtle	General Distribution	E/E	E	-	Regular													-	-	-	May-Nov	May-Nov
	Turtle	Leatherback sea turtle	General Distribution	E/E	E	-	Regular													-	-	-	May-Nov	May-Nov
	Turtle	Loggerhead sea turtle	General Distribution	T/E	T	-	Regular													-	-	-	May-Nov	May-Nov

INVERTEBRATES

Map ID	Subelement	Species	Mapping Qualifier	MA/RI S F	Concentration	Monthly Presence												Eggs	Larvae	Juveniles	Adults
						J	F	M	A	M	J	J	A	S	O	N	D				
666	Crab	Blue crab	Nursery		Common													Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
669	Crab	Horseshoe crab	Nursery		Abundant													May-Jul	-	Jan-Dec	Jan-Dec
	Cephalopod	Longfin squid	Concentration Area		Common													May-Aug	May-Aug	Apr-Nov	Apr-Nov
	Crab	Blue crab	Nursery		Common													Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Crab	Horseshoe crab	Nursery		Abundant													May-Jul	-	Jan-Dec	Jan-Dec
	Gastropod	Channeled whelk	Concentration Area		Med-Low													Jun-Jul	Aug-Oct	May-Oct	May-Oct
670	Gastropod	Knobbed whelk	Concentration Area		Medium													Jun-Jul	Aug-Oct	May-Oct	May-Oct
	Crab	Blue crab	Nursery		Common													Jun-Aug	-	Jan-Dec	Jan-Dec
	Crab	Horseshoe crab	Nursery		Abundant													May-Jul	-	Jan-Dec	Jan-Dec
	Gastropod	Channeled whelk	Concentration Area		Med-Low													Jun-Jul	Aug-Oct	May-Oct	May-Oct
	Gastropod	Knobbed whelk	Concentration Area		Medium													Jun-Jul	Aug-Oct	May-Oct	May-Oct
678	Cephalopod	Longfin squid	Concentration Area		Common													May-Aug	May-Aug	Apr-Nov	Apr-Nov
687	Crab	Horseshoe crab	Spawning		Abundant													May-Jul	May-Jul	May-Jul	May-Jul
690	Crab	Horseshoe crab	Concentration Area		Medium													May-Jul	May-Jul	Apr-Oct	Apr-Oct

MARINE MAMMALS

Map ID	Subelement	Species	Mapping Qualifier	MA/RI S F	Concentration	Monthly Presence												Calving	Pupping	Molt
						J	F	M	A	M	J	J	A	S	O	N	D			
716	Whale	Fin whale	General Distribution	E/E	Rare													-	-	-
	Whale	Humpback whale	General Distribution	E/E	Common													-	-	-
	Whale	Sei whale	General Distribution	E/-	Rare													-	-	-
	Whale	N.A. right whale	Concentration Area	E/E	Common													-	-	-
WIDESPREAD IN MAPPED AREA (> 10 SQUARE KILOMETERS)																				





BIRDS

Subelement	Species	Mapping Qualifier	MA/RI	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
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TERRESTRIAL MAMMALS

Subelement	Species	Mapping Qualifier	MA/RI		Concentration	Monthly Presence												
			S	F		J	F	M	A	M	J	J	A	S	O	N	D	
	Small Mammal	General Distribution	-/C		Rare													

BIRDS

Subelement	Species	Monthly Presence												Nest	Mig. (S)	Mig. (F)	Molt
		J	F	M	A	M	J	J	A	S	O	N	D				
	Atlantic puffin													-	Mar	Sep	-
	D. crested cormorant													-	Mar-Apr	Sep-Oct	-
	Gulls													-	Apr-May	Aug-Nov	-
	Northern gannet													-	Apr-May	Oct-Nov	-
	Shearwaters													-	May	Oct	-
	Red-necked phalarope													-	May	Oct	-
	Shorebirds													Apr-Aug	Mar-Dec	-	Aug
	American black duck													Mar-Jul	Sep-Mar	-	-
	Diving ducks													Mar-Apr	Sep-Apr	-	-
	Geese													May	Mar-May	Sep-Nov	-
	Sea ducks													-	Mar-May	Sep-Oct	-

FISH

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	Alewife													-	-	-	Jan-Dec	Jan-Dec
	American eel													-	-	-	Jan-Dec	Jan-Dec
	American shad													-	-	-	Jan-Dec	Jan-Dec
	Atlantic salmon													Sep-Dec	Sep-Mar	Feb-Jul	Jan-Dec	Jan-Dec
	Blueback herring													-	-	-	Jan-Dec	Jan-Dec
	Striped bass													-	-	-	Apr-Nov	Apr-Nov
	Atlantic herring													Aug-Nov	Aug-Nov	Oct-Dec	Jan-Dec	Jan-Dec
	Bay anchovy													Jun-Aug	Jun-Aug	Jun-Sep	Jan-Dec	Jan-Dec
	Black sea bass													Feb-Jul	Feb-Jul	Mar-Jul	Jan-Dec	Jan-Dec
	Bluefish													-	-	Jun-Aug	May-Nov	May-Nov
	Northern kingfish													Jun-Jul	Jun-Jul	Jun-Aug	May-Nov	May-Nov
	Scup													May-Aug	May-Aug	Jun-Aug	May-Oct	May-Oct
	Summer flounder													Aug-Nov	Aug-Nov	Sep-Nov	Apr-Nov	Apr-Nov
	Windowpane													May-Aug	May-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Winter flounder													Jan-May	Jan-May	Feb-May	Jan-Dec	Jan-Dec
	Atlantic silverside													May-Aug	May-Aug	May-Sep	Jan-Dec	Jan-Dec
	Forspine stickleback													May-Jul	May-Jul	May-Aug	Jan-Dec	Jan-Dec
	Mummichog													May-Aug	May-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Rainbow smelt													-	-	-	Jan-Dec	Jan-Dec
	American plaice													Feb-Jun	Feb-Jun	Mar-Jul	Jan-Dec	Jan-Dec
	Atlantic cod													-	-	-	Apr-Aug	Apr-Aug
	Atlantic cod													Nov-Mar	Nov-Mar	Dec-Mar	Jan-Dec	Jan-Dec
	Atlantic halibut													Apr-Sep	Apr-Sep	Apr-Sep	Jan-Dec	Jan-Dec
	Atlantic tomcod													Dec-Feb	Dec-Mar	Dec-Apr	Dec-Jun	Dec-Jun
	Atlantic wolffish													Mar-Aug	Mar-Aug	Mar-Sep	Jan-Dec	Jan-Dec
	Goosefish													-	-	-	-	-
	Haddock													Feb-Jun	Feb-Jun	Mar-Jun	Jan-Dec	Jan-Dec

FISH (continued)

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	Little skate													Jan-Dec	Jan-Dec	-	Jan-Dec	Jan-Dec
	Longhorn sculpin													Dec-Feb	Dec-Feb	Jan-Jun	Jan-Dec	Jan-Dec
	Ocean pout													Aug-Oct	Aug-Dec	Sep-Feb	Jan-Dec	Jan-Dec
	Pollock													-	-	-	Apr-Oct	Apr-Oct
	Red hake													Jun-Sep	Jun-Sep	Jul-Nov	Jan-Dec	Jan-Dec
	Red hake													Jun-Sep	Jun-Sep	Jul-Nov	Jun-Nov	Jun-Nov
	Red hake													-	-	-	Dec-May	Dec-May
	Rock gunnel													Nov-Mar	Nov-Apr	Jan-Jun	Jan-Dec	Jan-Dec
	Searobins													Jun-Sep	Jun-Sep	Jun-Oct	Jan-Dec	Jan-Dec
	Silver hake													-	-	-	Jan-Jun	Jan-Jun
	Silver hake													Jul-Oct	Jul-Oct	Aug-Oct	Jan-Dec	Jan-Dec
	Silver hake													Jul-Oct	Jul-Oct	Aug-Oct	Jul-Dec	Jul-Dec
	Tautog													May-Aug	May-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	White hake													Apr-Sep	May-Nov	May-Nov	Jan-Dec	Jan-Dec
	Winter skate													-	-	-	Jan-Dec	Jan-Dec
	Witch flounder													May-Aug	May-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Yellowtail flounder													Mar-Jul	Mar-Jul	Apr-Jul	Jan-Dec	Jan-Dec
	Atlantic mackerel													May-Jul	May-Aug	May-Aug	Mar-Dec	Mar-Dec
	Spiny dogfish													-	-	-	Jan-Dec	Jan-Dec
	Tunas													-	-	-	Jun-Sep	-




REPTILES & AMPHIBIANS

Subelement	Species	Monthly Presence												Nest	Hatch	Interest	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
Turtle	Eastern box turtle													Jun-Jul	Aug-Oct	-	Jan-Dec	Jan-Dec

INVERTEBRATES

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
Bivalve	Atlantic surfclam													Jun-Aug	Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Blue mussel													May-Nov	May-Nov	May-Nov	Jan-Dec	Jan-Dec
	Eastern oyster													Jun-Aug	Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Northern quahog													Jun-Aug	Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Sea scallop													Jul-Oct	Jul-Oct	Jul-Oct	Jan-Dec	Jan-Dec
	Softshell clam													Jun-Aug	Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
Cephalopod	Longfin squid													May-Aug	May-Aug	May-Aug	Apr-Nov	Apr-Nov
	Northern shortfin squid													-	-	-	Apr-Nov	Apr-Nov
Crab	Atlantic rock crab													May-Oct	Jun-Oct	Jun-Oct	Jan-Dec	Jan-Dec
	Blue crab													-	Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Horseshoe crab													May-Jul	May-Jul	-	Jan-Dec	Jan-Dec
	Jonah crab													May-Oct	May-Oct	May-Oct	Jan-Dec	Jan-Dec
Lobster	American lobster													Aug-Nov	Jan-Dec	Jun-Oct	Jan-Dec	Jan-Dec
Shrimp	Db grass shrimp													May-Jul	May-Jul	May-Jul	Jan-Dec	Jan-Dec
	Sevenspine bay shrimp													May-Jul	May-Jul	May-Jul	Jan-Dec	Jan-Dec

MARINE MAMMALS

	Subelement	Species	Monthly Presence												Calving	Pupping	Molt
			J	F	M	A	M	J	J	A	S	O	N	D			
	Dolphin	Atl. wht.-side dolphin													-	-	-
		Bottlenose dolphin													-	-	-
		Harbor porpoise													-	-	-
		Risso's dolphin													-	-	-
		Short-beaked common dolphin													-	-	-
	Pinniped	Gray seal													Dec-Feb	Dec-Feb	Mar-May
		Harbor seal													-	-	-
		Harp seal													-	-	-
		Hooded seal													-	-	-
	Whale	Minke whale													-	-	-
		Pilot whales													-	-	-

For additional information about species locations and extent, reference the underlying GIS data available from response.restoration.noaa.gov

SHORELINE RESOURCES

ESI POLYGON HABITAT TYPES

ESI Rank	Habitat Classification	Area (Acres)	Area (Sq. Miles)
10A	Salt and Brackish Water Marshes	240.86	0.38
10B	Freshwater Marshes	125.87	0.20
10C	Swamps	351.12	0.55
10D	Scrub and Shrub Wetlands	582.97	0.91
9A	Sheltered Tidal Flats	7.95	0.01
7	Exposed Tidal Flats	118.54	0.19

ESI SHORELINE HABITAT TYPES

ESI Rank	Shoreline Habitat Classification	Length (Meters)	Length (Miles)	% of ESI Shoreline
10A	Salt and Brackish Water Marshes	24,887.80	15.46	54%
10B	Freshwater Marshes	2,638.76	1.64	6%
10C	Swamps	4.13	0.00	< 1%
10D	Scrub and Shrub Wetlands	204.73	0.13	< 1%
9A	Sheltered Tidal Flats	1,332.06	0.83	3%
9B	Vegetated Low Banks	2,584.05	1.61	6%
8B	Sheltered, Solid Man-Made Structures	149.86	0.09	< 1%
7	Exposed Tidal Flats	6,753.40	4.20	15%
6B	Riprap	1,295.80	0.81	3%
5	Mixed Sand and Gravel Beaches	99.52	0.06	< 1%
4	Coarse Grained Sand Beaches	3,529.91	2.19	8%
3A	Fine to Medium Grained Sand Beaches	2,576.85	1.60	6%

Total ESI Shoreline: 46,056.86 Total ESI Shoreline: 28.62
 Total Shoreline: 37,481.93 Total Shoreline: 23.29

Note: A shoreline segment may include multiple shoreline habitats. If any segments include multiple habitats, the combined length of all habitats may exceed the length of the mapped shoreline, and the percent of ESI shoreline values will sum to greater than 100%

All underlying GIS data can be obtained from response.restoration.noaa.gov



Map 19B
Massachusetts and Rhode Island

BIOLOGICAL RESOURCES

Note: An asterisk (*) indicates that life stage occurs in this range but not in all months included

DISPLAYED ON MAP

BENTHIC

Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence											
							J	F	M	A	M	J	J	A	S	O	N	D
SAV	Eelgrass	High Ecological Value				Potential												
SAV	Eelgrass	High Ecological Value				Present												
SAV	Rare aquatic/wetland plant	High Ecological Value				Present												

BIRDS

Map ID	Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence											
								J	F	M	A	M	J	J	A	S	O	N	D
21	Wading	Marsh birds	General Distribution		C/C		Common												
86	Passerine	Northern parula	Nesting		-/T		Rare												
144	Diving	Great cormorant	Wintering				Common												
	Shorebird	Purple sandpiper	Wintering				Common												
207	Passerine	Marsh passerines	General Distribution		-/C		Common												
	Wading	Egrets	Migration		-/C		Common												
	Wading	Marsh birds	General Distribution		C/C		Common												
209	Passerine	Marsh passerines	General Distribution		-/C		Common												
	Wading	Egrets	General Distribution		-/C		Common												
	Wading	Marsh birds	General Distribution		C/C		Common												
243	Passerine	Marsh passerines	General Distribution		-/C		Common												
	Shorebird	Willet	Nesting		-/C		Common												
	Wading	Egrets	Migration		-/C		Common												
244	Passerine	Marsh passerines	General Distribution		-/C		Common												
	Shorebird	Willet	Nesting		-/C		Common												
	Wading	Egrets	Migration		-/C		Common												
	Wading	Marsh birds	General Distribution		C/C		Common												
274	Passerine	Marsh passerines	General Distribution		-/C		Common												
	Passerine	Saltmarsh sparrow	Nesting		-/C		Common												
	Shorebird	Willet	Nesting		-/C		Common												
	Wading	Egrets	Migration		-/C		Common												
	Wading	Marsh birds	General Distribution		C/C		Common												
	Waterfowl	Waterfowl	General Distribution		C/C		Common												
275	Passerine	Marsh passerines	General Distribution		-/C		Common												
	Shorebird	Willet	Nesting		-/C		Common												
	Wading	Egrets	Migration		-/C		Common												
	Wading	Marsh birds	General Distribution		C/C		Common												
	Waterfowl	Waterfowl	General Distribution		C/C		Common												
315	Passerine	Marsh passerines	General Distribution		-/C		Common												
	Passerine	Saltmarsh sparrow	Nesting		-/C		Common												

BIRDS (continued)

Map ID	Subelement	Species	Mapping Qualifier	MA/RI		Concentration	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt
				S	F		J	F	M	A	M	J	J	A	S	O	N	D				
	Wading	Egrets	Migration	-/C		Common											Apr-Jul	Mar-May	Aug-Sep	-		
	Wading	Marsh birds	General Distribution	C/C		Common											-	Mar-May	Aug-Nov	Jul-Aug		
	Waterfowl	Waterfowl	General Distribution	C/C		Common											May-Jul	Apr-May	Aug-Oct	Aug-Sep		
325	Passerine	Marsh passerines	General Distribution	-/C		Common											Apr-Aug	Apr-May	Aug-Nov	Sep-Oct		
	Wading	Egrets	Migration	-/C		Common											Apr-Jul	Mar-May	Aug-Sep	-		
	Wading	Marsh birds	General Distribution	C/C		Common											-	Mar-May	Aug-Nov	Jul-Aug		
	Waterfowl	Waterfowl	General Distribution	C/C		Common											May-Jul	Apr-May	Aug-Oct	Aug-Sep		
329	Passerine	Marsh passerines	General Distribution	-/C		Common											Apr-Aug	Apr-May	Aug-Nov	Sep-Oct		
	Wading	Egrets	General Distribution	-/C		Common											Apr-Jul	Mar-May	Aug-Sep	-		
	Wading	Marsh birds	General Distribution	C/C		Common											-	Mar-May	Aug-Nov	Jul-Aug		
	Waterfowl	Waterfowl	General Distribution	C/C		Common											May-Jul	Apr-May	Aug-Oct	Aug-Sep		
380	Shorebird	Willet	Nesting	-/C		Common											Apr-May	Apr-May	Aug-Oct	-		
	Waterfowl	American black duck	Wintering			Common											Mar-Apr	Sep-Apr	-	-		
393	Waterfowl	Diving ducks	Wintering			Common											Mar-Apr	Sep-Apr	-	-		
	Waterfowl	Geese	Wintering			Common											May	Mar-May	Sep-Nov	-		
	Waterfowl	American black duck	Wintering			Common											Mar-Apr	Sep-Apr	-	-		
	Waterfowl	Diving ducks	Wintering			Common											Mar-Apr	Sep-Apr	-	-		
396	Waterfowl	Geese	Wintering			Common											May	Mar-May	Sep-Nov	-		
	Waterfowl	Waterfowl	General Distribution	C/C		Common											Mar-Apr	Sep-Apr	-	-		
	Waterfowl	Waterfowl	General Distribution	C/C		Common											May	Mar-May	Sep-Nov	-		
	Waterfowl	Waterfowl	General Distribution	C/C		Common											May-Jul	Apr-May	Aug-Oct	Aug-Sep		
439	Shorebird	Piping plover	Nesting	T/E	T	Common											Mar-Aug	Mar-Apr	Jul-Oct	-		
445	Gull/Tern	Rare tern	Migration	C/-		Common											-	Apr-May	Jul-Sep	-		
	Gull/Tern	Roseate tern	Migration	E/-	E	Common											-	Apr-May	Jul-Sep	-		
	Shorebird	Piping plover	Nesting	T/E	T	Common											Mar-Aug	Mar-Apr	Jul-Oct	-		
	Shorebird	Red knot	Migration	T		Common											-	May-Jun	Jul-Sep	-		
458	Shorebird	Shorebirds	Migration			Common											-	Mar-Jun	Jul-Nov	Aug		
	Shorebird	Red knot	Migration			Common											-	May-Jun	Jul-Sep	-		
	Shorebird	Shorebirds	Migration			Common											-	Mar-Jun	Jul-Nov	Aug		
	Waterfowl	Waterfowl	General Distribution	C/C		Common											May-Jul	Apr-May	Aug-Oct	Aug-Sep		
491	Wading	Marsh birds	General Distribution	C/C		Common											-	Mar-May	Aug-Nov	Jul-Aug		
501	Waterfowl	Waterfowl	General Distribution	C/C		Common											May-Jul	Apr-May	Aug-Oct	Aug-Sep		
	Gull/Tern	Rare tern	Migration	C/-		Common											May-Aug	Apr-May	Jul-Sep	-		
	Gull/Tern	Roseate tern	Migration	E/-	E	Common											-	Apr-May	Jul-Sep	-		
	Gull/Tern	Rare tern	Migration	C/-		Common											-	Apr-May	Jul-Sep	-		
504	Gull/Tern	Roseate tern	Migration	E/-	E	Common											-	Apr-May	Jul-Sep	-		
	Gull/Tern	Rare tern	Migration			Common											-	Apr-May	Jul-Sep	-		
	Gull/Tern	Roseate tern	Migration			Common											-	Apr-May	Jul-Sep	-		
	Waterfowl	Sea ducks	Wintering			Abundant											-	Mar-May	Sep-Oct	-		

FISH

Map ID	Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
								J	F	M	A	M	J	J	A	S	O	N	D					
557	Diadromous	Alewife	Spawning Area				-													Apr-Jun	Apr-Jun	Apr-Jun	-	Apr-Jun
	Diadromous	American eel	Migration				-													-	-	-	Jan-Dec	Jan-Dec
558	Diadromous	Blueback herring	Spawning Area				-													Apr-Jun	Apr-Jun	Apr-Jun	-	Apr-Jun
	Diadromous	Alewife	Spawning Area				-													Apr-Jun	Apr-Jun	Apr-Jun	-	Apr-Jun
	Diadromous	American eel	Migration				-													-	-	-	Jan-Dec	Jan-Dec

FISH (continued)

Map ID	Subelement	Species	Mapping Qualifier	MA/RI		Monthly Presence												Eggs	Larvae	Juveniles	Adults	
				S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N					D
568	Diadromous	Blueback herring	Spawning Area			-													Apr-Jun	Apr-Jun	-	Apr-Jun
	Estuarine Nursery	White perch	Spawning Area			-													Apr-Aug	May-Sep	Jan-Dec	Jan-Dec
	Diadromous	Alewife	Spawning Area			-													Apr-Jun	Apr-Jun	-	Apr-Jun
	Diadromous	American eel	Migration			-													-	-	Jan-Dec	Jan-Dec
576	Diadromous	American shad	Spawning Area			-													Apr-Jun	Apr-Jun	-	Apr-Jun
	Diadromous	Blueback herring	Spawning Area			-													Apr-Jun	Apr-Jun	-	Apr-Jun
	Estuarine Nursery	White perch	Spawning Area			-													Apr-Aug	May-Sep	Jan-Dec	Jan-Dec
	Diadromous	Alewife	Spawning Area			-													Apr-Jun	Apr-Jun	-	Apr-Jun
	Diadromous	American eel	Migration			-													-	-	Jan-Dec	Jan-Dec
	Diadromous	American shad	Spawning Area			-													Apr-Jun	Apr-Jun	-	Apr-Jun
	Diadromous	Blueback herring	Spawning Area			-													Apr-Jun	Apr-Jun	-	Apr-Jun

HABITATS & RARE PLANTS

Map ID	Subelement	Species	Mapping Qualifier	MA/RI		Concentration	Monthly Presence											
				S	F		J	F	M	A	M	J	J	A	S	O	N	D
638	Plant	Rare plant	Vulnerable Occurrence			-												
646	Wetland	Vernal pool	Vulnerable Occurrence			-												





REPTILES & AMPHIBIANS

Map ID	Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N	D	Hatch	Internest	Juveniles	Adults
652	Turtle	Rare reptile	Vulnerable Occurrence				-													Apr-Jul	Jun-Nov	Jan-Dec	Jan-Dec


INVERTEBRATES

Map ID	Subelement	Species	Mapping Qualifier	MA/RI		Concentration	Monthly Presence												Eggs	Larvae	Juveniles	Adults
				S	F		J	F	M	A	M	J	J	A	S	O	N	D				
666	Crab	Blue crab	Nursery			Common													-	Jun-Aug	Jan-Dec	Jan-Dec
	Crab	Horseshoe crab	Nursery			Abundant													May-Jul	-	Jan-Dec	Jan-Dec
670	Crab	Blue crab	Nursery			Common													Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Crab	Horseshoe crab	Nursery			Abundant													May-Jul	-	Jan-Dec	Jan-Dec
	Gastropod	Channeled whelk	Concentration Area			Med-Low													Aug-Oct	-	May-Oct	May-Oct
	Gastropod	Knobbed whelk	Concentration Area			Medium													Aug-Oct	-	May-Oct	May-Oct
671	Crab	Blue crab	Nursery			Common													Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Crab	Horseshoe crab	Nursery			Abundant													May-Jul	-	Jan-Dec	Jan-Dec
	Crab	Jonah crab	Concentration Area			Low													May-Oct	May-Oct	Apr-Oct	Apr-Oct
687	Crab	Horseshoe crab	Spawning			Abundant													May-Jul	-	May-Jul	May-Jul
699	Crab	Jonah crab	Concentration Area			Low													May-Oct	May-Oct	Apr-Oct	Apr-Oct

BIRDS

Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt
							J	F	M	A	M	J	J	A	S	O	N	D				
 Alcids	Razorbill	Wintering				Common													-	-	Oct-Nov	-
 Diving	Loons	Migration	C/-			Common													-	Mar-Jun	Sep-Dec	Jan-Mar
 Gull/Tern	Rare tern	General Distribution	C/-			Common													-	Apr-May	Jul-Sep	-
	Roseate tern	General Distribution	E/-	E		Common													-	Apr-May	Jul-Sep	-
 Wading	Wading birds	General Distribution	-/C			Common													-	Mar-May	Jul-Oct	-


REPTILES & AMPHIBIANS

Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence												Nest	Hatch	Interst	Juveniles	Adults
							J	F	M	A	M	J	J	A	S	O	N	D					
 Turtle	Green sea turtle	General Distribution	T/E	T		Regular													-	-	-	May-Nov	May-Nov
	K. ridley sea turtle	General Distribution	E/E	E		Regular													-	-	-	May-Nov	May-Nov
	Leatherback sea turtle	General Distribution	E/E	E		Regular													-	-	-	May-Nov	May-Nov
	Loggerhead sea turtle	General Distribution	T/E	T		Regular													-	-	-	May-Nov	May-Nov

INVERTEBRATES

Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
							J	F	M	A	M	J	J	A	S	O	N	D					
 Cephalopod	Longfin squid	Concentration Area				Common													May-Aug	May-Aug	May-Aug	Apr-Nov	Apr-Nov

MARINE MAMMALS

Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence												Mating	Calving	Pupping	Molt
							J	F	M	A	M	J	J	A	S	O	N	D				
 Whale	Fin whale	General Distribution	E/E	E		Rare													-	-	-	-
	Humpback whale	General Distribution	E/E	E		Common													-	-	-	-
	N.A. right whale	Concentration Area	E/E	E		Common													-	-	-	-
	Sei whale	General Distribution	E/-	E		Rare													-	-	-	-

TERRESTRIAL MAMMALS

Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence											
							J	F	M	A	M	J	J	A	S	O	N	D
 Small Mammal	New England cottontail	General Distribution	-/C			Rare												

ALSO PRESENT IN MAPPED AREA (GENERAL DISTRIBUTION)






BIRDS

Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt
							J	F	M	A	M	J	J	A	S	O	N	D				
 Alcids	Atlantic puffin																		-	Mar	Sep	-
 Diving	D. crested cormorant																		-	Mar-Apr	Sep-Oct	-
 Gull/Tern	Gulls																		-	Apr-May	Aug-Nov	-
 Pelagic	Northern gannet																		-	Apr-May	Oct-Nov	-
	Shearwaters																		-	May	Oct	-
 Shorebird	Red-necked phalarope																		-	May	Oct	-

BIRDS (continued)

Subelement	Species	Monthly Presence											
		J	F	M	A	M	J	J	A	S	O	N	D
	Shorebirds												
	American black duck												
	Diving ducks												
	Geese												
	Sea ducks												

FISH

Subelement	Species	Monthly Presence											
		J	F	M	A	M	J	J	A	S	O	N	D
	Alewife												
	American eel												
	American shad												
	Atlantic salmon												
	Blueback herring												
	Striped bass												
	Atlantic herring												
	Bay anchovy												
	Black sea bass												
	Bluefish												
	Northern kingfish												
	Scup												
	Summer flounder												
	Windowpane												
	Winter flounder												
	Atlantic silverside												
	Fourspine stickleback												
	Mummichog												
	Rainbow smelt												
	American plaice												
	Atlantic cod												
	Atlantic cod												
	Atlantic halibut												
	Atlantic tomcod												
	Atlantic wolffish												
	Goosefish												
	Haddock												
	Little skate												
	Longhorn sculpin												
	Ocean pout												
	Pollock												
	Red hake												
	Red hake												
	Red hake												
	Rock gunnel												

FISH (continued)

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	Searobins													Jun-Sep	Jun-Sep	Jun-Oct	Jan-Jun	Jan-Dec
	Silver hake													-	-	-	Jan-Jun	Jan-Jun
	Silver hake													Jul-Oct	Jul-Oct	Aug-Oct	Jan-Dec	Jan-Dec
	Silver hake													Jul-Oct	Jul-Oct	Aug-Oct	Jan-Dec	Jan-Dec
	Tautog													May-Aug	May-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	White hake													Apr-Sep	May-Nov	May-Nov	Jan-Dec	Jan-Dec
	Winter skate													-	-	-	Jan-Dec	Jan-Dec
	Witch flounder													May-Aug	May-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Yellowtail flounder													Mar-Jul	Mar-Jul	Apr-Jul	Jan-Dec	Jan-Dec
	Atlantic mackerel													May-Jul	May-Aug	May-Aug	Mar-Dec	Mar-Dec
	Spiny dogfish													-	-	-	Jan-Dec	Jan-Dec
	Tunas													-	-	-	Jun-Sep	-

REPTILES & AMPHIBIANS

Subelement	Species	Monthly Presence												Nest	Hatch	Internest	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	Eastern box turtle													Jun-Jul	Aug-Oct	-	Jan-Dec	Jan-Dec



INVERTEBRATES

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	Atl. jackknife clam													Apr-May	Apr-May	Apr-May	Jan-Dec	Jan-Dec
	Atlantic surfclam													Jun-Aug	Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Bay scallop													Jun-Sep	Jun-Sep	Jun-Sep	Jan-Dec	Jan-Dec
	Blue mussel													May-Nov	May-Nov	May-Nov	Jan-Dec	Jan-Dec
	Eastern oyster													Jun-Aug	Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Northern quahog													Jun-Aug	Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Sea scallop													Jul-Oct	Jul-Oct	Jul-Oct	Jan-Dec	Jan-Dec
	Softshell clam													Jun-Aug	Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Northern shortfin squid													-	-	-	Apr-Nov	Apr-Nov
	Atlantic rock crab													May-Oct	Jun-Oct	Jun-Oct	Jan-Dec	Jan-Dec
	Blue crab													-	Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Horseshoe crab													May-Jul	May-Jul	-	Jan-Dec	Jan-Dec
	Jonah crab													May-Oct	May-Oct	May-Oct	Jan-Dec	Jan-Dec
	American lobster													Aug-Nov	Jan-Dec	Jun-Oct	Jan-Dec	Jan-Dec
	Db grass shrimp													May-Jul	May-Jul	May-Jul	Jan-Dec	Jan-Dec
	Sevenspine bay shrimp													May-Jul	May-Jul	May-Jul	Jan-Dec	Jan-Dec

MARINE MAMMALS

Subelement	Species	Monthly Presence												Mating	Calving	Pupping	Molt
		J	F	M	A	M	J	J	A	S	O	N	D				
	Atl. wht.-side dolphin													-	-	-	-
	Bottlenose dolphin													-	-	-	-
	Harbor porpoise													-	-	-	-
	Risso's dolphin													-	-	-	-

MARINE MAMMALS (continued)

Subelement	Species	Monthly Presence												Mating	Calving	Pupping	Molt
		J	F	M	A	M	J	J	A	S	O	N	D				
	Short-beaked common dolphin													-	-	-	-
	Gray seal													Dec-Feb	Dec-Feb	Dec-Feb	Mar-May
	Harbor seal													-	-	-	-
	Harp seal													-	-	-	-
	Hooded seal													-	-	-	-
	Minke whale													-	-	-	-
	Pilot whales													-	-	-	-

For additional information about species locations and extent, reference the underlying GIS data available from response.restoration.noaa.gov

SHORELINE RESOURCES

ESI POLYGON HABITAT TYPES

ESI Rank	Habitat Classification	Area (Acres)	Area (Sq. Miles)
10A	Salt and Brackish Water Marshes	868.09	1.36
10B	Freshwater Marshes	47.37	0.07
10C	Swamps	347.48	0.54
10D	Scrub and Shrub Wetlands	349.24	0.55
9A	Sheltered Tidal Flats	2.58	0.00
7	Exposed Tidal Flats	33.90	0.05
5	Mixed Sand and Gravel Beaches	34.74	0.05

ESI SHORELINE HABITAT TYPES

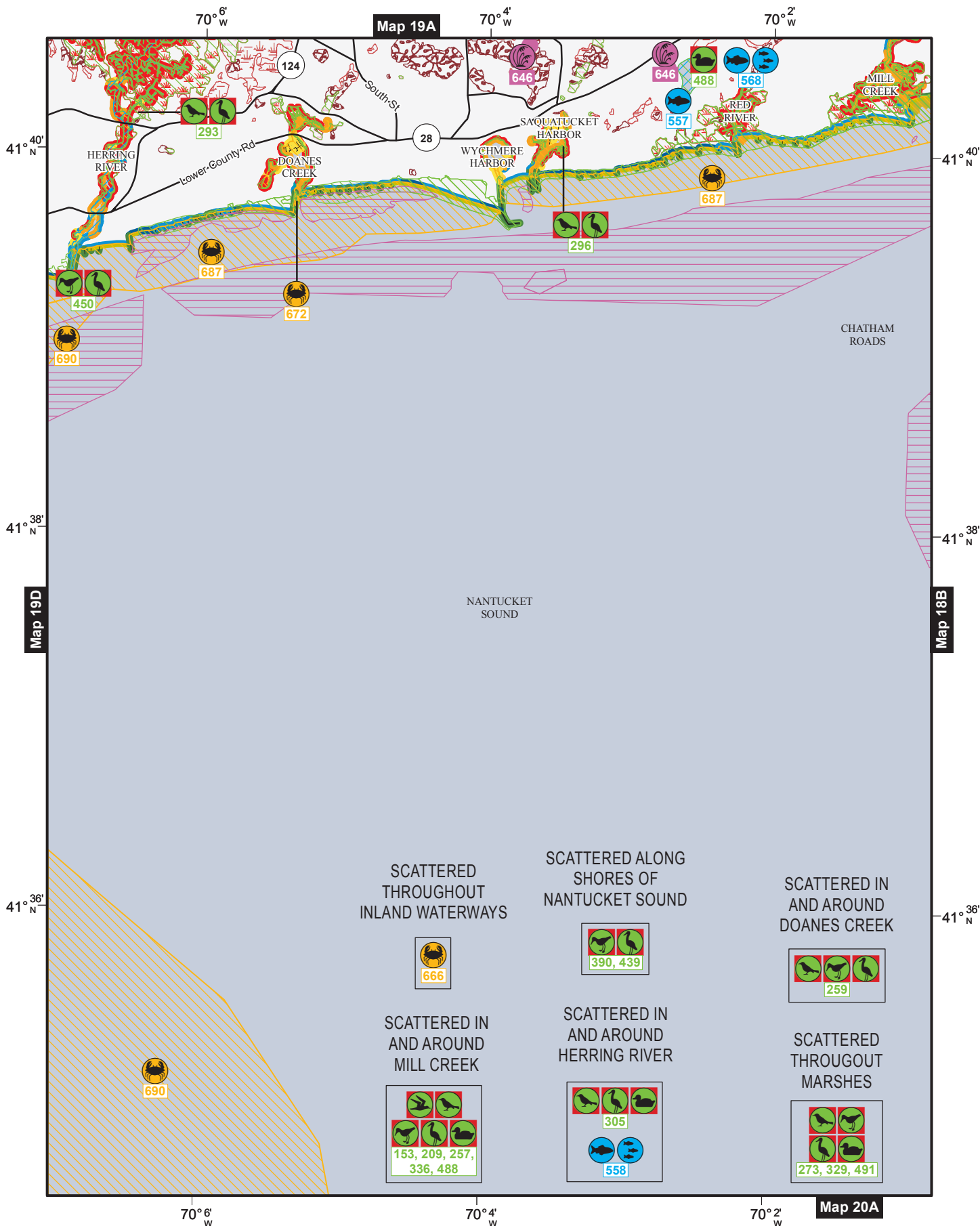
ESI Rank	Shoreline Habitat Classification	Length (Meters)	Length (Miles)	% of ESI Shoreline
10A	Salt and Brackish Water Marshes	57,883.00	35.97	51%
10B	Freshwater Marshes	2,093.00	1.30	2%
10C	Swamps	3,205.25	1.99	3%
10D	Scrub and Shrub Wetlands	442.66	0.28	< 1%
9A	Sheltered Tidal Flats	364.06	0.23	< 1%
9B	Vegetated Low Banks	17,385.55	10.80	15%
8B	Sheltered, Solid Man-Made Structures	3,063.22	1.90	3%
8C	Sheltered Riprap	1,415.72	0.88	1%
7	Exposed Tidal Flats	8,274.87	5.14	7%
6B	Riprap	4,326.68	2.69	4%
5	Mixed Sand and Gravel Beaches	2,479.96	1.54	2%
4	Coarse Grained Sand Beaches	6,431.74	4.00	6%
3A	Fine to Medium Grained Sand Beaches	5,061.89	3.15	5%

Total ESI Shoreline: 112,427.59 Total ESI Shoreline: 69.86
Total Shoreline: 96,054.37 Total Shoreline: 59.69

Note: A shoreline segment may include multiple shoreline habitats. If any segments include multiple habitats, the combined length of all habitats may exceed the length of the mapped shoreline, and the percent of ESI shoreline values will sum to greater than 100%

All underlying GIS data can be obtained from response.restoration.noaa.gov





Map 19C
Massachusetts and Rhode Island

BIOLOGICAL RESOURCES

Note: An asterisk (*) indicates that life stage occurs in this range but not in all months included

DISPLAYED ON MAP

BENTHIC

Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence											
							J	F	M	A	M	J	J	A	S	O	N	D
SAV	Eelgrass	High Ecological Value				Potential												
SAV	Eelgrass	High Ecological Value				Present												

BIRDS

Map ID	Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence											
								J	F	M	A	M	J	J	A	S	O	N	D
153	Gull/Tern	Rare tern	Nesting		C/-		Rare												
209	Passerine	Marsh passerines	General Distribution		-/C		Common												
	Wading	Egrets	General Distribution		-/C		Common												
	Wading	Marsh birds	General Distribution		C/C		Common												
257	Passerine	Marsh passerines	General Distribution		-/C		Common												
	Shorebird	Willet	Nesting		-/C		Common												
	Wading	Egrets	General Distribution		-/C		Common												
	Wading	Marsh birds	General Distribution		C/C		Common												
	Wading	Wading birds	General Distribution		-/C		Common												
259	Passerine	Marsh passerines	General Distribution		-/C		Common												
	Shorebird	Willet	Nesting		-/C		Common												
	Wading	Egrets	General Distribution		-/C		Common												
	Wading	Wading birds	General Distribution		-/C		Common												
273	Passerine	Marsh passerines	General Distribution		-/C		Common												
	Shorebird	Willet	Nesting		-/C		Common												
	Wading	Egrets	General Distribution		-/C		Common												
	Wading	Wading birds	General Distribution		-/C		Common												
	Wading	Marsh birds	General Distribution		C/C		Common												
	Wading	Wading birds	General Distribution		-/C		Common												
	Waterfowl	Waterfowl	General Distribution		C/C		Common												
293	Passerine	Marsh passerines	General Distribution		-/C		Common												
	Wading	Egrets	Migration		-/C		Common												
	Wading	Wading birds	General Distribution		-/C		Common												
296	Passerine	Marsh passerines	General Distribution		-/C		Common												
	Wading	Egrets	General Distribution		-/C		Common												
	Wading	Wading birds	General Distribution		-/C		Common												
305	Passerine	Marsh passerines	General Distribution		-/C		Common												
	Wading	Egrets	Migration		-/C		Common												
	Wading	Marsh birds	General Distribution		C/C		Common												
	Wading	Wading birds	General Distribution		-/C		Common												
	Waterfowl	Waterfowl	General Distribution		C/C		Common												
329	Passerine	Marsh passerines	General Distribution		-/C		Common												

BIRDS (continued)

Map ID	Subelement	Species	Mapping Qualifier	MA/RI		Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt	
				S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N					D
	Wading	Egrets	General Distribution	-/C		Common													Apr-Jul	Mar-May	Aug-Sep	-
	Wading	Marsh birds	General Distribution	C/C		Common													-	Mar-May	Aug-Nov	Jul-Aug
	Waterfowl	Waterfowl	General Distribution	C/C		Common													May-Jul	Apr-May	Aug-Oct	Aug-Sep
336	Shorebird	American oystercatcher	Nesting	-/C		Rare													May-Aug	May	-	-
390	Shorebird	Willet	Nesting	-/C		Common													Apr-May	Apr-May	Aug-Oct	-
	Wading	Wading birds	General Distribution	-/C		Common													-	Mar-May	Jul-Oct	-
439	Shorebird	Piping plover	Nesting	T/E	T	Common													Mar-Aug	Mar-Apr	Jul-Oct	-
450	Shorebird	Piping plover	Nesting	T/E	T	Common													Mar-Aug	Mar-Apr	Jul-Oct	-
	Wading	Wading birds	General Distribution	-/C		Common													-	Mar-May	Jul-Oct	-
488	Waterfowl	Waterfowl	General Distribution	C/C		Common													May-Jul	Apr-May	Aug-Oct	Aug-Sep
491	Wading	Marsh birds	General Distribution	C/C		Common													-	Mar-May	Aug-Nov	Jul-Aug
	Waterfowl	Waterfowl	General Distribution	C/C		Common													May-Jul	Apr-May	Aug-Oct	Aug-Sep

FISH

Map ID	Subelement	Species	Mapping Qualifier	MA/RI		Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults	
				S	F		J	F	M	A	M	J	J	A	S	O	N	D						
557	Diadromous	Alewife	Spawning Area			-													Apr-Jun	Apr-Jun	Apr-Jun	-	Apr-Jun	Apr-Jun
	Diadromous	American eel	Migration			-													-	-	-	Jan-Dec	Jan-Dec	
	Diadromous	Blueback herring	Spawning Area			-													Apr-Jun	Apr-Jun	Apr-Jun	-	Apr-Jun	Apr-Jun
558	Diadromous	Alewife	Spawning Area			-													Apr-Jun	Apr-Jun	Apr-Jun	-	Apr-Jun	Apr-Jun
	Diadromous	American eel	Migration			-													-	-	-	Jan-Dec	Jan-Dec	
	Diadromous	Blueback herring	Spawning Area			-													Apr-Jun	Apr-Jun	Apr-Jun	-	Apr-Jun	Apr-Jun
568	Estuarine Nursery	White perch	Spawning Area			-													Apr-Aug	Apr-Aug	May-Sep	Jan-Dec	Jan-Dec	Jan-Dec
	Diadromous	Alewife	Spawning Area			-													Apr-Jun	Apr-Jun	Apr-Jun	-	Apr-Jun	Apr-Jun
	Diadromous	American eel	Migration			-													-	-	-	Jan-Dec	Jan-Dec	
	Diadromous	American shad	Spawning Area			-													Apr-Jun	Apr-Jun	Apr-Jun	-	Apr-Jun	Apr-Jun
	Diadromous	Blueback herring	Spawning Area			-													Apr-Jun	Apr-Jun	Apr-Jun	-	Apr-Jun	Apr-Jun
	Estuarine Nursery	White perch	Spawning Area			-													Apr-Aug	Apr-Aug	May-Sep	Jan-Dec	Jan-Dec	Jan-Dec





HABITATS & RARE PLANTS

Map ID	Subelement	Species	Mapping Qualifier	MA/RI	Monthly Presence													
					S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N
646	Wetland	Vernal pool	Vulnerable Occurrence				-											


INVERTEBRATES

Map ID	Subelement	Species	Mapping Qualifier	MA/RI		Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults				
							S	F	J	F	M	A	M	J	J	A	S	O						N	D		
666	Crab	Blue crab	Nursery			Common														Jun-Aug						Jan-Dec	Jan-Dec
	Crab	Horseshoe crab	Nursery			Abundant														May-Jul						Jan-Dec	Jan-Dec
672	Crab	Horseshoe crab	Nursery			Abundant														May-Jul						Jan-Dec	Jan-Dec
687	Crab	Horseshoe crab	Spawning			Abundant														May-Jul						May-Jul	May-Jul
690	Crab	Horseshoe crab	Concentration Area			Medium														May-Jul						Apr-Oct	Apr-Oct




BIRDS

Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence												Nest	Hatch	Internest	Juveniles	Adults
							J	F	M	A	M	J	J	A	S	O	N	D					
 Alcids	Razorbill	Wintering				Common													-			Oct-Nov	-
 Diving	Loons	Migration			C/-	Common													-	Mar-Jun	Sep-Dec	Jan-Mar	-
 Gull/Tern	Rare tern	General Distribution			C/-	Common													-	Apr-May	Jul-Sep	-	-
	Roseate tern	General Distribution			E/-	Common													-	Apr-May	Jul-Sep	-	-
 Waterfowl	Sea ducks	Wintering				Abundant													-	Mar-May	Sep-Oct	-	-


REPTILES & AMPHIBIANS

Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence												Nest	Hatch	Internest	Juveniles	Adults
							J	F	M	A	M	J	J	A	S	O	N	D					
 Turtle	Green sea turtle	General Distribution			T/E	Regular													-			May-Nov	May-Nov
	K. ridley sea turtle	General Distribution			E/E	Regular													-			May-Nov	May-Nov
	Leatherback sea turtle	General Distribution			E/E	Regular													-			May-Nov	May-Nov
	Loggerhead sea turtle	General Distribution			T/E	Regular													-			May-Nov	May-Nov

INVERTEBRATES

Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
							J	F	M	A	M	J	J	A	S	O	N	D					
 Cephalopod	Longfin squid	Concentration Area				Common													May-Aug	May-Aug	May-Aug	Apr-Nov	Apr-Nov
 Crab	Horseshoe crab	Concentration Area				High													May-Jul	May-Jul	-	Apr-Oct	Apr-Oct
 Gastropod	Channeled whelk	Concentration Area				High													Jun-Jul	Aug-Oct	-	May-Oct	May-Oct
	Channeled whelk	Concentration Area				Med-Low													Jun-Jul	Aug-Oct	-	May-Oct	May-Oct
	Knobbed whelk	Concentration Area				Medium													Jun-Jul	Aug-Oct	-	May-Oct	May-Oct
	Knobbed whelk	Concentration Area				High													Jun-Jul	Aug-Oct	-	May-Oct	May-Oct







MARINE MAMMALS

Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence												Mating	Calving	Pupping	Molt
							J	F	M	A	M	J	J	A	S	O	N	D				
 Whale	Fin whale	General Distribution			E/E	Rare													-	-	-	-
	Humpback whale	General Distribution			E/E	Common													-	-	-	-
	N.A. right whale	General Distribution			E/E	Common													-	-	-	-
	Sei whale	General Distribution			E/-	Rare													-	-	-	-





TERRESTRIAL MAMMALS

Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence											
							J	F	M	A	M	J	J	A	S	O	N	D
 Small Mammal	New England cottontail	General Distribution			-/C	Rare												

BIRDS

Subelement	Species	Monthly Presence												Nest	Mig. (S)	Mig. (F)	Molt
		J	F	M	A	M	J	J	A	S	O	N	D				
 Alcid	Atlantic puffin													-	Mar	Sep	-
 Diving	D. crested cormorant													-	Mar-Apr	Sep-Oct	-
 Gull/Tern	Gulls													-	Apr-May	Aug-Nov	-
 Pelagic	Northern gannet													-	Apr-May	Oct-Nov	-
	Shearwaters													-	May	Oct	-
 Shorebird	Red-necked phalarope													-	May	Oct	-
	Shorebirds													Apr-Aug	Mar-Dec	-	Aug
 Waterfowl	American black duck													Mar-Jul	Sep-Mar	-	-
	Diving ducks													Mar-Apr	Sep-Apr	-	-
	Geese													May	Mar-May	Sep-Nov	-

FISH

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
 Diadromous	Alewife													-	-	-	Jan-Dec	Jan-Dec
	American eel													-	-	-	Jan-Dec	Jan-Dec
	American shad													-	-	-	Jan-Dec	Jan-Dec
	Atlantic salmon													Sep-Dec	Sep-Mar	Feb-Jul	Jan-Dec	Jan-Dec
	Blueback herring													-	-	-	Jan-Dec	Jan-Dec
	Striped bass													-	-	-	Apr-Nov	Apr-Nov
 Estuarine Nursery	Atlantic herring													Aug-Nov	Aug-Nov	Oct-Dec	Jan-Dec	Jan-Dec
	Bay anchovy													Jun-Aug	Jun-Aug	Jun-Sep	Jan-Dec	Jan-Dec
	Black sea bass													Feb-Jul	Feb-Jul	Mar-Jul	Jan-Dec	Jan-Dec
	Bluefish													-	-	Jun-Aug	May-Nov	May-Nov
	Northern kingfish													Jun-Jul	Jun-Jul	Jun-Aug	May-Nov	May-Nov
	Scup													May-Aug	May-Aug	Jun-Aug	May-Oct	May-Oct
	Summer flounder													Aug-Nov	Aug-Nov	Sep-Nov	Apr-Nov	Apr-Nov
	Windowpane													May-Aug	May-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Winter flounder													Jan-May	Jan-May	Feb-May	Jan-Dec	Jan-Dec
 Estuarine Resident	Atlantic silverside													May-Aug	May-Aug	May-Sep	Jan-Dec	Jan-Dec
	Forspine stickleback													May-Jul	May-Jul	May-Aug	Jan-Dec	Jan-Dec
	Mummichog													May-Aug	Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
 Marine Benthic	Atlantic cod													-	-	-	Apr-Aug	Apr-Aug
	Atlantic tomcod													Dec-Feb	Dec-Mar	Dec-Apr	Dec-Jun	Dec-Jun
	Atlantic wolffish													Mar-Aug	Mar-Aug	Mar-Sep	Jan-Dec	Jan-Dec
	Goosefish													-	-	-	-	Jan-Dec
	Haddock													Feb-Jun	Feb-Jun	Mar-Jun	Jan-Dec	Jan-Dec
	Little skate													Jan-Dec	Jan-Dec	-	Jan-Dec	Jan-Dec
	Pollock													-	-	-	Apr-Oct	Apr-Oct
	Red hake													-	-	-	Dec-May	Dec-May
	Red hake													Jun-Sep	Jun-Sep	Jul-Nov	Jun-Nov	Jun-Nov
	Rock gunnel													Nov-Mar	Nov-Apr	Jan-Jun	Jan-Dec	Jan-Dec



FISH (continued)

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	Searobins													Jun-Sep	Jun-Sep	Jun-Oct	Jan-Dec	Jan-Dec
	Silver hake													Jul-Oct	Jul-Oct	Aug-Oct	Jul-Dec	Jul-Dec
	Silver hake													-	-	-	Jan-Jun	Jan-Jun
	Tautog													May-Aug	May-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	White hake													Apr-Sep	May-Nov	May-Nov	Jan-Dec	Jan-Dec
	Winter skate													-	-	-	Jan-Dec	Jan-Dec
	Yellowtail flounder													Mar-Jul	Mar-Jul	Apr-Jul	Jan-Dec	Jan-Dec
	Atlantic mackerel													May-Jul	May-Aug	May-Aug	Mar-Dec	Mar-Dec
	Spiny dogfish													-	-	-	Jan-Dec	Jan-Dec
	Tunas													-	-	-	Jun-Sep	-




REPTILES & AMPHIBIANS

Subelement	Species	Monthly Presence												Nest	Hatch	Internest	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	Eastern box turtle													Jun-Jul	Aug-Oct	-	Jan-Dec	Jan-Dec

INVERTEBRATES

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	Atl. jackknife clam													Apr-May	Apr-May	Apr-May	Jan-Dec	Jan-Dec
	Atlantic surfclam													Jun-Aug	Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Bay scallop													Jun-Sep	Jun-Sep	Jun-Sep	Jan-Dec	Jan-Dec
	Blue mussel													May-Nov	May-Nov	May-Nov	Jan-Dec	Jan-Dec
	Eastern oyster													Jun-Aug	Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Northern quahog													Jun-Aug	Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Sea scallop													Jul-Oct	Jul-Oct	Jul-Oct	Jan-Dec	Jan-Dec
	Softshell clam													Jun-Aug	Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Longfin squid													May-Aug	May-Aug	May-Aug	Apr-Nov	Apr-Nov
	Atlantic rock crab													May-Oct	Jun-Oct	Jun-Oct	Jan-Dec	Jan-Dec
	Blue crab													-	Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Jonah crab													May-Oct	May-Oct	May-Oct	Jan-Dec	Jan-Dec
	American lobster													Aug-Nov	Jan-Dec	Jun-Oct	Jan-Dec	Jan-Dec
	Db grass shrimp													May-Jul	May-Jul	May-Jul	Jan-Dec	Jan-Dec
	Sevenspine bay shrimp													May-Jul	May-Jul	May-Jul	Jan-Dec	Jan-Dec

MARINE MAMMALS

Subelement	Species	Monthly Presence												Mating	Calving	Pupping	Molt
		J	F	M	A	M	J	J	A	S	O	N	D				
	Atl. wht.-side dolphin													-	-	-	-
	Bottlenose dolphin													-	-	-	-
	Harbor porpoise													-	-	-	-
	Risso's dolphin													-	-	-	-
	Short-beaked common dolphin													-	-	-	-
	Gray seal													Dec-Feb	Dec-Feb	Dec-Feb	Mar-May
	Harbor seal													-	-	-	-
	Harp seal													-	-	-	-
	Hooded seal													-	-	-	-
	Minke whale													-	-	-	-
	Pilot whales													-	-	-	-

For additional information about species locations and extent, reference the underlying GIS data available from response.restoration.noaa.gov

ESI POLYGON HABITAT TYPES

<i>ESI Rank</i>	<i>Habitat Classification</i>	<i>Area (Acres)</i>	<i>Area (Sq. Miles)</i>
10A	Salt and Brackish Water Marshes	281.10	0.44
10B	Freshwater Marshes	24.67	0.04
10C	Swamps	91.11	0.14
10D	Scrub and Shrub Wetlands	137.59	0.21
9A	Sheltered Tidal Flats	43.06	0.07
7	Exposed Tidal Flats	6.38	0.01
5	Mixed Sand and Gravel Beaches	0.40	0.00

ESI SHORELINE HABITAT TYPES

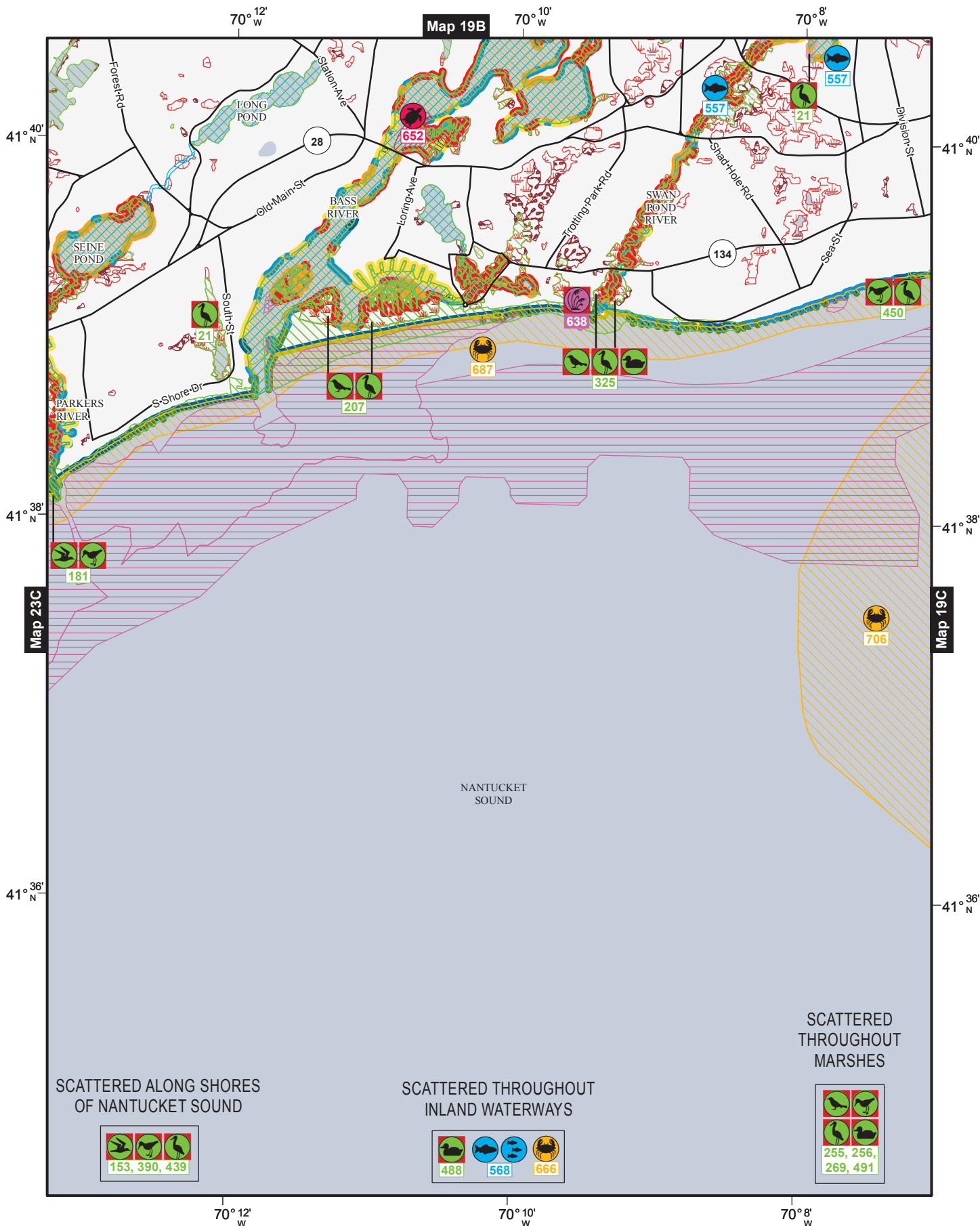
<i>ESI Rank</i>	<i>Shoreline Habitat Classification</i>	<i>Length (Meters)</i>	<i>Length (Miles)</i>	<i>% of ESI Shoreline</i>
10A	Salt and Brackish Water Marshes	28,985.49	18.01	38%
10B	Freshwater Marshes	57.72	0.04	< 1%
10C	Swamps	61.79	0.04	< 1%
9A	Sheltered Tidal Flats	17,128.11	10.64	23%
9B	Vegetated Low Banks	2,066.53	1.28	3%
8B	Sheltered, Solid Man-Made Structures	3,270.65	2.03	4%
8C	Sheltered Riprap	559.28	0.35	1%
7	Exposed Tidal Flats	7,853.10	4.88	10%
6B	Riprap	4,531.07	2.82	6%
5	Mixed Sand and Gravel Beaches	283.71	0.18	< 1%
4	Coarse Grained Sand Beaches	7,571.00	4.70	10%
3A	Fine to Medium Grained Sand Beaches	2,976.85	1.85	4%

Total ESI Shoreline: 75,345.31 Total ESI Shoreline: 46.82
 Total Shoreline: 48,943.13 Total Shoreline: 30.41

Note: A shoreline segment may include multiple shoreline habitats. If any segments include multiple habitats, the combined length of all habitats may exceed the length of the mapped shoreline, and the percent of ESI shoreline values will sum to greater than 100%

All underlying GIS data can be obtained from response.restoration.noaa.gov

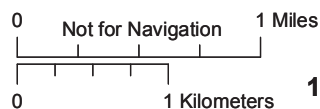




Map 19D
Mass. / Rhode Island



SEE BACK OF MAP
for details about mapped species and
other species that occur in mapped area.
Data Published: November 2016



1:50,000



Map 19D
Massachusetts and Rhode Island

BIOLOGICAL RESOURCES

Note: An asterisk (*) indicates that life stage occurs in this range but not in all months included

DISPLAYED ON MAP

BENTHIC

Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence											
						J	F	M	A	M	J	J	A	S	O	N	D
SAV	Eelgrass	High Ecological Value			Potential												
SAV	Eelgrass	High Ecological Value			Present												
SAV	Rare aquatic/wetland plant	High Ecological Value			Present												

BIRDS

Map ID	Subelement	Species	MA/RI	S	F	Mapping Qualifier	Concentration	Monthly Presence										Nest	Mig. (S)	Mig. (F)	Molt
								J	F	M	A	M	J	J	A	S	O				
21	Wading	Marsh birds		C/C		General Distribution	Common											-	Mar-May	Aug-Nov	Jul-Aug
153	Gull/Tern	Rare tern		C/-		Nesting	Rare											May-Aug	-	-	-
181	Gull/Tern	Rare tern		C/-		Nesting	Rare											May-Aug	-	-	-
	Shorebird	Red knot			T	Migration	Common											-	May-Jun	Jul-Sep	-
	Shorebird	Shorebirds				Migration	Common											-	Mar-Jun	Jul-Nov	Aug
207	Passerine	Marsh passerines		-/C		General Distribution	Common											Apr-Aug	Apr-May	Aug-Nov	Sep-Oct
	Wading	Egrets		-/C		Migration	Common											Apr-Jul	Mar-May	Aug-Sep	-
	Wading	Marsh birds		C/C		General Distribution	Common											-	Mar-May	Aug-Nov	Jul-Aug
255	Passerine	Marsh passerines		-/C		General Distribution	Common											Apr-Aug	Apr-May	Aug-Nov	Sep-Oct
	Shorebird	Willet		-/C		Nesting	Common											Apr-May	Apr-May	Aug-Oct	-
	Wading	Egrets		-/C		Migration	Common											Apr-Jul	Mar-May	Aug-Sep	-
	Wading	Wading birds		-/C		General Distribution	Common											-	Mar-May	Jul-Oct	-
256	Passerine	Marsh passerines		-/C		General Distribution	Common											Apr-Aug	Apr-May	Aug-Nov	Sep-Oct
	Shorebird	Willet		-/C		Nesting	Common											Apr-May	Apr-May	Aug-Oct	-
	Wading	Egrets		-/C		Migration	Common											Apr-Jul	Mar-May	Aug-Sep	-
	Wading	Marsh birds		C/C		General Distribution	Common											-	Mar-May	Aug-Nov	Jul-Aug
	Wading	Wading birds		-/C		General Distribution	Common											-	Mar-May	Jul-Oct	-
269	Passerine	Marsh passerines		-/C		General Distribution	Common											Apr-Aug	Apr-May	Aug-Nov	Sep-Oct
	Shorebird	Willet		-/C		Nesting	Common											Apr-May	Apr-May	Aug-Oct	-
	Wading	Egrets		-/C		Migration	Common											Apr-Jul	Mar-May	Aug-Sep	-
	Wading	Marsh birds		C/C		General Distribution	Common											-	Mar-May	Aug-Nov	Jul-Aug
	Wading	Wading birds		-/C		General Distribution	Common											-	Mar-May	Jul-Oct	-
325	Waterfowl	Waterfowl		C/C		General Distribution	Common											May-Jul	Apr-May	Aug-Oct	Aug-Sep
	Passerine	Marsh passerines		-/C		General Distribution	Common											Apr-Aug	Apr-May	Aug-Nov	Sep-Oct
	Wading	Egrets		-/C		Migration	Common											Apr-Jul	Mar-May	Aug-Sep	-
	Wading	Marsh birds		C/C		General Distribution	Common											-	Mar-May	Aug-Nov	Jul-Aug
	Wading	Wading birds		-/C		General Distribution	Common											-	Mar-May	Jul-Oct	-
390	Waterfowl	Waterfowl		C/C		General Distribution	Common											May-Jul	Apr-May	Aug-Oct	Aug-Sep
	Shorebird	Willet		-/C		Nesting	Common											Apr-May	Apr-May	Aug-Oct	-
	Wading	Wading birds		-/C		General Distribution	Common											-	Mar-May	Jul-Oct	-
439	Shorebird	Piping plover		T/E	T	Nesting	Common											Mar-Aug	Mar-Apr	Jul-Oct	-

BIRDS (continued)

Map ID	Subelement	Species	Mapping Qualifier	MA/RI	Monthly Presence												Nest	Eggs	Larvae	Mig.(S)	Mig.(F)	Molt
					S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N	D			
450	Shorebird	Piping plover	Nesting				Common												Mar-Aug	Mar-Apr	Jul-Oct	-
		Wading birds	General Distribution				Common												-	Mar-May	Jul-Oct	-
488	Waterfowl	Waterfowl	General Distribution				Common												May-Jul	Apr-May	Aug-Oct	-
491	Wading	Marsh birds	General Distribution				Common												-	Mar-May	Aug-Nov	Jul-Aug
	Waterfowl	Waterfowl	General Distribution				Common												May-Jul	Apr-May	Aug-Oct	-

FISH

Map ID	Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
								J	F	M	A	M	J	J	A	S	O	N	D					
557	Diadromous	Alewife	Spawning Area				-													Apr-Jun	Apr-Jun	Apr-Jun	-	Apr-Jun
		American eel	Migration				-													-	-	-	Jan-Dec	Jan-Dec
568	Diadromous	Blueback herring	Spawning Area				-													Apr-Jun	Apr-Jun	Apr-Jun	-	Apr-Jun
		Alewife	Spawning Area				-													Apr-Jun	Apr-Jun	Apr-Jun	-	Apr-Jun
	Diadromous	American eel	Migration				-													-	-	-	Jan-Dec	Jan-Dec
	Diadromous	American shad	Spawning Area				-													Apr-Jun	Apr-Jun	Apr-Jun	-	Apr-Jun
	Diadromous	Blueback herring	Spawning Area				-													Apr-Jun	Apr-Jun	Apr-Jun	-	Apr-Jun
	Estuarine Nursery	White perch	Spawning Area				-													Apr-Aug	Apr-Aug	May-Sep	Jan-Dec	Jan-Dec

HABITATS & RARE PLANTS

Map ID	Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence											
								J	F	M	A	M	J	J	A	S	O	N	D
638	Plant	Rare plant	Vulnerable Occurrence				-												

REPTILES & AMPHIBIANS

Map ID	Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence												Nest	Hatch	Interest	Juveniles	Adults
								J	F	M	A	M	J	J	A	S	O	N	D					
652	Turtle	Rare reptile	Vulnerable Occurrence				-													-	Apr-Jul	Jun-Nov	Jan-Dec	Jan-Dec

INVERTEBRATES

Map ID	Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
								J	F	M	A	M	J	J	A	S	O	N	D					
666	Crab	Blue crab	Nursery				Common													Jun-Aug	-	Jun-Aug	Jan-Dec	Jan-Dec
687	Crab	Horseshoe crab	Nursery				Abundant													May-Jul	May-Jul	-	Jan-Dec	Jan-Dec
		Horseshoe crab	Spawning				Abundant													May-Jul	May-Jul	-	May-Jul	May-Jul
706	Crab	Horseshoe crab	Concentration Area				High													May-Jul	May-Jul	-	Apr-Oct	Apr-Oct


WIDESPREAD IN MAPPED AREA (> 10 SQUARE KILOMETERS)

BIRDS




Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt
							J	F	M	A	M	J	J	A	S	O	N	D				
Aldid	Razorbill	Wintering				Common													-	-	Oct-Nov	-
	Loons	Migration				Common													-	Mar-Jun	Sep-Dec	Jan-Mar
Gull/Tern	Rare tern	General Distribution				Common													-	Apr-May	Jul-Sep	-
	Roseate tern	General Distribution				Common													-	Apr-May	Jul-Sep	-
Waterfowl	Sea ducks	Wintering				Abundant													-	Mar-May	Sep-Oct	-

Massachusetts and Rhode Island: Map 19D


REPTILES & AMPHIBIANS

Subelement	Species	Mapping Qualifier	MA/RI		Monthly Presence												Nest	Hatch	Internest	Juveniles	Adults
			S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N	D				
	Green sea turtle	General Distribution	T/E	T	Regular												-	-	-	May-Nov	May-Nov
	K. ridley sea turtle	General Distribution	E/E	E	Regular												-	-	-	May-Nov	May-Nov
	Leatherback sea turtle	General Distribution	E/E	E	Regular												-	-	-	May-Nov	May-Nov
	Loggerhead sea turtle	General Distribution	T/E	T	Regular												-	-	-	May-Nov	May-Nov

INVERTEBRATES

Subelement	Species	Mapping Qualifier	MA/RI		Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
			S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N	D				
  	Longfin squid	Concentration Area			Common												May-Aug	May-Aug	May-Aug	Apr-Nov	Apr-Nov
	Horseshoe crab	Concentration Area			Medium												May-Jul	May-Jul	-	Apr-Oct	Apr-Oct
	Channeled whelk	Concentration Area			High												Jun-Jul	Aug-Oct	-	May-Oct	May-Oct
	Channeled whelk	Concentration Area			Med-Low												Jun-Jul	Aug-Oct	-	May-Oct	May-Oct
	Knobbed whelk	Concentration Area			High												Jun-Jul	Aug-Oct	-	May-Oct	May-Oct
	Knobbed whelk	Concentration Area			Medium												Jun-Jul	Aug-Oct	-	May-Oct	May-Oct

MARINE MAMMALS






Subelement	Species	Mapping Qualifier	MA/RI		Concentration	Monthly Presence												Mating	Calving	Pupping	Molt
			S	F		J	F	M	A	M	J	J	A	S	O	N	D				
	Fin whale	General Distribution	E/E	E	Rare												-	-	-		
	Humpback whale	General Distribution	E/E	E	Common												-	-	-		
	N.A. right whale	General Distribution	E/E	E	Common												-	-	-		
	Sei whale	General Distribution	E/-	E	Rare												-	-	-		

TERRESTRIAL MAMMALS





Subelement	Species	Mapping Qualifier	MA/RI		Concentration	Monthly Presence											
			S	F		J	F	M	A	M	J	J	A	S	O	N	D
	New England cottontail	General Distribution	-/C		Rare												

ALSO PRESENT IN MAPPED AREA (GENERAL DISTRIBUTION)

BIRDS

Subelement	Species	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt
		J	F	M	A	M	J	J	A	S	O	N	D				
	Atlantic puffin													-	Mar	Sep	-
	D. crested cormorant													-	Mar-Apr	Sep-Oct	-
	Gulls													-	Apr-May	Aug-Nov	-
	Northern gannet													-	Apr-May	Oct-Nov	-
	Shearwaters													-	May	Oct	-
	Red-necked phalarope													-	May	Oct	-
	Shorebirds													Apr-Aug	Mar-Dec	-	Aug
	American black duck													Mar-Jul	Sep-Mar	-	-
	Diving ducks													Mar-Apr	Sep-Apr	-	-
	Geese													May	Mar-May	Sep-Nov	-





FISH

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	Diadromous													-	-	-	Jan-Dec	Jan-Dec
	Alewife																	
	American eel																	
	American shad																	
	Atlantic salmon													Sep-Dec	Sep-Mar	Feb-Jul	Jan-Dec	Jan-Dec
	Blueback herring																	
	Striped bass																	
	Atlantic herring																	
	Bay anchovy													Aug-Nov	Aug-Nov	Oct-Dec	Jan-Dec	Jan-Dec
	Black sea bass													Jun-Aug	Jun-Aug	Jun-Sep	Jan-Dec	Jan-Dec
	Bluefish													Feb-Jul	Feb-Jul	Mar-Jul	Jan-Dec	Jan-Dec
	Northern kingfish															Jun-Aug	May-Nov	May-Nov
	Scup													Jun-Jul	Jun-Jul	Jun-Aug	May-Oct	May-Oct
	Summer flounder													May-Aug	May-Aug	Sep-Nov	Apr-Nov	Apr-Nov
	Windowpane													May-Aug	May-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Winter flounder													Jan-May	Jan-May	Feb-May	Jan-Dec	Jan-Dec
	Atlantic silverside													May-Aug	May-Aug	May-Sep	Jan-Dec	Jan-Dec
	Fourspine stickleback													May-Jul	May-Jul	May-Aug	Jan-Dec	Jan-Dec
	Mummichog													May-Aug	Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Atlantic cod																Apr-Aug	Apr-Aug
	Atlantic tomcod													Dec-Feb	Dec-Mar	Dec-Apr	Dec-Jun	Dec-Jun
	Atlantic wolffish													Mar-Aug	Mar-Aug	Mar-Sep	Jan-Dec	Jan-Dec
	Goosefish																	
	Haddock													Feb-Jun	Feb-Jun	Mar-Jun	Jan-Dec	Jan-Dec
	Little skate													Jan-Dec	Jan-Dec		Jan-Dec	Jan-Dec
	Pollock																Apr-Oct	Apr-Oct
	Red hake													Jun-Sep	Jun-Sep	Jul-Nov	Jun-Nov	Jun-Nov
	Red hake																Dec-May	Dec-May
	Rock gunnel													Nov-Mar	Nov-Apr	Jan-Jun	Jan-Dec	Jan-Dec
	Searobins													Jun-Sep	Jun-Sep	Jun-Oct	Jan-Dec	Jan-Dec
	Silver hake													Jul-Oct	Jul-Oct	Aug-Oct	Jul-Dec	Jul-Dec
	Silver hake																Jan-Jun	Jan-Jun
	Tautog													May-Aug	May-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	White hake													Apr-Sep	May-Nov	May-Nov	Jan-Dec	Jan-Dec
	Winter skate																Jan-Dec	Jan-Dec
	Yellowtail flounder													Mar-Jul	Mar-Jul	Apr-Jul	Jan-Dec	Jan-Dec
	Atlantic mackerel													May-Jul	May-Aug	May-Aug	Mar-Dec	Mar-Dec
	Spiny dogfish																Jan-Dec	Jan-Dec
	Tunas																Jun-Sep	-
	Tunas																	




REPTILES & AMPHIBIANS

Subelement	Species	Monthly Presence												Nest	Hatch	Interest	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	Eastern box turtle													Jun-Jul	Aug-Oct	-	Jan-Dec	Jan-Dec

INVERTEBRATES

Subelement	Species	Monthly Presence												Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D				
	Atl. jackknife clam													Apr-May	Apr-May	Jan-Dec	Jan-Dec
	Atlantic surfclam													Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Bay scallop													Jun-Sep	Jun-Sep	Jan-Dec	Jan-Dec
	Blue mussel													May-Nov	May-Nov	Jan-Dec	Jan-Dec
	Eastern oyster													Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Northern quahog													Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Sea scallop													Jul-Oct	Jul-Oct	Jan-Dec	Jan-Dec
	Softshell clam													Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Atlantic rock crab													May-Oct	Jun-Oct	Jan-Dec	Jan-Dec
	Blue crab													-	Jun-Aug	Jan-Dec	Jan-Dec
	Jonah crab													May-Oct	May-Oct	Jan-Dec	Jan-Dec
	American lobster													Aug-Nov	Jun-Oct	Jan-Dec	Jan-Dec
	Db grass shrimp													May-Jul	May-Jul	Jan-Dec	Jan-Dec
	Sevenspine bay shrimp													May-Jul	May-Jul	Jan-Dec	Jan-Dec

MARINE MAMMALS

Subelement	Species	Monthly Presence												Mating	Calving	Pupping	Molt
		J	F	M	A	M	J	J	A	S	O	N	D				
	Atl. wht.-side dolphin													-	-	-	-
	Bottlenose dolphin													-	-	-	-
	Harbor porpoise													-	-	-	-
	Risso's dolphin													-	-	-	-
	Short-beaked common dolphin													-	-	-	-
	Gray seal													Dec-Feb	Dec-Feb	Mar-May	-
	Harbor seal													-	-	-	-
	Harp seal													-	-	-	-
	Hooded seal													-	-	-	-
	Minke whale													-	-	-	-
	Pilot whales													-	-	-	-
														-	-	-	-

For additional information about species locations and extent, reference the underlying GIS data available from response.restoration.noaa.gov

SHORELINE RESOURCES

ESI POLYGON HABITAT TYPES

ESI Rank	Habitat Classification	Area (Acres)	Area (Sq. Miles)
10A	Salt and Brackish Water Marshes	296.67	0.46
10B	Freshwater Marshes	24.06	0.04
10C	Swamps	249.38	0.39
10D	Scrub and Shrub Wetlands	102.10	0.16
9A	Sheltered Tidal Flats	27.87	0.04
7	Exposed Tidal Flats	0.28	0.00

ESI SHORELINE HABITAT TYPES

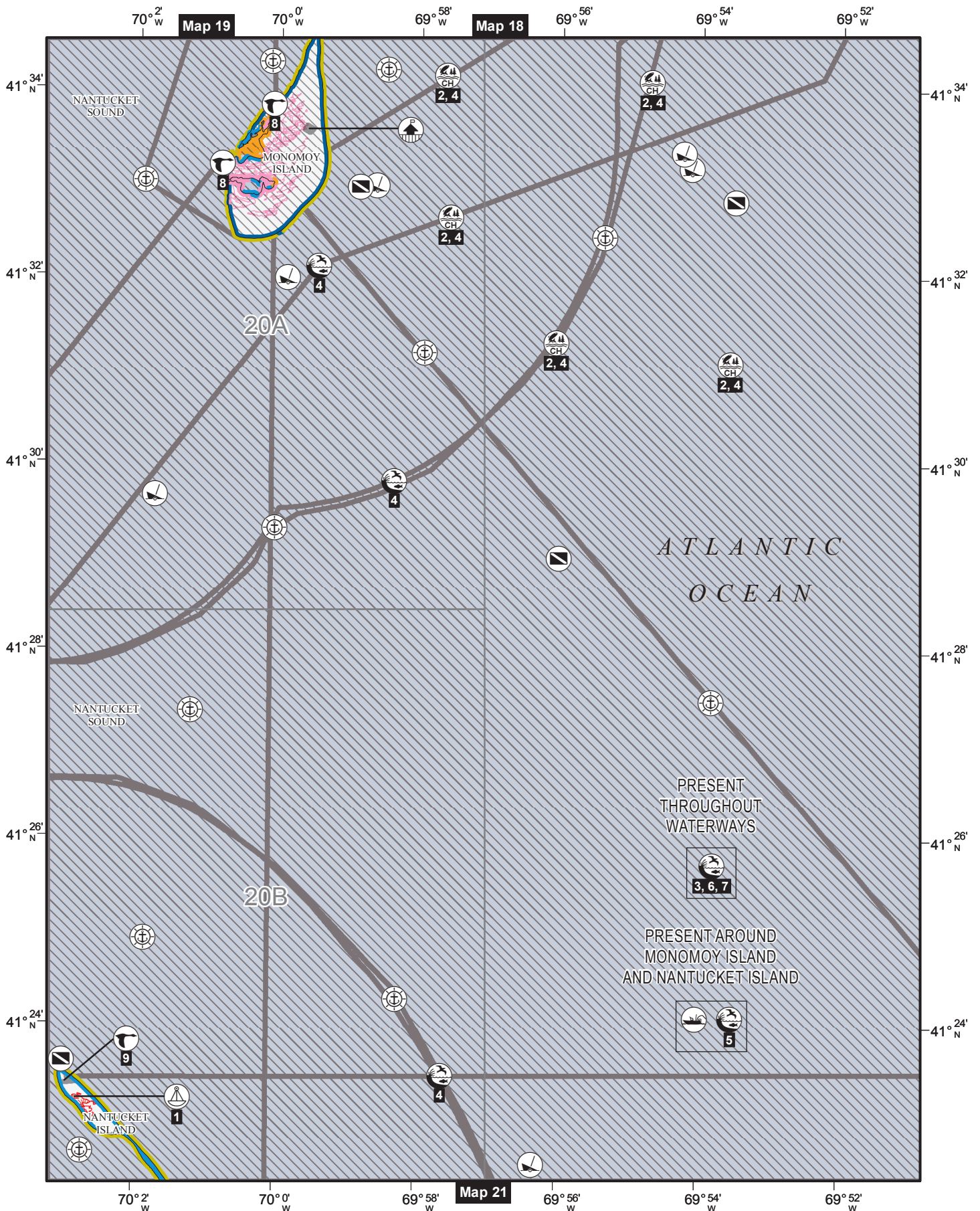
ESI Rank	Shoreline Habitat Classification	Length (Meters)	Length (Miles)	% of ESI Shoreline
10A	Salt and Brackish Water Marshes	36,857.96	22.90	42%
10B	Freshwater Marshes	255.12	0.16	< 1%
10C	Swamps	269.32	0.17	< 1%
10D	Scrub and Shrub Wetlands	233.54	0.15	< 1%
9A	Sheltered Tidal Flats	10,219.99	6.35	12%
9B	Vegetated Low Banks	5,575.88	3.46	6%
8B	Sheltered, Solid Man-Made Structures	8,023.82	4.99	9%
8C	Sheltered Riprap	1,494.55	0.93	2%
7	Exposed Tidal Flats	3,204.72	1.99	4%
6B	Riprap	3,930.30	2.44	4%
5	Mixed Sand and Gravel Beaches	125.85	0.08	< 1%
4	Coarse Grained Sand Beaches	10,914.62	6.78	12%
3A	Fine to Medium Grained Sand Beaches	6,336.80	3.94	7%
1B	Exposed, Solid Man-Made Structures	50.12	0.03	< 1%

Total ESI Shoreline: 87,492.60 Total ESI Shoreline: 54.37
Total Shoreline: 69,043.49 Total Shoreline: 42.90

Note: A shoreline segment may include multiple shoreline habitats. If any segments include multiple habitats, the combined length of all habitats may exceed the length of the mapped shoreline, and the percent of ESI shoreline values will sum to greater than 100%

All underlying GIS data can be obtained from response.restoration.noaa.gov





Map 20
Massachusetts and Rhode Island

HUMAN USE RESOURCES

DISPLAYED ON MAP (POINTS)			
Map ID	Type	Name	Phone
1	REPEATED MEASUREMENT SITE	TIDE GAUGE - GREAT POINT	
DISPLAYED ON MAP (POLYGONS)			
Map ID	Type	Name	Phone
2	CRITICAL HABITAT	CRITICAL HABITAT: NORTH ATLANTIC RIGHT WHALE	
3	MANAGEMENT AREA	OUTER CAPE LOBSTER MANAGEMENT AREA	
4	MANAGEMENT AREA	GEORGES BANK SEASONAL CLOSURE AREA	
5	MANAGEMENT AREA	NORTHERN INSHORE STATE TRAP/POT WATERS AREA	
6	MANAGEMENT AREA	NORTHERN NEARSHORE TRAP/POT WATERS AREA	
7	MANAGEMENT AREA	OTHER NORTHEAST GILLNET WATERS AREA	
8	WILDLIFE REFUGE	MONOMOY NATIONAL WILDLIFE REFUGE	MATTHEW HILLMANN, USFWS, E. MA NWR COMPLEX 978-579-4001
9	WILDLIFE REFUGE	NANTUCKET NATIONAL WILDLIFE REFUGE	TOM EAGLE, USFWS, E. MA NWR COMPLEX 978-579-4027

ALSO PRESENT IN MAPPED AREA (POLYGONS)			
Type	Name	Contact	Phone
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: ATLANTIC COD	NORTHEAST FISHERIES MANAGEMENT COUNCIL	
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: ATLANTIC HALIBUT	NORTHEAST FISHERIES MANAGEMENT COUNCIL	
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: ATLANTIC HERRING	NORTHEAST FISHERIES MANAGEMENT COUNCIL	
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: ATLANTIC WOLFFISH	NORTHEAST FISHERIES MANAGEMENT COUNCIL	
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: HADDOCK	NORTHEAST FISHERIES MANAGEMENT COUNCIL	
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: LITTLE SKATE	NORTHEAST FISHERIES MANAGEMENT COUNCIL	
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: POLLOCK	NORTHEAST FISHERIES MANAGEMENT COUNCIL	
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: WINDOW PANE FLOUNDER	NORTHEAST FISHERIES MANAGEMENT COUNCIL	
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: WINTER FLOUNDER	NORTHEAST FISHERIES MANAGEMENT COUNCIL	
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: WINTER SKATE	NORTHEAST FISHERIES MANAGEMENT COUNCIL	
MANAGEMENT AREA	PRIORITY HABITAT	MDFW NHESP	508-389-6380

JURISDICTIONS

COUNTY: BARNSTABLE, NANTUCKET
COAST GUARD: DISTRICT 1, SECTOR SE NEW ENGLAND
USACE: NORTH ATLANTIC DIVISION, NEW ENGLAND DISTRICT

FEMA:
EPA:

REGION I
 REGION 1

SHORELINE RESOURCES

ESI POLYGON HABITAT TYPES

ESI Rank	Habitat Classification	Area (Acres)	Area (Sq. Miles)
10A	Salt and Brackish Water Marshes	18.10	0.03
10B	Freshwater Marshes	216.61	0.34
9A	Sheltered Tidal Flats	45.05	0.07
7	Exposed Tidal Flats	10.64	0.02



ESI SHORELINE HABITAT TYPES

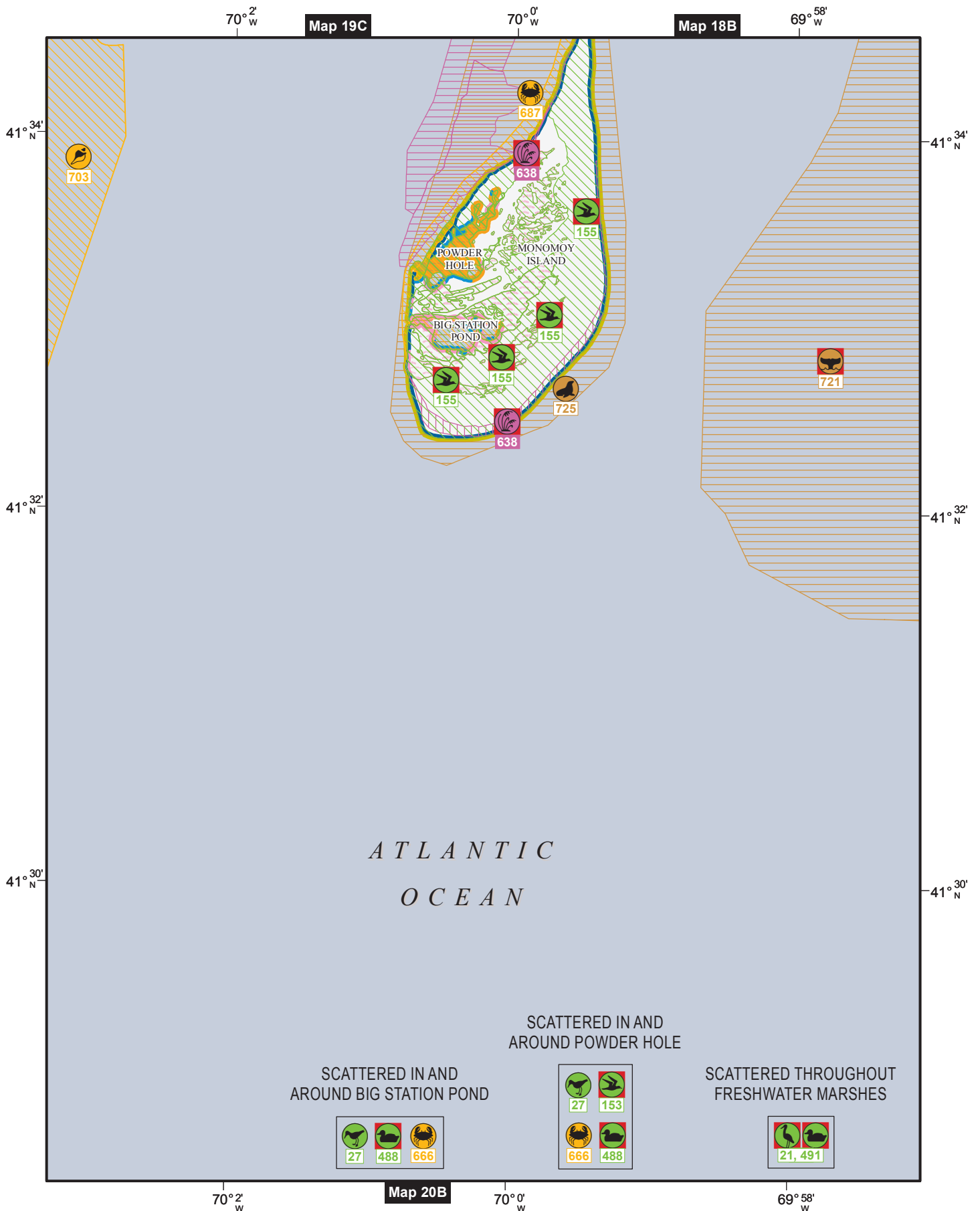
ESI Rank	Shoreline Habitat Classification	Length (Meters)	Length (Miles)	% of ESI Shoreline
10B	Freshwater Marshes	3,420.84	2.13	8%
9A	Sheltered Tidal Flats	3,494.53	2.17	8%
9B	Vegetated Low Banks	1,724.78	1.07	4%
7	Exposed Tidal Flats	16,101.90	10.01	37%
4	Coarse Grained Sand Beaches	9,429.64	5.86	22%
3A	Fine to Medium Grained Sand Beaches	9,386.87	5.83	22%

Total ESI Shoreline: 43,558.55
 Total ESI Shoreline: 27.07
 Total Shoreline: 22,401.99
 Total Shoreline: 13.92

Note: A shoreline segment may include multiple shoreline habitats. If any segments include multiple habitats, the combined length of all habitats may exceed the length of the mapped shoreline, and the percent of ESI shoreline values will sum to greater than 100%

All underlying GIS data can be obtained from response.restoration.noaa.gov

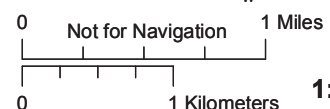




Map 20A
Mass. / Rhode Island



SEE BACK OF MAP
for details about mapped species and
other species that occur in mapped area.
Data Published: November 2016



1:50,000



Map 20A
Massachusetts and Rhode Island

BIOLOGICAL RESOURCES

Note: An asterisk (*) indicates that life stage occurs in this range but not in all months included

DISPLAYED ON MAP

BENTHIC

Subelement	Species	Mapping Qualifier	MA/RI S F	Concentration	Monthly Presence											
					J	F	M	A	M	J	J	A	S	O	N	D
SAV	Eelgrass	High Ecological Value		Potential												
SAV	Eelgrass	High Ecological Value		Present												

BIRDS

Map ID	Subelement	Species	Mapping Qualifier	MA/RI S F C/C	Concentration	Monthly Presence											
						J	F	M	A	M	J	J	A	S	O	N	D
21	Wading	Marsh birds	General Distribution		Common												
27	Shorebird	Hudsonian godwit	Migration		Rare												
153	Gull/Tern	Rare tern	Nesting	C/-	Rare												
155	Gull/Tern	Laughing gull	Nesting		Common												
	Gull/Tern	Rare tern	Nesting	C/-	Rare												
488	Waterfowl	Waterfowl	General Distribution	C/C	Common												
491	Wading	Marsh birds	General Distribution	C/C	Common												
	Waterfowl	Waterfowl	General Distribution	C/C	Common												

HABITATS & RARE PLANTS

Map ID	Subelement	Species	Mapping Qualifier	MA/RI S F T/C	Concentration	Monthly Presence											
						J	F	M	A	M	J	J	A	S	O	N	D
638	Plant	Rare plant	Vulnerable Occurrence		-												







INVERTEBRATES

Map ID	Subelement	Species	Mapping Qualifier	MA/RI S F	Concentration	Monthly Presence											
						J	F	M	A	M	J	J	A	S	O	N	D
666	Crab	Blue crab	Nursery		Common												
	Crab	Horseshoe crab	Nursery		Abundant												
687	Crab	Horseshoe crab	Spawning		Abundant												
703	Gastropod	Channeled whelk	Concentration Area		High												



MARINE MAMMALS

Map ID	Subelement	Species	Mapping Qualifier	MA/RI S F E/E	Concentration	Monthly Presence											
						J	F	M	A	M	J	J	A	S	O	N	D
721	Whale	N.A. right whale	Concentration Area		Common												
725	Pinniped	Gray seal	Haul Out		High												
	Pinniped	Harbor seal	Haul Out		Low												




BIRDS

Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence												Nest	Mig. (S)	Mig. (F)	Molt
							J	F	M	A	M	J	J	A	S	O	N	D				
	Acid	Razorbill				Common													-	-	Oct-Nov	-
	Diving	Loons		C/-		Common													-	Mar-Jun	Sep-Dec	Jan-Mar
	Gull/Tern	Rare tern		C/-		Common													-	Apr-May	Jul-Sep	-
	Shorebird	Roseate tern		E/-	E	Common													-	Apr-May	Jul-Sep	-
		American oystercatcher		-/C		Rare													May-Aug	May	-	-
		Piping plover		T/E	T	Common													Mar-Aug	Mar-Apr	Jul-Oct	-
		Red knot			T	Abundant													-	May-Jun	Jul-Sep	-
		Shorebirds				Abundant													-	Mar-Jun	Jul-Nov	Aug
		Willet		-/C		Common													-	Apr-May	Aug-Oct	-
	Wading	BC night-heron		-/C		Common													-	May-Aug	Sep-Oct	-
		Wading birds		-/C		Common													-	Mar-May	Jul-Oct	-
	Waterfowl	Sea ducks				Abundant													-	Mar-May	Sep-Oct	-



REPTILES & AMPHIBIANS

Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence												Nest	Hatch	Internest	Juveniles	Adults
							J	F	M	A	M	J	J	A	S	O	N	D					
	Turtle	Green sea turtle		T/E	T	Regular													-	-	-	May-Nov	May-Nov
		K. ridley sea turtle		E/E	E	Regular													-	-	-	May-Nov	May-Nov
		Leatherback sea turtle		E/E	E	Regular													-	-	-	May-Nov	May-Nov
		Loggerhead sea turtle		T/E	T	Regular													-	-	-	May-Nov	May-Nov







INVERTEBRATES

Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
							J	F	M	A	M	J	J	A	S	O	N	D					
	Cephalopod	Longfin squid				Common													May-Aug	May-Aug	May-Aug	Apr-Nov	Apr-Nov
	Crab	Horseshoe crab				Medium													May-Jul	May-Jul	-	Apr-Oct	Apr-Oct
		Horseshoe crab				High													May-Jul	May-Jul	-	Apr-Oct	Apr-Oct
	Gastropod	Channeled whelk				Med-Low													Jun-Jul	Aug-Oct	-	May-Oct	May-Oct
		Knobbed whelk				Medium													Jun-Jul	Aug-Oct	-	May-Oct	May-Oct





MARINE MAMMALS

Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence												Mating	Calving	Pupping	Molt
							J	F	M	A	M	J	J	A	S	O	N	D				
	Whale	Fin whale		E/E	E	Rare													-	-	-	-
		Humpback whale		E/E	E	Common													-	-	-	-
		N.A. right whale		E/E	E	Common													-	-	-	-
		Sei whale		E/-	E	Rare													-	-	-	-

BIRDS

Subelement	Species	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt
		J	F	M	A	M	J	J	A	S	O	N	D				
 Alcids	Atlantic puffin													-	Mar	Sep	-
 Diving	D. crested cormorant													-	Mar-Apr	Sep-Oct	-
 Gull/Tern	Gulls													-	Apr-May	Aug-Nov	-
 Pelagic	Northern gannet													-	Apr-May	Oct-Nov	-
	Shearwaters													-	May	Oct	-
 Shorebird	Red-necked phalarope													-	May	Oct	-
 Waterfowl	American black duck													Mar-Jul	Sep-Mar	-	-
	Diving ducks													Mar-Apr	Sep-Apr	-	-
	Geese													May	Mar-May	Sep-Nov	-

FISH

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
 Diadromous	Alewife													-	-	-	Jan-Dec	Jan-Dec
	American eel													-	-	-	Jan-Dec	Jan-Dec
	American shad													-	-	-	Jan-Dec	Jan-Dec
	Atlantic salmon													Sep-Dec	Sep-Mar	Feb-Jul	Jan-Dec	Jan-Dec
	Blueback herring													-	-	-	Jan-Dec	Jan-Dec
	Striped bass													-	-	-	Apr-Nov	Apr-Nov
 Estuarine Nursery	Atlantic herring													Aug-Nov	Aug-Nov	Oct-Dec	Jan-Dec	Jan-Dec
	Bay anchovy													Jun-Aug	Jun-Aug	Jun-Sep	Jan-Dec	Jan-Dec
	Black sea bass													Feb-Jul	Feb-Jul	Mar-Jul	Jan-Dec	Jan-Dec
	Black sea bass													Feb-Jul	Feb-Jul	Mar-Jul	Feb-Jul	Feb-Jul
	Black sea bass													-	-	-	Aug-Jan	Aug-Jan
	Bluefish													-	-	Jun-Aug	May-Nov	May-Nov
	Northern kingfish													Jun-Jul	Jun-Jul	Jun-Aug	May-Nov	May-Nov
	Scup													May-Aug	May-Aug	Jun-Aug	May-Oct	May-Oct
	Summer flounder													Aug-Nov	Aug-Nov	Sep-Nov	Apr-Nov	Apr-Nov
	Windowpane													May-Aug	May-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Winter flounder													Jan-May	Jan-May	Feb-May	Jan-Dec	Jan-Dec
 Estuarine Resident	Atlantic silverside													May-Aug	May-Aug	May-Sep	Jan-Dec	Jan-Dec
	Forspinner stickleback													May-Jul	May-Jul	May-Aug	Jan-Dec	Jan-Dec
	Mummichog													May-Aug	Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
 Marine Benthic	Atlantic cod													Nov-Mar	Nov-Mar	Dec-Mar	Jan-Dec	Jan-Dec
	Atlantic cod													-	-	-	Apr-Aug	Apr-Aug
	Atlantic halibut													Apr-Sep	Apr-Sep	Apr-Sep	Jan-Dec	Jan-Dec
	Atlantic tomcod													Dec-Feb	Dec-Mar	Dec-Apr	Dec-Jun	Dec-Jun
	Atlantic wolffish													Mar-Aug	Mar-Aug	Mar-Sep	Jan-Dec	Jan-Dec
	Goosefish													-	-	-	-	Jan-Dec
	Goosefish													-	-	-	-	Jan-Jun
	Haddock													Feb-Jun	Feb-Jun	Mar-Jun	Jan-Dec	Jan-Dec
	Little skate													Jan-Dec	Jan-Dec	-	Jan-Dec	Jan-Dec




FISH (continued)

Subelement	Species	Monthly Presence												Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D				
	Pollock													-	-	Apr-Oct	Apr-Oct
	Red hake													Jun-Sep	Jul-Nov	Jun-Nov	Jun-Nov
	Red hake													-	-	Dec-May	Dec-May
	Rock gunnel													Jun-Sep	Jul-Nov	Jan-Dec	Jan-Dec
	Searobins													Nov-Mar	Jan-Jun	Jan-Dec	Jan-Dec
	Silver hake													Jun-Sep	Jun-Oct	Jan-Dec	Jan-Dec
	Silver hake													Jul-Oct	Aug-Oct	Jul-Dec	Jul-Dec
	Silver hake													Jul-Oct	Aug-Oct	Jan-Dec	Jan-Dec
	Tautog													-	-	Jan-Jun	Jan-Jun
	White hake													May-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Winter skate													Apr-Sep	May-Nov	Jan-Dec	Jan-Dec
	Yellowtail flounder													-	-	Jan-Dec	Jan-Dec
	Atlantic mackerel													Mar-Jul	Apr-Jul	Jan-Dec	Jan-Dec
	Spiny dogfish													May-Jul	May-Aug	Mar-Dec	Mar-Dec
	Tunas													-	-	Jan-Dec	Jan-Dec
														-	-	Jun-Sep	-

INVERTEBRATES

Subelement	Species	Monthly Presence												Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D				
	Atlantic surfclam													Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Bay scallop													Jun-Sep	Jun-Sep	Jan-Dec	Jan-Dec
	Blue mussel													May-Nov	May-Nov	Jan-Dec	Jan-Dec
	Northern quahog													Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Sea scallop													Jul-Oct	Jul-Oct	Jan-Dec	Jan-Dec
	Longfin squid													May-Aug	May-Aug	Apr-Nov	Apr-Nov
	Atlantic rock crab													May-Oct	Jun-Oct	Jan-Dec	Jan-Dec
	Blue crab													-	Jun-Aug	Jan-Dec	Jan-Dec
	Horseshoe crab													May-Jul	May-Jul	Jan-Dec	Jan-Dec
	Jonah crab													May-Oct	May-Oct	Jan-Dec	Jan-Dec
	American lobster													Aug-Nov	Jun-Oct	Jan-Dec	Jan-Dec
	Db grass shrimp													May-Jul	May-Jul	Jan-Dec	Jan-Dec
	Northern shrimp													-	Dec-Feb	Nov-Feb	Dec-Feb
	Sevenspine bay shrimp													May-Jul	May-Jul	Jan-Dec	Jan-Dec

MARINE MAMMALS

Subelement	Species	Monthly Presence												Mating	Calving	Pupping	Molt
		J	F	M	A	M	J	J	A	S	O	N	D				
	Atl. wht.-side dolphin													-	-	-	-
	Bottlenose dolphin													-	-	-	-
	Harbor porpoise													-	-	-	-
	Risso's dolphin													-	-	-	-
	Short-beaked common dolphin													-	-	-	-
	Gray seal													Dec-Feb	Dec-Feb	Dec-Feb	Mar-May
	Harbor seal													-	-	-	-
	Harp seal													-	-	-	-
	Hooded seal													-	-	-	-
	Minke whale													-	-	-	-
	Pilot whales													-	-	-	-
														-	-	-	-

For additional information about species locations and extent, reference the underlying GIS data available from response.restoration.noaa.gov

SHORELINE RESOURCES

ESI POLYGON HABITAT TYPES			
ESI Rank	Habitat Classification	Area (Acres)	Area (Sq. Miles)
10B	Freshwater Marshes	216.61	0.34
9A	Sheltered Tidal Flats	45.05	0.07
7	Exposed Tidal Flats	10.64	0.02

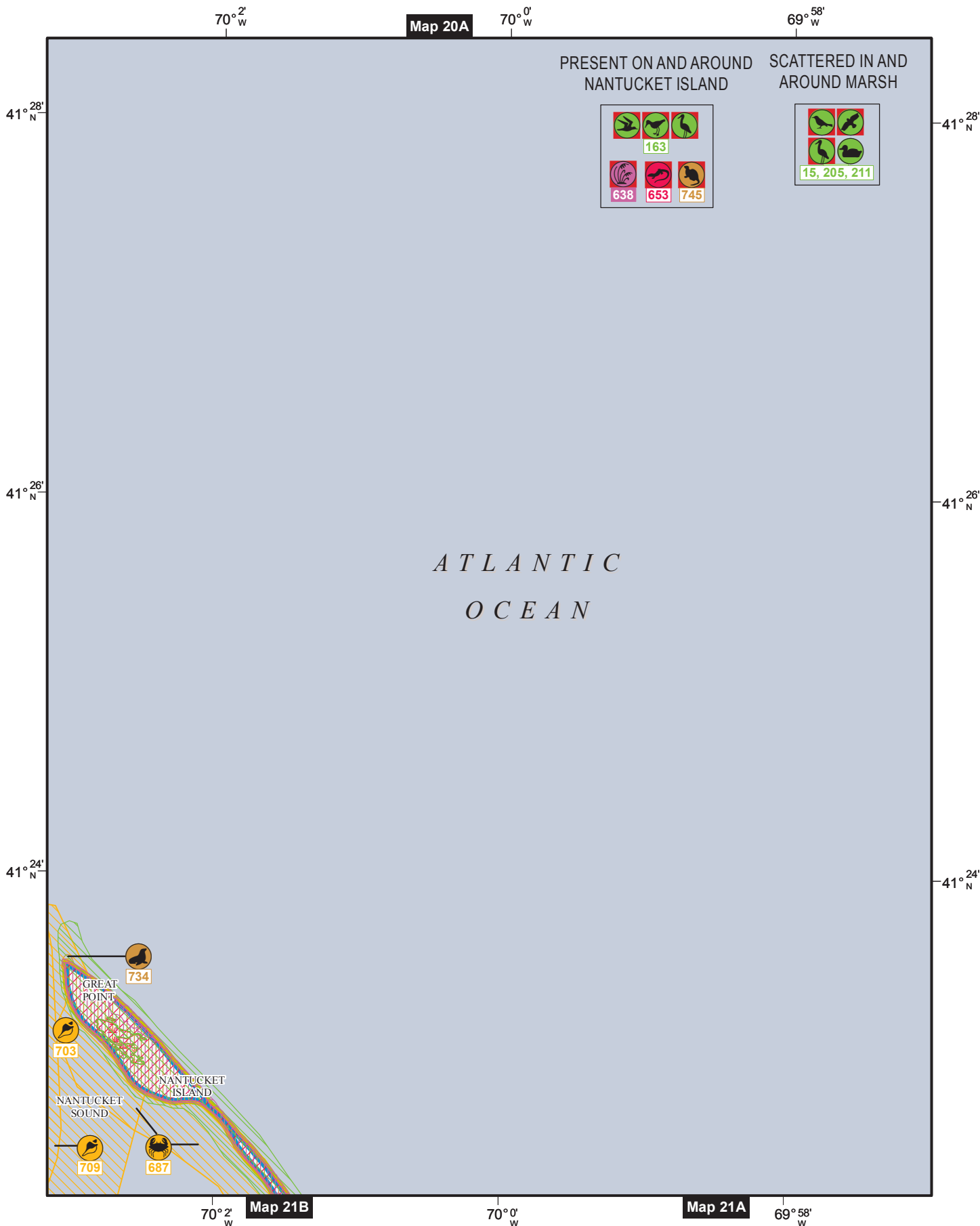
ESI SHORELINE HABITAT TYPES			
ESI Rank	Shoreline Habitat Classification	Length (Meters)	Length (Miles)
10B	Freshwater Marshes	3,420.84	2.13
9A	Sheltered Tidal Flats	3,494.53	2.17
9B	Vegetated Low Banks	1,724.78	1.07
7	Exposed Tidal Flats	9,668.74	6.01
4	Coarse Grained Sand Beaches	2,994.34	1.86
3A	Fine to Medium Grained Sand Beaches	9,389.00	5.83

Total ESI Shoreline: 30,692.22 Total ESI Shoreline: 19.07
 Total Shoreline: 15,968.83 Total Shoreline: 9.92

Note: A shoreline segment may include multiple shoreline habitats. If any segments include multiple habitats, the combined length of all habitats may exceed the length of the mapped shoreline, and the percent of ESI shoreline values will sum to greater than 100%

All underlying GIS data can be obtained from response.restoration.noaa.gov





Map 20B
Massachusetts and Rhode Island

BIOLOGICAL RESOURCES

Note: An asterisk (*) indicates that life stage occurs in this range but not in all months included

DISPLAYED ON MAP

BENTHIC

Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence
SAV	Rare aquatic/wetland plant	High Ecological Value				Present	J F M A M J J A S O N D

BIRDS

Map ID	Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence	Nest	Mig.(S)	Mig.(F)	Molt
15	Raptor	Northern harrier	Nesting		T/E		Rare		Mar-Jul	-	-	-
163	Gull/Tern	Rare tern	Nesting		C/-		Rare		May-Aug	-	-	-
	Shorebird	American oystercatcher	Nesting		-/C		Rare		May-Aug	May	-	-
	Shorebird	Eskimo curlew	General Distribution		E		Rare		-	-	Aug-Sep	-
	Shorebird	Piping plover	Nesting		T/E	T	Common		Mar-Aug	Mar-Apr	Jul-Oct	-
	Shorebird	Red knot	Migration		T		Common		-	May-Jun	Jul-Sep	-
	Shorebird	Shorebirds	Migration				Common		-	Mar-Jun	Jul-Nov	Aug
	Shorebird	Willet	Nesting		-/C		Common		Apr-May	Apr-May	Aug-Oct	-
	Wading	BC night-heron	Nesting		-/C		Common		May-Aug	Mar-Apr	Sep-Oct	-
	Wading	Wading birds	General Distribution		-/C		Common		-	Mar-May	Jul-Oct	-
205	Passerine	Marsh passerines	General Distribution		-/C		Common		Apr-Aug	Apr-May	Aug-Nov	Sep-Oct
	Raptor	Northern harrier	Nesting		T/E		Rare		Mar-Jul	-	-	-
	Wading	Egrets	General Distribution		-/C		Common		Apr-Jul	Mar-May	Aug-Sep	-
	Wading	Marsh birds	General Distribution		C/C		Common		-	Mar-May	Aug-Nov	Jul-Aug
	Waterfowl	Blue-winged teal	Nesting				Rare		May-Jul	-	-	-
211	Passerine	Marsh passerines	General Distribution		-/C		Common		Apr-Aug	Apr-May	Aug-Nov	Sep-Oct
	Wading	Egrets	General Distribution		-/C		Common		Apr-Jul	Mar-May	Aug-Sep	-
	Wading	Marsh birds	General Distribution		C/C		Common		-	Mar-May	Aug-Nov	Jul-Aug
	Waterfowl	Blue-winged teal	Nesting				Rare		May-Jul	-	-	-

HABITATS & RARE PLANTS

Map ID	Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence
638	Plant	Rare plant	Vulnerable Occurrence		T/C		-	J F M A M J J A S O N D

REPTILES & AMPHIBIANS

Map ID	Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence	Nest	Hatch	Interstest	Juveniles	Adults
653	Amphibian	Eastern spadefoot	Vulnerable Occurrence		T/E		-	J F M A M J J A S O N D	Apr-Jun	May-Jul	-	Jan-Dec	Jan-Dec

INVERTEBRATES

Map ID	Subelement	Species	Mapping Qualifier	MA/RI		Concentration	Monthly Presence												Eggs	Larvae	Juveniles	Adults
				S	F		J	F	M	A	M	J	J	A	S	O	N	D				
687	Crab	Horseshoe crab	Spawning			Abundant													May-Jul	-	May-Jul	May-Jul
703	Gastropod	Channeled whelk	Concentration Area			High													Jun-Jul	Aug-Oct	-	May-Oct
709	Gastropod	Knobbed whelk	Concentration Area			High													Jun-Jul	Aug-Oct	-	May-Oct

MARINE MAMMALS

MARINE MAMMALS

Map ID	Subelement	Species	Mapping Qualifier	MA/RI		Concentration	Monthly Presence												Calving	Pupping	Molt																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
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TERRESTRIAL MAMMALS

Map ID	Subelement	Species	Mapping Qualifier	MA/RI		Monthly Presence												
				S	F	Concentration		J	F	M	A	M	J	J	A	S	O	N
745	Small Mammal	New England cottontail	General Distribution		-/C	Rare												


WIDESPREAD IN MAPPED AREA (> 10 SQUARE KILOMETERS)

WIDESPREAD IN MAPPED AREA (> 10 SQUARE KILOMETERS)




BIRDS

Subelement	Species	Mapping Qualifier	MA/RI		Concentration	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt		
			S	F		J	F	M	A	M	J	J	A	S	O	N	D						
	Aldid	Wintering			Common														-		Oct-Nov	-	-
	Diving	Migration	C/-		Common														-	Mar-Jun	Sep-Dec	Jan-Mar	-
	Gull/Tern	General Distribution	C/-		Common														-	Apr-May	Jul-Sep	-	-
	Roseate tern	General Distribution	E/-	E	Common														-	Apr-May	Jul-Sep	-	-
	Waterfowl	Wintering			Abundant														-	Mar-May	Sep-Oct	-	-


REPTILES & AMPHIBIANS

Subelement	Species	Mapping Qualifier	MA/RI		Concentration	Monthly Presence												Nest	Hatch	Internest	Juveniles	Adults
			S	F		J	F	M	A	M	J	J	A	S	O	N	D					
	Green sea turtle	General Distribution	T/E	T	Regular												-	-	May-Nov	May-Nov		
	K. ridley sea turtle	General Distribution	E/E	E	Regular												-	-	May-Nov	May-Nov		
	Leatherback sea turtle	General Distribution	E/E	E	Regular												-	-	May-Nov	May-Nov		
	Loggerhead sea turtle	General Distribution	T/E	T	Regular												-	-	May-Nov	May-Nov		

INVERTEBRATES




Subelement	Species	Mapping Qualifier	MA/RI		Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
			S	F		J	F	M	A	M	J	J	A	S	O	N	D					
	Cephalopod	Concentration Area			Common													May-Aug	May-Aug	May-Aug	Apr-Nov	Apr-Nov
	Crab	Concentration Area			Medium													May-Jul	May-Jul	-	Apr-Oct	Apr-Oct
	Gastropod	Channelled whelk			Med-Low													Jun-Jul	Aug-Oct	-	May-Oct	May-Oct
	Knobbed whelk	Concentration Area			Medium													Jun-Jul	Aug-Oct	-	May-Oct	May-Oct

MARINE MAMMALS







Subelement	Species	Mapping Qualifier	MA/RI	Monthly Presence											
				S	F	Concentration	J	F	M	A	M	J	J	A	S
	Fin whale	General Distribution	E/E	E		Rare									
	Humpback whale	General Distribution	E/E	E		Common									
	N.A. right whale	General Distribution	E/E	E		Common									
	Sei whale	General Distribution	E/-	E		Rare									

ALSO PRESENT IN MAPPED AREA (GENERAL DISTRIBUTION)


BIRDS

Subelement	Species	Monthly Presence											
		J	F	M	A	M	J	J	A	S	O	N	D
	Atlantic puffin												
	D. crested cormorant												
	Gulls												
	Northern gannet												
	Shearwaters												
	Red-necked phalarope												
	American black duck												
	Diving ducks												
	Geese												

FISH

Subelement	Species	Monthly Presence											
		J	F	M	A	M	J	J	A	S	O	N	D
	Alewife												
	American eel												
	American shad												
	Atlantic salmon												
	Blueback herring												
	Striped bass												
	Atlantic herring												
	Bay anchovy												
	Black sea bass												
	Black sea bass												
	Black sea bass												
	Bluefish												
	Northern kingfish												
	Scup												
	Summer flounder												
	Windowpane												
	Winter flounder												
	Atlantic silverside												
	Fourspine stickleback												
	Mummichog												
	Atlantic cod												







FISH (continued)

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	Atlantic cod													-	-	-	Apr-Aug	Apr-Aug
	Atlantic halibut													Apr-Sep	Apr-Sep	Apr-Sep	Jan-Dec	Jan-Dec
	Atlantic tomcod													Dec-Feb	Dec-Mar	Dec-Apr	Dec-Jun	Dec-Jun
	Atlantic wolffish													Mar-Aug	Mar-Aug	Mar-Sep	Jan-Dec	Jan-Dec
	Goosefish													-	-	-	-	Jan-Jun
	Goosefish													-	-	-	-	Jan-Dec
	Haddock													Feb-Jun	Feb-Jun	Mar-Jun	Jan-Dec	Jan-Dec
	Little skate													Jan-Dec	Jan-Dec	-	Jan-Dec	Jan-Dec
	Pollock													-	-	-	Apr-Oct	Apr-Oct
	Red hake													Jun-Sep	Jun-Sep	Jul-Nov	Jun-Nov	Jun-Nov
	Red hake													Jun-Sep	Jun-Sep	Jul-Nov	Jan-Dec	Jan-Dec
	Red hake													-	-	-	Dec-May	Dec-May
	Rock gunnel													Nov-Mar	Nov-Apr	Jan-Jun	Jan-Dec	Jan-Dec
	Searobins													Jun-Sep	Jun-Sep	Jun-Oct	Jan-Dec	Jan-Dec
	Silver hake													Jul-Oct	Jul-Oct	Aug-Oct	Jan-Dec	Jan-Dec
	Silver hake													Jul-Oct	Jul-Oct	Aug-Oct	Jul-Dec	Jul-Dec
	Silver hake													-	-	-	Jan-Jun	Jan-Jun
	Tautog													May-Aug	May-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	White hake													Apr-Sep	May-Nov	May-Nov	Jan-Dec	Jan-Dec
	Winter skate													-	-	-	Jan-Dec	Jan-Dec
	Yellowtail flounder													Mar-Jul	Mar-Jul	Apr-Jul	Jan-Dec	Jan-Dec
	Atlantic mackerel													May-Jul	May-Aug	May-Aug	Mar-Dec	Mar-Dec
	Spiny dogfish													-	-	-	Jan-Dec	Jan-Dec
	Tunas													-	-	-	Jun-Sep	-

REPTILES & AMPHIBIANS




Subelement	Species	Monthly Presence												Nest	Hatch	Interst	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	Eastern box turtle													Jun-Jul	Aug-Oct	-	Jan-Dec	Jan-Dec

INVERTEBRATES

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	Atlantic surfclam													Jun-Aug	Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Blue mussel													May-Nov	May-Nov	May-Nov	Jan-Dec	Jan-Dec
	Northern quahog													Jun-Aug	Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Sea scallop													Jul-Oct	Jul-Oct	Jul-Oct	Jan-Dec	Jan-Dec
	Softshell clam													Jun-Aug	Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Longfin squid													May-Aug	May-Aug	May-Aug	Apr-Nov	Apr-Nov
	Atlantic rock crab													May-Oct	Jun-Oct	Jun-Oct	Jan-Dec	Jan-Dec
	Blue crab													-	Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Horseshoe crab													May-Jul	May-Jul	-	Jan-Dec	Jan-Dec
	Jonah crab													May-Oct	May-Oct	May-Oct	Jan-Dec	Jan-Dec
	American lobster													Aug-Nov	Jan-Dec	Jun-Oct	Jan-Dec	Jan-Dec
	Northern shrimp													-	Dec-Feb	Nov-Feb	Nov-Feb	Dec-Feb
	Sevenspine bay shrimp													May-Jul	May-Jul	May-Jul	Jan-Dec	Jan-Dec




Massachusetts and Rhode Island: Map 20B

MARINE MAMMALS

Subelement	Species	Monthly Presence												Calving	Pupping	Molt
		J	F	M	A	M	J	J	A	S	O	N	D			
	Atl. wht.-side dolphin													-	-	-
	Bottlenose dolphin													-	-	-
	Harbor porpoise													-	-	-
	Risso's dolphin													-	-	-
	Short-beaked common dolphin													-	-	-
	Gray seal													Dec-Feb	Dec-Feb	Mar-May
	Harbor seal													-	-	-
	Harp seal													-	-	-
	Hooded seal													-	-	-
	Minke whale													-	-	-
	Pilot whales													-	-	-
														-	-	-

For additional information about species locations and extent, reference the underlying GIS data available from response.restoration.noaa.gov

SHORELINE RESOURCES

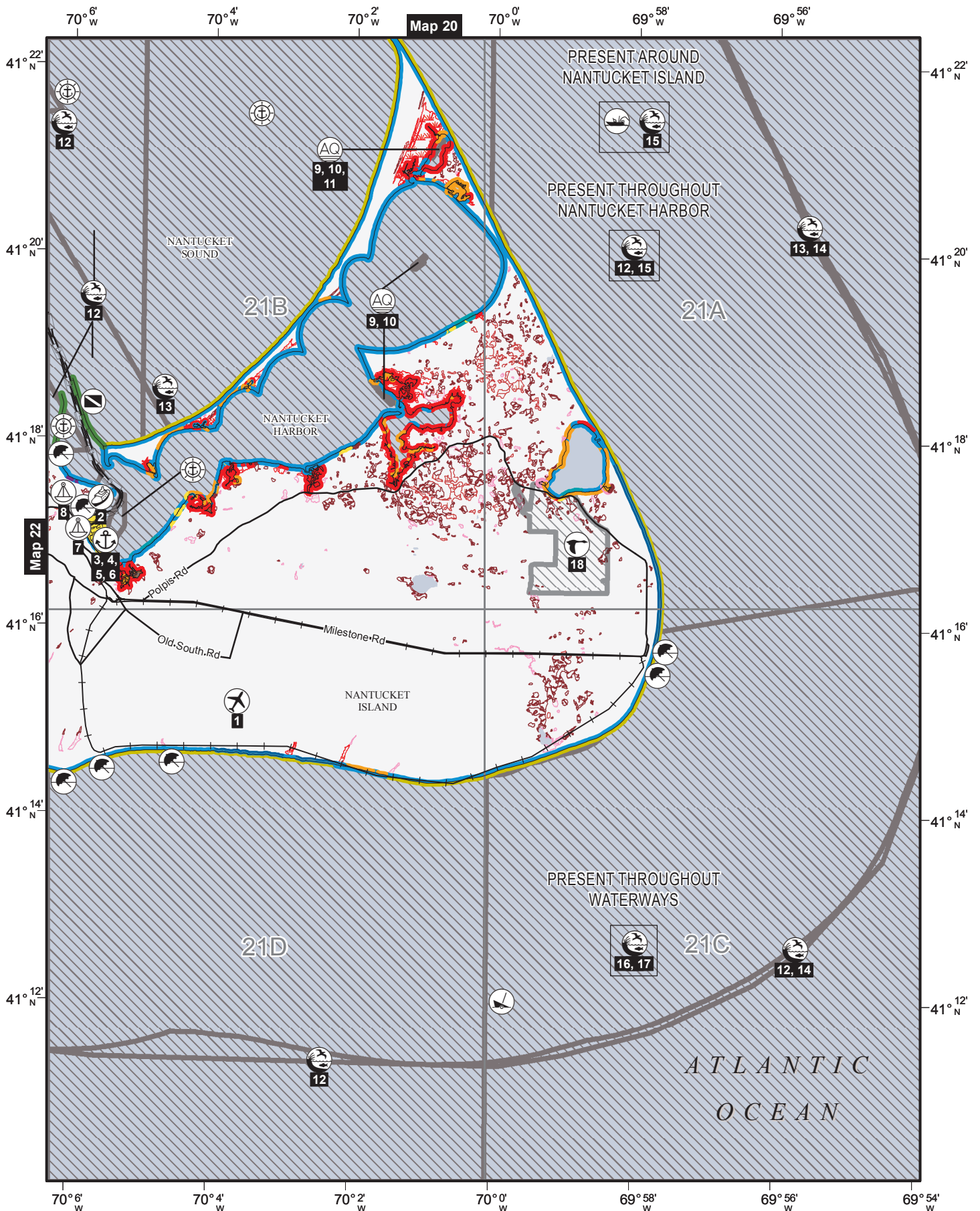
ESI POLYGON HABITAT TYPES				
ESI Rank	Habitat Classification	Area (Acres)	Area (Sq. Miles)	
10A	Salt and Brackish Water Marshes	18.10	0.03	
				
ESI SHORELINE HABITAT TYPES				
ESI Rank	Shoreline Habitat Classification	Length (Meters)	Length (Miles)	% of ESI Shoreline
7	Exposed Tidal Flats	6,432.00	4.00	50%
4	Coarse Grained Sand Beaches	6,432.00	4.00	50%
				
				

Total ESI Shoreline: 12,864.01 Total ESI Shoreline: 7.99
Total Shoreline: 6,432.00 Total Shoreline: 4.00

Note: A shoreline segment may include multiple shoreline habitats. If any segments include multiple habitats, the combined length of all habitats may exceed the length of the mapped shoreline, and the percent of ESI shoreline values will sum to greater than 100%

All underlying GIS data can be obtained from response.restoration.noaa.gov





Map 21
Massachusetts and Rhode Island

HUMAN USE RESOURCES

DISPLAYED ON MAP (POINTS)				
Map ID	Type	Name	Contact	Phone
1	AIRPORT	NANTUCKET MEMORIAL AIRPORT		
2	FERRY	NANTUCKET FERRY TERMINAL		
3	MARINA	NANTUCKET MOORINGS		
4	MARINA	NANTUCKET TOWN PIER		
5	MARINA	NANTUCKET BOAT BASIN		
6	MARINA	OLD NORTH WHARF		
7	REPEATED MEASUREMENT SITE	TIDE GAUGE - NANTUCKET		
8	REPEATED MEASUREMENT SITE	ENV BUOY-STATION NTKM3-8449130-NANTUCKET ISLAND		
DISPLAYED ON MAP (POLYGONS)				
Map ID	Type	Name	Contact	Phone
9	AQUACULTURE	OYSTER	CHRISTOPHER SCHILLACI, MA DMF, N. BEDFORD, MA	508-990-2860
10	AQUACULTURE	QUAHOG	CHRISTOPHER SCHILLACI, MA DMF, N. BEDFORD, MA	508-990-2860
11	AQUACULTURE	SOFT CLAM	CHRISTOPHER SCHILLACI, MA DMF, N. BEDFORD, MA	508-990-2860
12	MANAGEMENT AREA	LOBSTER MANAGEMENT AREA 2		
13	MANAGEMENT AREA	OUTER CAPE LOBSTER MANAGEMENT AREA		
14	MANAGEMENT AREA	GEORGES BANK SEASONAL CLOSURE AREA		
15	MANAGEMENT AREA	NORTHERN INSHORE STATE TRAP/POT WATERS AREA		
16	MANAGEMENT AREA	NORTHERN NEARSHORE TRAP/POT WATERS AREA		
17	MANAGEMENT AREA	OTHER NORTHEAST GILLNET WATERS AREA		
18	WILDLIFE REFUGE	SESACHACHA HEATHLANDS WILDLIFE SANCTUARY	MASSACHUSETTS AUDUBON SOCIETY	508-228-9208
ALSO PRESENT IN MAPPED AREA (POINTS)				
Type	Name		Contact	Phone
COAST GUARD	LORSTA NANTUCKET		USCG	508-257-6302
COAST GUARD	STA BRANT POINT		USCG	508-228-0388
ESSENTIAL HABITAT	FACULTATIVE SPECIES, FAIRY SHRIMP -VERNAL POOL		MA DFW NHESP, WESTBOROUGH, MA	508-389-6375
ESSENTIAL HABITAT	FAIRY SHRIMP -VERNAL POOL		MA DFW NHESP, WESTBOROUGH, MA	508-389-6375
ALSO PRESENT IN MAPPED AREA (POLYGONS)				
Type	Name		Contact	Phone
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: ATLANTIC COD		NORTHEAST FISHERIES MANAGEMENT COUNCIL	
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: ATLANTIC HALIBUT		NORTHEAST FISHERIES MANAGEMENT COUNCIL	
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: ATLANTIC HERRING		NORTHEAST FISHERIES MANAGEMENT COUNCIL	
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: ATLANTIC WOLFFISH		NORTHEAST FISHERIES MANAGEMENT COUNCIL	
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: HADDOCK		NORTHEAST FISHERIES MANAGEMENT COUNCIL	
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: LITTLE SKATE		NORTHEAST FISHERIES MANAGEMENT COUNCIL	
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: WINDOW PANE FLOUNDER		NORTHEAST FISHERIES MANAGEMENT COUNCIL	
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: WINTER FLOUNDER		NORTHEAST FISHERIES MANAGEMENT COUNCIL	
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: WINTER SKATE		NORTHEAST FISHERIES MANAGEMENT COUNCIL	
MANAGEMENT AREA	PRIORITY HABITAT		MDFW NHESP	508-389-6380
STATE PROTECTED AREA	NANTUCKET STATE FOREST		EOEEA, DEPT. OF CONSERVATION AND RECREATION	617-626-1250

JURISDICTIONS

COUNTY: NANTUCKET
COAST GUARD: DISTRICT 1, SECTOR SE NEW ENGLAND
USACE: NORTH ATLANTIC DIVISION, NEW ENGLAND DISTRICT

FEMA: REGION I
EPA: REGION 1

SHORELINE RESOURCES

ESI POLYGON HABITAT TYPES

ESI Rank	Habitat Classification	Area (Acres)	Area (Sq. Miles)
10A	Salt and Brackish Water Marshes	485.37	0.76
10B	Freshwater Marshes	156.08	0.24
10C	Swamps	197.34	0.31
10D	Scrub and Shrub Wetlands	669.47	1.05
9A	Sheltered Tidal Flats	74.98	0.12
7	Exposed Tidal Flats	1.31	0.00

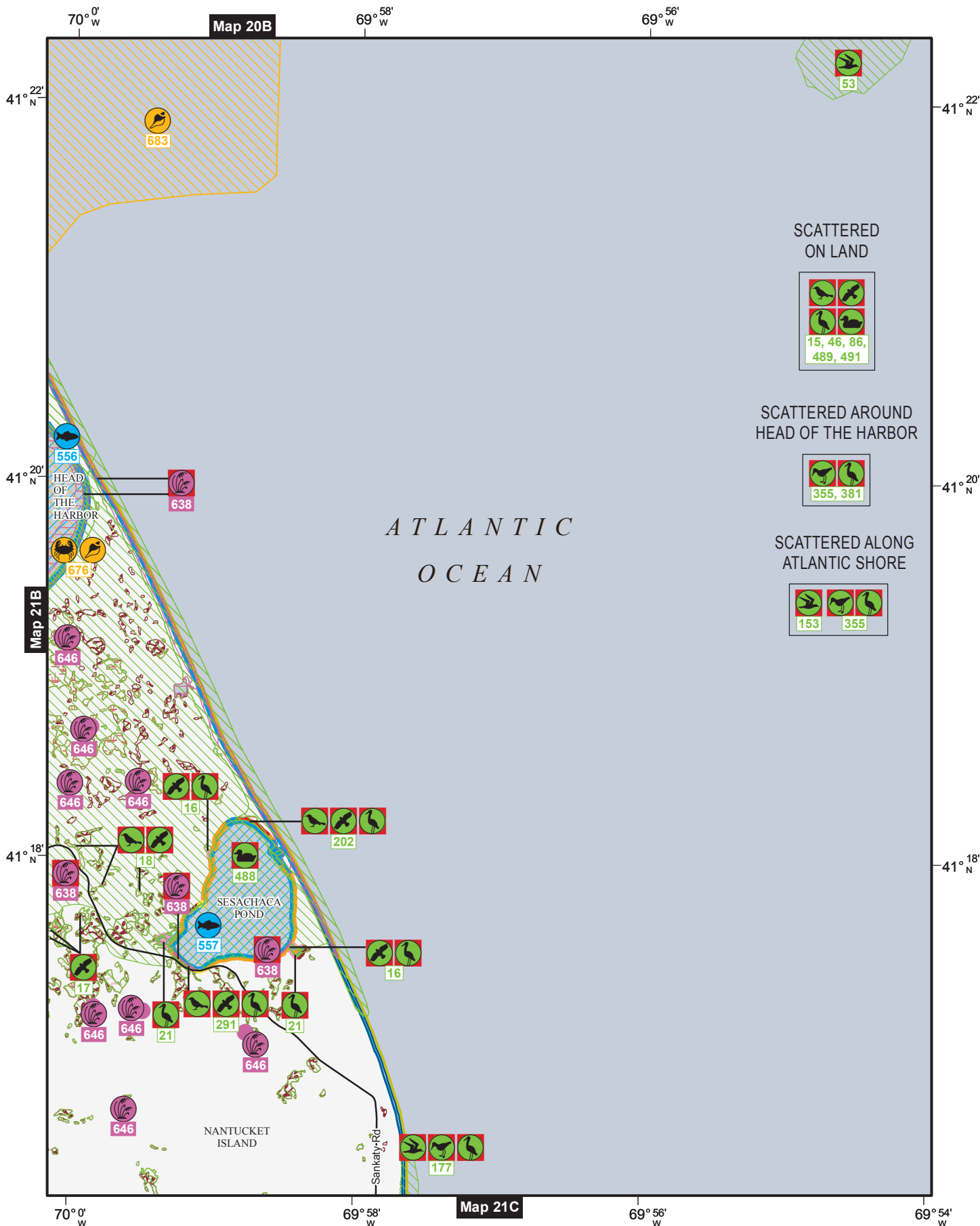
ESI SHORELINE HABITAT TYPES

ESI Rank	Shoreline Habitat Classification	Length (Meters)	Length (Miles)	% of ESI Shoreline
10A	Salt and Brackish Water Marshes	39,878.10	24.78	20%
10B	Freshwater Marshes	862.35	0.54	< 1%
10D	Scrub and Shrub Wetlands	916.03	0.57	< 1%
9A	Sheltered Tidal Flats	26,056.15	16.19	13%
9B	Vegetated Low Banks	9,014.38	5.60	4%
8B	Sheltered, Solid Man-Made Structures	6,020.15	3.74	3%
8C	Sheltered Riprap	65.41	0.04	< 1%
7	Exposed Tidal Flats	36,647.36	22.77	18%
6B	Riprap	2,654.33	1.65	1%
5	Mixed Sand and Gravel Beaches	1,496.54	0.93	1%
4	Coarse Grained Sand Beaches	74,146.65	46.07	36%
3B	Scarps and Steep Slopes (Sand)	6,051.23	3.76	3%
1B	Exposed, Solid Man-Made Structures	280.57	0.17	< 1%
Total ESI Shoreline:		204,089.25	126.82	
Total Shoreline:		121,529.11	75.51	

Note: A shoreline segment may include multiple shoreline habitats. If any segments include multiple habitats, the combined length of all habitats may exceed the length of the mapped shoreline, and the percent of ESI shoreline values will sum to greater than 100%

All underlying GIS data can be obtained from response.restoration.noaa.gov





Map 21A
Massachusetts and Rhode Island

BIOLOGICAL RESOURCES

Note: An asterisk (*) indicates that life stage occurs in this range but not in all months included

DISPLAYED ON MAP

BENTHIC

Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence											
							J	F	M	A	M	J	J	A	S	O	N	D
SAV	Eelgrass	High Ecological Value				Present												
SAV	Rare aquatic/wetland plant	High Ecological Value				Present												

BIRDS

Map ID	Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt
								J	F	M	A	M	J	J	A	S	O	N	D				
15	Raptor	Northern harrier	Nesting		T/E		Rare												Mar-Jul	-	-	-	
16	Raptor	Northern harrier	Nesting		T/E		Rare												Mar-Jul	-	-	-	
17	Wading	Marsh birds	General Distribution		C/C		Common												-	Mar-May	Aug-Nov	Jul-Aug	
	Raptor	Barn owl	Nesting		C/E		Common												Apr-Sep	-	-	-	
18	Raptor	Northern harrier	Nesting		T/E		Rare												Mar-Jul	-	-	-	
	Passerine	Northern parula	Nesting		-/T		Rare												May-Jun	-	-	-	
21	Raptor	Northern harrier	Nesting		T/E		Rare												Mar-Jul	-	-	-	
	Wading	Marsh birds	General Distribution		C/C		Common												-	Mar-May	Aug-Nov	Jul-Aug	
46	Raptor	Barn owl	Nesting		C/E		Common												Apr-Sep	-	-	-	
53	Gull/Tern	Rare tern	General Distribution		C/-		Rare												-	Apr-May	Jul-Sep	-	
86	Gull/Tern	Roseate tern	General Distribution		E/-	E	Rare												-	Apr-May	Jul-Sep	-	
	Passerine	Northern parula	Nesting		-/T		Rare												May-Jun	-	-	-	
153	Gull/Tern	Rare tern	Nesting		C/-		Rare												May-Aug	-	-	-	
177	Gull/Tern	Rare tern	Nesting		C/-		Rare												May-Aug	-	-	-	
202	Shorebird	Eskimo curlew	General Distribution			E	Rare												-	-	Aug-Sep	-	
	Shorebird	Piping plover	Nesting		T/E	T	Common												Mar-Aug	Mar-Apr	Jul-Oct	-	
	Shorebird	Red knot	Migration			T	Common												-	May-Jun	Jul-Sep	-	
	Shorebird	Shorebirds	Migration				Common												-	Mar-Jun	Jul-Nov	Aug	
	Wading	Wading birds	General Distribution		-/C		Common												-	Mar-May	Jul-Oct	-	
	Passerine	Marsh passerines	General Distribution		-/C		Common												Apr-Aug	Apr-May	Aug-Nov	Sep-Oct	
	Raptor	Northern harrier	Nesting		T/E		Rare												Mar-Jul	-	-	-	
	Wading	Egrets	General Distribution		-/C		Common												Apr-Jul	Mar-May	Aug-Sep	-	
	Wading	Marsh birds	General Distribution		C/C		Common												-	Mar-May	Aug-Nov	Jul-Aug	
	Wading	Marsh passerines	General Distribution		C/C		Common												Apr-Aug	Apr-May	Aug-Nov	Sep-Oct	
291	Raptor	Northern harrier	Nesting		T/E		Rare												Mar-Jul	-	-	-	
	Wading	Egrets	General Distribution		-/C		Common												Apr-Jul	Mar-May	Aug-Sep	-	
	Wading	Marsh birds	General Distribution		C/C		Common												-	Mar-May	Aug-Nov	Jul-Aug	
	Wading	Wading birds	General Distribution		-/C		Common												-	Mar-May	Jul-Oct	-	
355	Shorebird	American oystercatcher	Nesting		-/C		Rare												May-Aug	May	-	-	
	Shorebird	Eskimo curlew	General Distribution			E	Rare												-	-	Aug-Sep	-	
	Shorebird	Piping plover	Nesting		T/E	T	Common												Mar-Aug	Mar-Apr	Jul-Oct	-	

BIRDS (continued)

Map ID	Subelement	Species	Mapping Qualifier	MA/RI		Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
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381	Shorebird	Red knot	Migration		T																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		

FISH

Map ID	Subelement	Species	Mapping Qualifier	MA/RI		Concentration	Monthly Presence												Larvae	Eggs	Spawn	Juveniles	Adults																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
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556	Diadromous	Alewife	Spawning Area			-																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		

HABITATS & RARE PLANTS


Map ID	Subelement	Species	Mapping Qualifier	MA/RI		Concentration	Monthly Presence																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
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638	Plant	Rare plant	Vulnerable Occurrence		T/C	-																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			

INVERTEBRATES



Map ID	Subelement	Species	Mapping Qualifier	MA/RI		Monthly Presence												Larvae	Eggs	Spawn	Juveniles	Adults
						S	F	Concentration	J	F	M	A	M	J	J	A	S					
676	Crab	Horseshoe crab	Nursery			Abundant											May-Jul	May-Jul	-	Jan-Dec	Jan-Dec	
	Gastropod	Channeled whelk	Concentration Area			Med-Low											Jun-Jul	Jun-Jul	-	May-Oct	May-Oct	
	Gastropod	Knobbed whelk	Concentration Area			Medium											Jun-Jul	Jun-Jul	-	May-Oct	May-Oct	
683	Gastropod	Channeled whelk	Concentration Area			Med-Low											Jun-Jul	Jun-Jul	-	May-Oct	May-Oct	

WIDESPREAD IN MAPPED AREA (> 10 SQUARE KILOMETERS)

BIRDS

	Subelement	Species	Mapping Qualifier	MA/RI		Concentration	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
				S	F		J	F	M	A	M	J	J	A	S	O	N	D																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
	Alcid	Razorbill	Wintering			Common																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									</


REPTILES & AMPHIBIANS

Subelement	Species	Mapping Qualifier	MA/RI		Concentration	Monthly Presence												Nest	Hatch	Internest	Juveniles	Adults	
			S	F		J	F	M	A	M	J	J	A	S	O	N	D						
	Eastern spadefoot	Vulnerable Occurrence	T/E		-														Apr-Jun	May-Jul	-	Jan-Dec	Jan-Dec
	Green sea turtle	General Distribution	T/E	T	Regular														-	-	-	May-Nov	May-Nov
	K. ridley sea turtle	General Distribution	E/E	E	Regular														-	-	-	May-Nov	May-Nov
	Leatherback sea turtle	General Distribution	E/E	E	Regular														-	-	-	May-Nov	May-Nov
	Loggerhead sea turtle	General Distribution	T/E	T	Regular														-	-	-	May-Nov	May-Nov

INVERTEBRATES

Subelement	Species	Mapping Qualifier	MA/RI		Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults		
			S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N						D	
	Longfin squid	Concentration Area			Common														May-Aug	May-Aug	May-Aug	Apr-Nov	Apr-Nov

MARINE MAMMALS







Subelement	Species	Mapping Qualifier	MA/RI		Concentration	Monthly Presence												Mating	Calving	Pupping	Molt
			S	F		J	F	M	A	M	J	J	A	S	O	N	D				
 Whale	Fin whale	General Distribution	E/E	E	Rare													-	-		
	Humpback whale	General Distribution	E/E	E	Common													-	-		
	N.A. right whale	General Distribution	E/E	E	Common													-	-		
	Sei whale	General Distribution	E/-	E	Rare													-	-		

TERRESTRIAL MAMMALS





Subelement	Species	Mapping Qualifier	MA/RI	Monthly Presence													
				S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N
 Small Mammal	New England cottontail	General Distribution	-/C			Rare											

ALSO PRESENT IN MAPPED AREA (GENERAL DISTRIBUTION)

BIRDS

Subelement	Species	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt
		J	F	M	A	M	J	J	A	S	O	N	D				
	Atlantic puffin														Mar	Sep	-
	D. crested cormorant														Mar-Apr	Sep-Oct	-
	D. crested cormorant																-
	Gulls														Apr-Jun	-	-
	Northern gannet														Apr-May	Aug-Nov	-
	Shearwaters														Apr-May	Oct-Nov	-
	Red-necked phalarope														May	Oct	-
	American black duck														May	Oct	-
	Diving ducks														Mar-Jul	Sep-Mar	-
	Geese														Mar-Apr	-	-
	Sea ducks														May	Sep-Nov	-
															Mar-May	Sep-Oct	-

FISH

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	Alewife													-	-	-	Jan-Dec	Jan-Dec
	American eel													-	-	-	Jan-Dec	Jan-Dec
	American shad													-	-	-	Jan-Dec	Jan-Dec
	Atlantic salmon													Sep-Dec	Sep-Mar	Feb-Jul	Jan-Dec	Jan-Dec
	Blueback herring													-	-	-	Jan-Dec	Jan-Dec
	Striped bass													-	-	-	Apr-Nov	Apr-Nov
	Atlantic herring													Aug-Nov	Aug-Nov	Oct-Dec	Jan-Dec	Jan-Dec
	Bay anchovy													Jun-Aug	Jun-Aug	Jun-Sep	Jan-Dec	Jan-Dec
	Black sea bass													Feb-Jul	Feb-Jul	Mar-Jul	Jan-Dec	Jan-Dec
	Bluefish													-	-	Jun-Aug	May-Nov	May-Nov
	Northern kingfish													Jun-Jul	Jun-Jul	Jun-Aug	May-Nov	May-Nov
	Scup													May-Aug	May-Aug	Jun-Aug	May-Oct	May-Oct
	Summer flounder													Aug-Nov	Aug-Nov	Sep-Nov	Apr-Nov	Apr-Nov
	Windowpane													May-Aug	May-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Winter flounder													Jan-May	Jan-May	Feb-May	Jan-Dec	Jan-Dec
	Atlantic silverside													May-Aug	May-Aug	May-Sep	Jan-Dec	Jan-Dec
	Fourspine stickleback													May-Jul	May-Jul	May-Aug	Jan-Dec	Jan-Dec
	Mummichog													May-Aug	Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Atlantic cod													Nov-Mar	Nov-Mar	Dec-Mar	Jan-Dec	Jan-Dec
	Atlantic cod													-	-	-	Apr-Aug	Apr-Aug
	Atlantic halibut													Apr-Sep	Apr-Sep	Apr-Sep	Jan-Dec	Jan-Dec
	Atlantic wolffish													Mar-Aug	Mar-Aug	Mar-Sep	Jan-Dec	Jan-Dec
	Goosefish													-	-	-	-	Jan-Jun
	Goosefish													-	-	-	-	Jan-Dec
	Haddock													Feb-Jun	Feb-Jun	Mar-Jun	Jan-Dec	Jan-Dec
	Little skate													Jan-Dec	Jan-Dec	-	Jan-Dec	Jan-Dec
	Pollock													-	-	-	Apr-Oct	Apr-Oct
	Red hake													Jun-Sep	Jun-Sep	Jul-Nov	Jan-Dec	Jan-Dec
	Red hake													Jun-Sep	Jun-Sep	Jul-Nov	Jun-Nov	Jun-Nov
	Red hake													-	-	-	Dec-May	Dec-May
	Rock gunnel													Nov-Mar	Nov-Apr	Jan-Jun	Jan-Dec	Jan-Dec
	Searobins													Jun-Sep	Jun-Sep	Jun-Oct	Jan-Dec	Jan-Dec
	Silver hake													Jul-Oct	Jul-Oct	Aug-Oct	Jul-Dec	Jul-Dec
	Silver hake													Jul-Oct	Jul-Oct	Aug-Oct	Jan-Dec	Jan-Dec
	Silver hake													-	-	-	Jan-Jun	Jan-Jun
	Tautog													May-Aug	May-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	White hake													Apr-Sep	May-Nov	May-Nov	Jan-Dec	Jan-Dec
	Winter skate													-	-	-	Jan-Dec	Jan-Dec
	Yellowtail flounder													Mar-Jul	Mar-Jul	Apr-Jul	Jan-Dec	Jan-Dec
	Atlantic mackerel													May-Jul	May-Aug	May-Aug	Mar-Dec	Mar-Dec
	Spiny dogfish													-	-	-	Jan-Dec	Jan-Dec
	Tunas													-	-	-	Jun-Sep	-

REPTILES & AMPHIBIANS

Subelement	Species	Monthly Presence												Nest	Hatch	Internest	Juveniles	Adults
Turtle	Eastern box turtle	J	F	M	A	M	J	J	A	S	O	N	D	Jun-Jul	Aug-Oct	-	Jan-Dec	Jan-Dec

INVERTEBRATES

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
Bivalve	Atlantic surfclam	J	F	M	A	M	J	J	A	S	O	N	D	Jun-Aug	Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Bay scallop													Jun-Sep	Jun-Sep	Jun-Sep	Jan-Dec	Jan-Dec
	Blue mussel													May-Nov	May-Nov	May-Nov	Jan-Dec	Jan-Dec
	Eastern oyster													Jun-Aug	Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
Cephalopod	Mussel bed													-	-	-	-	-
	Northern quahog													Jun-Aug	Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Sea scallop													Jul-Oct	Jul-Oct	Jul-Oct	Jan-Dec	Jan-Dec
	Longfin squid													May-Aug	May-Aug	May-Aug	Apr-Nov	Apr-Nov
Crab	Atlantic rock crab													May-Oct	Jun-Oct	Jun-Oct	Jan-Dec	Jan-Dec
	Blue crab													-	Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Horseshoe crab													May-Jul	May-Jul	-	Jan-Dec	Jan-Dec
	Jonah crab													May-Oct	May-Oct	May-Oct	Jan-Dec	Jan-Dec
Lobster	American lobster													Aug-Nov	Jan-Dec	Jun-Oct	Jan-Dec	Jan-Dec
Shrimp	Northern shrimp													-	Dec-Feb	Nov-Feb	Nov-Feb	Dec-Feb
	Sevenspine bay shrimp													May-Jul	May-Jul	May-Jul	Jan-Dec	Jan-Dec

MARINE MAMMALS

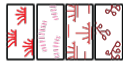
Subelement	Species	Monthly Presence												Mating	Calving	Pupping	Molt
Dolphin	Atl. wht.-side dolphin	J	F	M	A	M	J	J	A	S	O	N	D	-	-	-	-
	Bottlenose dolphin													-	-	-	-
	Harbor porpoise													-	-	-	-
	Risso's dolphin													-	-	-	-
Pinniped	Short-beaked common dolphin													-	-	-	-
	Gray seal													Dec-Feb	Dec-Feb	Dec-Feb	Mar-May
	Harbor seal													-	-	-	-
	Harp seal													-	-	-	-
Whale	Hooded seal													-	-	-	-
	Minke whale													-	-	-	-
	Pilot whales													-	-	-	-
														-	-	-	-

For additional information about species locations and extent, reference the underlying GIS data available from response.restoration.noaa.gov

SHORELINE RESOURCES

ESI POLYGON HABITAT TYPES

ESI Rank	Habitat Classification	Area (Acres)	Area (Sq. Miles)
10A	Salt and Brackish Water Marshes	3.71	0.01
10B	Freshwater Marshes	37.22	0.06
10C	Swamps	78.42	0.12
10D	Scrub and Shrub Wetlands	219.28	0.34



ESI SHORELINE HABITAT TYPES

ESI Rank	Shoreline Habitat Classification	Length (Meters)	Length (Miles)	% of ESI Shoreline
10A	Salt and Brackish Water Marshes	382.20	0.24	1%
10B	Freshwater Marshes	791.45	0.49	3%
10D	Scrub and Shrub Wetlands	288.40	0.18	1%
9B	Vegetated Low Banks	3,685.87	2.29	12%
8B	Sheltered, Solid Man-Made Structures	123.54	0.08	< 1%
7	Exposed Tidal Flats	8,803.30	5.47	28%
5	Mixed Sand and Gravel Beaches	412.50	0.26	1%
4	Coarse Grained Sand Beaches	13,842.07	8.60	44%
3B	Scarps and Steep Slopes (Sand)	3,064.90	1.90	10%
Total ESI Shoreline:		31,394.23	19.51	
Total Shoreline:		15,950.52	9.91	

Note: A shoreline segment may include multiple shoreline habitats. If any segments include multiple habitats, the combined length of all habitats may exceed the length of the mapped shoreline, and the percent of ESI shoreline values will sum to greater than 100%

All underlying GIS data can be obtained from response.restoration.noaa.gov



Map 21B
Massachusetts and Rhode Island

BIOLOGICAL RESOURCES

Note: An asterisk (*) indicates that life stage occurs in this range but not in all months included

DISPLAYED ON MAP

BENTHIC

Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence											
						J	F	M	A	M	J	J	A	S	O	N	D
SAV	Eelgrass	High Ecological Value			Potential												
SAV	Eelgrass	High Ecological Value			Present												
SAV	Rare aquatic/wetland plant	High Ecological Value			Present												

BIRDS

Map ID	Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence										Nest	Mig. (S)	Mig. (F)	Molt
								J	F	M	A	M	J	J	A	S	O				
15	Raptor	Northern harrier	Nesting	T/E			Rare											Mar-Jul	-	-	-
18	Passerine	Northern parula	Nesting	-/T			Rare											May-Jun	-	-	-
	Raptor	Northern harrier	Nesting	T/E			Rare											Mar-Jul	-	-	-
21	Wading	Marsh birds	General Distribution	C/C			Common											-	Mar-May	Aug-Nov	Jul-Aug
86	Passerine	Northern parula	Nesting	-/T			Rare											May-Jun	-	-	-
152	Diving	Great cormorant	Wintering				Common											-	Feb-Mar	Nov	-
	Shorebird	Purple sandpiper	Wintering				Common											-	Mar	Oct	-
	Waterfowl	Harlequin duck	Wintering				Rare											-	Mar-Apr	Nov	-
153	Gull/Tern	Rare tern	Nesting	C/-			Rare											May-Aug	-	-	-
175	Gull/Tern	Rare tern	Nesting	C/-			Rare											May-Aug	-	-	-
	Shorebird	Piping plover	Nesting	T/E		T	Common											Mar-Aug	Mar-Apr	Jul-Oct	-
198	Passerine	Marsh passerines	General Distribution	-/C			Common											Apr-Aug	Apr-May	Aug-Nov	Sep-Oct
	Passerine	Saltmarsh sparrow	Nesting	-/C			Common											May-Jul	May	-	-
	Wading	Egrets	Nesting	-/C			Common											Apr-Jul	Mar-May	Aug-Sep	-
	Wading	Marsh birds	General Distribution	C/C			Common											-	Mar-May	Aug-Nov	Jul-Aug
200	Passerine	Marsh passerines	General Distribution	-/C			Common											Apr-Aug	Apr-May	Aug-Nov	Sep-Oct
	Passerine	Saltmarsh sparrow	Nesting	-/C			Common											May-Jul	May	-	-
	Wading	Egrets	Nesting	-/C			Common											Apr-Jul	Mar-May	Aug-Sep	-
202	Passerine	Marsh passerines	General Distribution	-/C			Common											Apr-Aug	Apr-May	Aug-Nov	Sep-Oct
	Raptor	Northern harrier	Nesting	T/E			Rare											Mar-Jul	-	-	-
	Wading	Egrets	General Distribution	-/C			Common											Apr-Jul	Mar-May	Aug-Sep	-
	Wading	Marsh birds	General Distribution	C/C			Common											-	Mar-May	Aug-Nov	Jul-Aug
209	Passerine	Marsh passerines	General Distribution	-/C			Common											Apr-Aug	Apr-May	Aug-Nov	Sep-Oct
	Wading	Egrets	General Distribution	-/C			Common											Apr-Jul	Mar-May	Aug-Sep	-
	Wading	Marsh birds	General Distribution	C/C			Common											-	Mar-May	Aug-Nov	Jul-Aug
247	Passerine	Marsh passerines	General Distribution	-/C			Common											Apr-Aug	Apr-May	Aug-Nov	Sep-Oct
	Passerine	Saltmarsh sparrow	Nesting	-/C			Common											May-Jul	May	-	-
	Shorebird	Willet	Nesting	-/C			Common											Apr-May	Apr-May	Aug-Oct	-
	Wading	BC night-heron	Nesting	-/C			Common											May-Aug	Mar-Apr	Sep-Oct	-
	Wading	Egrets	Nesting	-/C			Common											Apr-Jul	Mar-May	Aug-Sep	-

BIRDS (continued)

Map ID	Subelement	Species	Mapping Qualifier	MA/RI		Monthly Presence												Nest	Mig. (S)	Mig. (F)	Molt
				S	F	J	F	M	A	M	J	J	A	S	O	N	D				
252	Wading	Wading birds	General Distribution	-C													-	Mar-May	Jul-Oct	-	
	Passerine	Marsh passerines	General Distribution	-C													Apr-Aug	Apr-May	Aug-Nov	Sep-Oct	
	Passerine	Saltmarsh sparrow	Nesting	-C													May-Jul	May	-	-	
	Shorebird	Willet	Nesting	-C													Apr-May	Apr-May	Aug-Oct	-	
	Wading	Egrets	Nesting	-C													Apr-Jul	Mar-May	Aug-Sep	-	
	Wading	Wading birds	General Distribution	-C													-	Mar-May	Jul-Oct	-	
	Passerine	Marsh passerines	General Distribution	-C													Apr-Aug	Apr-May	Aug-Nov	Sep-Oct	
	Passerine	Saltmarsh sparrow	Nesting	-C													May-Jul	May	-	-	
	Raptor	Northern harrier	Nesting	T/E													Mar-Jul	-	-	-	
	Shorebird	Willet	Nesting	-C													Apr-May	Apr-May	Aug-Oct	-	
	Wading	BC night-heron	Nesting	-C													May-Aug	Mar-Apr	Sep-Oct	-	
	Wading	Egrets	Nesting	-C													Apr-Jul	Mar-May	Aug-Sep	-	
	Wading	Marsh birds	General Distribution	C/C													-	Mar-May	Aug-Nov	Jul-Aug	-
	Wading	Wading birds	General Distribution	-C													-	Mar-May	Jul-Oct	-	
	Waterfowl	Waterfowl	General Distribution	C/C													May-Jul	Apr-May	Aug-Oct	Aug-Sep	-
	Passerine	Marsh passerines	General Distribution	-C													Apr-Aug	Apr-May	Aug-Nov	Sep-Oct	
266	Passerine	Saltmarsh sparrow	Nesting	-C													May-Jul	May	-	-	
	Shorebird	Willet	Nesting	-C													Apr-May	Apr-May	Aug-Oct	-	
	Wading	BC night-heron	Nesting	-C													May-Aug	Mar-Apr	Sep-Oct	-	
	Wading	Egrets	Nesting	-C													Apr-Jul	Mar-May	Aug-Sep	-	
	Wading	Marsh birds	General Distribution	C/C													-	Mar-May	Aug-Nov	Jul-Aug	-
	Wading	Wading birds	General Distribution	-C													-	Mar-May	Jul-Oct	-	
	Waterfowl	Waterfowl	General Distribution	C/C													May-Jul	Apr-May	Aug-Oct	Aug-Sep	-
	Passerine	Marsh passerines	General Distribution	-C													Apr-Aug	Apr-May	Aug-Nov	Sep-Oct	
296	Passerine	Saltmarsh sparrow	Nesting	-C													May-Jul	May	-	-	
	Shorebird	Willet	Nesting	-C													Apr-May	Apr-May	Aug-Oct	-	
	Wading	Egrets	Nesting	-C													Apr-Jul	Mar-May	Aug-Sep	-	
	Wading	Wading birds	General Distribution	-C													-	Mar-May	Jul-Oct	-	
304	Passerine	Marsh passerines	General Distribution	-C													Apr-Aug	Apr-May	Aug-Nov	Sep-Oct	-
	Raptor	Northern harrier	Nesting	T/E													Mar-Jul	-	-	-	
	Wading	Egrets	General Distribution	-C													Apr-Jul	Mar-May	Aug-Sep	-	
	Wading	Marsh birds	General Distribution	C/C													-	Mar-May	Aug-Nov	Jul-Aug	-
	Wading	Wading birds	General Distribution	-C													-	Mar-May	Jul-Oct	-	
	Waterfowl	Waterfowl	General Distribution	C/C													May-Jul	Apr-May	Aug-Oct	Aug-Sep	-
	Passerine	Marsh passerines	General Distribution	-C													Apr-Aug	Apr-May	Aug-Nov	Sep-Oct	-
	Passerine	Saltmarsh sparrow	Nesting	-C													May-Jul	May	-	-	
314	Raptor	Northern harrier	Nesting	T/E													Mar-Jul	-	-	-	
	Wading	Egrets	Nesting	-C													Apr-Jul	Mar-May	Aug-Sep	-	
	Wading	Marsh birds	General Distribution	C/C													-	Mar-May	Aug-Nov	Jul-Aug	-

Monthly Presence

446

HABITATS & RARE PLANTS

Map ID	Subelement	Species	Mapping Qualifier	MA/RI	Monthly Presence											
					S	F	Concentration	J	F	M	A	M	J	J	A	S
638	Plant	Rare plant	Vulnerable Occurrence	T/C			-									
646	Wetland	Vernal pool	Vulnerable Occurrence				-									

INVERTEBRATES






Map ID	Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence											
								J	F	M	A	M	J	J	A	S	N	D	
665	Crab	Blue crab	Nursery				Common												
687	Crab	Horseshoe crab	Spawning				Abundant												
703	Gastropod	Channeled whelk	Concentration Area				High												
709	Gastropod	Knobbed whelk	Concentration Area				High												

MARINE MAMMALS


Map ID	Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence											
								J	F	M	A	M	J	J	A	S	N	D	
732	Pinniped	Harbor seal	Haul Out				Low												

WIDESPREAD IN MAPPED AREA (> 10 SQUARE KILOMETERS)



BIRDS

Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence												Molt
							J	F	M	A	M	J	J	A	S	N	D		
	Alcid	Razorbill	Wintering				Common												
	Diving	Loons	Migration	C/-			Common												
	Gull/Tern	Rare tern	General Distribution	C/-			Common												
		Roseate tern	General Distribution	E/-	E		Common												
	Raptor	Barn owl	Nesting				Common												
	Waterfowl	Sea ducks	Wintering	C/E			Abundant												



FISH

Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence												Adults
							J	F	M	A	M	J	J	A	S	N	D		
	Diadromous	Alewife	Spawning Area				-												
		Blueback herring	Spawning Area				-												


REPTILES & AMPHIBIANS

Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence												Adults
							J	F	M	A	M	J	J	A	S	N	D		
	Amphibian	Eastern spadefoot	Vulnerable Occurrence	T/E			-												
	Turtle	Green sea turtle	General Distribution	T/E	T		Regular												
		K. ridley sea turtle	General Distribution	E/E	E		Regular												
		Leatherback sea turtle	General Distribution	E/E	E		Regular												
		Loggerhead sea turtle	General Distribution	T/E	T		Regular												


INVERTEBRATES

Subelement	Species	Mapping Qualifier	MA/RI S F	Concentration	Monthly Presence												Larvae	Juveniles	Adults
					J	F	M	A	M	J	J	A	S	O	N	D			
	Cephalopod	Concentration Area		Common													May-Aug	May-Aug	Apr-Nov
	Crab	Concentration Area		Medium													May-Jul	May-Jul	Apr-Oct
	Horseshoe crab	Nursery		Abundant													May-Jul	May-Jul	Jan-Dec
	Channeled whelk	Concentration Area		Med-Low													Jun-Jul	Aug-Oct	May-Oct
	Knobbed whelk	Concentration Area		Medium													Jun-Jul	Aug-Oct	May-Oct

MARINE MAMMALS





Subelement	Species	Mapping Qualifier	MA/RI S F	Concentration	Monthly Presence												Calving	Pupping	Molt
					J	F	M	A	M	J	J	A	S	O	N	D			
	Fin whale	General Distribution	E/E E	Rare													-	-	-
	Humpback whale	General Distribution	E/E E	Common													-	-	-
	N.A. right whale	General Distribution	E/E E	Common													-	-	-
	Sei whale	General Distribution	E/- E	Rare													-	-	-

TERRESTRIAL MAMMALS




Subelement	Species	Mapping Qualifier	MA/RI S F	Concentration	Monthly Presence											
					J	F	M	A	M	J	J	A	S	O	N	D
	Small Mammal	General Distribution	-/C	Rare												

ALSO PRESENT IN MAPPED AREA (GENERAL DISTRIBUTION)




BIRDS

Subelement	Species	Mapping Qualifier	MA/RI S F	Concentration	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt
					J	F	M	A	M	J	J	A	S	O	N	D				
	Atlantic puffin																-	Mar	Sep	-
	D. crested cormorant																-	Mar-Apr	Sep-Oct	-
	Gulls																-	Apr-May	Aug-Nov	-
	Pelagic																-	Apr-May	Oct-Nov	-
	Shearwaters																-	May	Oct	-
	Red-necked phalarope																-	May	Oct	-
	Shorebirds																-	Mar-Dec	-	Aug
	American black duck																-	Mar-Mar	-	-
	Diving ducks																-	Sep-Apr	-	-
	Geese																-	Mar-May	Sep-Nov	-

FISH

Subelement	Species	Mapping Qualifier	MA/RI S F	Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
					J	F	M	A	M	J	J	A	S	O	N	D					
	Alewife																-	-	-	Jan-Dec	Jan-Dec
	American eel																-	-	-	Jan-Dec	Jan-Dec
	American shad																-	-	-	Jan-Dec	Jan-Dec
	Atlantic salmon																Sep-Dec	Sep-Mar	Feb-Jul	Jan-Dec	Jan-Dec
	Blueback herring																-	-	-	Jan-Dec	Jan-Dec
	Striped bass																-	-	-	Apr-Nov	Apr-Nov
	Atlantic herring																Aug-Nov	Aug-Nov	Oct-Dec	Jan-Dec	Jan-Dec





FISH (continued)

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	Bay anchovy													Jun-Aug	Jun-Aug	Jun-Sep	Jan-Dec	Jan-Dec
	Black sea bass													Feb-Jul	Feb-Jul	Mar-Jul	Jan-Dec	Jan-Dec
	Bluefish													-	-	Jun-Aug	May-Nov	May-Nov
	Northern kingfish													Jun-Jul	Jun-Jul	Jun-Aug	May-Nov	May-Nov
	Scup													May-Aug	May-Aug	Jun-Aug	May-Oct	May-Oct
	Summer flounder													Aug-Nov	Aug-Nov	Sep-Nov	Apr-Nov	Apr-Nov
	Windowpane													May-Aug	May-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Winter flounder													Jan-May	Jan-May	Feb-May	Jan-Dec	Jan-Dec
	Atlantic silverside													May-Aug	May-Aug	May-Sep	Jan-Dec	Jan-Dec
	Forspine stickleback													May-Jul	May-Jul	May-Aug	Jan-Dec	Jan-Dec
	Mummichog													May-Aug	Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Atlantic cod													-	-	-	Apr-Aug	Apr-Aug
	Atlantic tomcod													Dec-Feb	Dec-Mar	Dec-Apr	Dec-Jun	Dec-Jun
	Atlantic wolffish													Mar-Aug	Mar-Aug	Mar-Sep	Jan-Dec	Jan-Dec
	Goosefish													-	-	-	-	Jan-Dec
	Haddock													Feb-Jun	Feb-Jun	Mar-Jun	Jan-Dec	Jan-Dec
	Little skate													Jan-Dec	Jan-Dec	-	Jan-Dec	Jan-Dec
	Pollock													-	-	-	Apr-Oct	Apr-Oct
	Red hake													Jun-Sep	Jun-Sep	Jul-Nov	Jun-Nov	Jun-Nov
	Red hake													-	-	-	Dec-May	Dec-May
	Rock gunnel													Nov-Mar	Nov-Apr	Jan-Jun	Jan-Dec	Jan-Dec
	Searobins													Jun-Sep	Jun-Sep	Jun-Oct	Jan-Dec	Jan-Dec
	Silver hake													Jul-Oct	Jul-Oct	Aug-Oct	Jul-Dec	Jul-Dec
	Silver hake													-	-	-	Jan-Jun	Jan-Jun
	Tautog													May-Aug	May-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	White hake													Apr-Sep	May-Nov	May-Nov	Jan-Dec	Jan-Dec
	Winter skate													-	-	-	Jan-Dec	Jan-Dec
	Yellowtail flounder													Mar-Jul	Mar-Jul	Apr-Jul	Jan-Dec	Jan-Dec
	Atlantic mackerel													May-Jul	May-Aug	May-Aug	Mar-Dec	Mar-Dec
	Spiny dogfish													-	-	-	Jan-Dec	Jan-Dec
	Tunas													-	-	-	Jun-Sep	-




REPTILES & AMPHIBIANS

Subelement	Species	Monthly Presence												Nest	Hatch	Internest	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	Eastern box turtle													Jun-Jul	Aug-Oct	-	Jan-Dec	Jan-Dec

INVERTEBRATES

Subelement	Species	Monthly Presence												Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D				
	Atl. jackknife clam													Apr-May	Apr-May	Jan-Dec	Jan-Dec
	Atlantic surfclam													Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Bay scallop													Jun-Sep	Jun-Sep	Jan-Dec	Jan-Dec
	Eastern oyster													Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Northern quahog													Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Sea scallop													Jul-Oct	Jul-Oct	Jan-Dec	Jan-Dec
	Softshell clam													Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Atlantic rock crab													May-Oct	Jun-Oct	Jan-Dec	Jan-Dec
	Blue crab													-	Jun-Aug	Jan-Dec	Jan-Dec
	Horseshoe crab													May-Jul	May-Jul	Jan-Dec	Jan-Dec
	Jonah crab													May-Oct	May-Oct	Jan-Dec	Jan-Dec
	American lobster													Aug-Nov	Jun-Oct	Jan-Dec	Jan-Dec
	Db grass shrimp													May-Jul	May-Jul	Jan-Dec	Jan-Dec
	Sevenspine bay shrimp													May-Jul	May-Jul	Jan-Dec	Jan-Dec

MARINE MAMMALS

Subelement	Species	Monthly Presence												Mating	Calving	Pupping	Molt
		J	F	M	A	M	J	J	A	S	O	N	D				
	Atl. wht.-side dolphin													-	-	-	-
	Bottlenose dolphin													-	-	-	-
	Harbor porpoise													-	-	-	-
	Risso's dolphin													-	-	-	-
	Short-beaked common dolphin													-	-	-	-
	Gray seal													Dec-Feb	Dec-Feb	Dec-Feb	Mar-May
	Harbor seal													-	-	-	-
	Harp seal													-	-	-	-
	Hooded seal													-	-	-	-
	Minke whale													-	-	-	-
	Pilot whales													-	-	-	-

For additional information about species locations and extent, reference the underlying GIS data available from response.restoration.noaa.gov

SHORELINE RESOURCES

ESI POLYGON HABITAT TYPES

ESI Rank	Habitat Classification	Area (Acres)	Area (Sq. Miles)
10A	Salt and Brackish Water Marshes	472.19	0.74
10B	Freshwater Marshes	82.66	0.13
10C	Swamps	115.92	0.18
10D	Scrub and Shrub Wetlands	332.85	0.52
9A	Sheltered Tidal Flats	74.98	0.12
7	Exposed Tidal Flats	1.31	0.00

ESI SHORELINE HABITAT TYPES

ESI Rank	Shoreline Habitat Classification	Length (Meters)	Length (Miles)	% of ESI Shoreline
10A	Salt and Brackish Water Marshes	39,495.90	24.54	28%
10B	Freshwater Marshes	70.90	0.04	< 1%
10D	Scrub and Shrub Wetlands	627.63	0.39	< 1%
9A	Sheltered Tidal Flats	26,056.15	16.19	18%
9B	Vegetated Low Banks	4,537.93	2.82	3%
8B	Sheltered, Solid Man-Made Structures	5,896.61	3.66	4%
8C	Sheltered Riprap	65.41	0.04	< 1%
7	Exposed Tidal Flats	14,700.67	9.13	10%
6B	Riprap	2,654.33	1.65	2%
5	Mixed Sand and Gravel Beaches	1,084.04	0.67	1%
4	Coarse Grained Sand Beaches	46,152.09	28.68	33%
1B	Exposed, Solid Man-Made Structures	280.57	0.17	< 1%
Total ESI Shoreline:		141,622.24	88.00	
Total Shoreline:		91,426.10	56.81	

Note: A shoreline segment may include multiple shoreline habitats. If any segments include multiple habitats, the combined length of all habitats may exceed the length of the mapped shoreline, and the percent of ESI shoreline values will sum to greater than 100%

All underlying GIS data can be obtained from response.restoration.noaa.gov



Map 21C
Massachusetts and Rhode Island

BIOLOGICAL RESOURCES

Note: An asterisk (*) indicates that life stage occurs in this range but not in all months included

DISPLAYED ON MAP

BENTHIC

Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence
		High Ecological Value					J F M A M J J A S O N D
SAV	Rare aquatic/wetland plant					Present	

BIRDS

Map ID	Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence	Nest	Mig. (S)	Mig. (F)	Molt
								J F M A M J J A S O N D				
15	Raptor	Northern harrier	Nesting		T/E		Rare		Mar-Jul	-	-	-
21	Wading	Marsh birds	General Distribution		C/C		Common		-	Mar-May	Aug-Nov	Jul-Aug
72	Diving	Loons	General Distribution		C/-		Common		-	Mar-Jun	Sep-Dec	Jan-Mar
177	Gull/Tern	Rare tern	Nesting		C/-		Rare		May-Aug	-	-	-
	Shorebird	Eskimo curlew	General Distribution		E		Rare		-	-	Aug-Sep	-
	Shorebird	Piping plover	Nesting		T/E	T	Common		Mar-Apr	Mar-Apr	Jul-Oct	-
	Shorebird	Red knot	Migration		T		Common		-	May-Jun	Jul-Sep	-
	Shorebird	Shorebirds	Migration				Common		-	Mar-Jun	Jul-Nov	Aug
	Wading	Wading birds	General Distribution		-/C		Common		-	Mar-May	Jul-Oct	-
488	Waterfowl	Waterfowl	General Distribution		C/C		Common		May-Jul	Apr-May	Aug-Oct	Aug-Sep
489	Raptor	Northern harrier	Nesting		T/E		Rare		Mar-Jul	-	-	-
	Wading	Marsh birds	General Distribution		C/C		Common		-	Mar-May	Aug-Nov	Jul-Aug
	Waterfowl	Waterfowl	General Distribution		C/C		Common		May-Jul	Apr-May	Aug-Oct	Aug-Sep
491	Wading	Marsh birds	General Distribution		C/C		Common		-	Mar-May	Aug-Nov	Jul-Aug
	Waterfowl	Waterfowl	General Distribution		C/C		Common		May-Jul	Apr-May	Aug-Oct	Aug-Sep

HABITATS & RARE PLANTS

Map ID	Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence
			Vulnerable Occurrence					J F M A M J J A S O N D
638	Plant	Rare plant			T/C		-	

REPTILES & AMPHIBIANS





Map ID	Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence	Nest	Hatch	Interest	Juveniles	Adults
			Vulnerable Occurrence					J F M A M J J A S O N D					
653	Amphibian	Eastern spadefoot			T/E		-		Apr-Jun	May-Jul	-	Jan-Dec	Jan-Dec

TERRESTRIAL MAMMALS


Map ID	Subelement	Species	Mapping Qualifier	MA/RI	Monthly Presence														
					S	F	Concentration	J F M A M J J A S O N D											
745	Small Mammal	New England cottontail	General Distribution				Rare	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div>											

WIDESPREAD IN MAPPED AREA (> 10 SQUARE KILOMETERS)

BIRDS

Subelement	Species	Mapping Qualifier	MA/RI	Monthly Presence												Nest	Hatch	Internest	Juveniles	Adults
				S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N	D		
	Alcid	Wintering				Common														
	Razorbill	Migration				Common														
	Loons	General Distribution	C/-			Common														
	Rare tern	General Distribution	C/-			Common														
	Rare tern	General Distribution	C/-			Rare														
	Roseate tern	General Distribution	E/-			Rare														
	Roseate tern	General Distribution	E/-			Common														
	Sea ducks	Wintering				Abundant														

REPTILES & AMPHIBIANS







Subelement	Species	Mapping Qualifier	MA/RI	Monthly Presence												Nest	Hatch	Internest	Juveniles	Adults
				S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N	D		
	Green sea turtle	General Distribution	T/E			Regular														
	K. ridley sea turtle	General Distribution	E/E			Regular														
	Leatherback sea turtle	General Distribution	E/E			Regular														
	Loggerhead sea turtle	General Distribution	T/E			Regular														

MARINE MAMMALS

<div><div></div><div>Whale</div></div>	Species	Mapping Qualifier	MA/RI		Concentration	Monthly Presence												Mating	Calving	Pupping	Molt
			S	F		J	F	M	A	M	J	J	A	S	O	N	D				
	Fin whale	General Distribution	E/E	E	Common																
	Fin whale	General Distribution	E/E	E	Rare																
	Humpback whale	General Distribution	E/E	E	Common																
	N.A. right whale	General Distribution	E/E	E	Common																
	Sei whale	General Distribution	E/-	E	Common																
	Sei whale	General Distribution	E/-	E	Rare																
	Sperm whale	General Distribution	E/-	E	Rare																






ALSO PRESENT IN MAPPED AREA (GENERAL DISTRIBUTION)

BIRDS

Subelement	Species	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt
		J	F	M	A	M	J	J	A	S	O	N	D				
	Atlantic puffin														Mar	Sep	-
	Razorbill														May-Jun	-	-
	D. crested cormorant														Apr-Jun	-	-
	D. crested cormorant														Mar-Apr	Sep-Oct	-
	Gulls														Apr-May	Aug-Nov	-
	Northern gannet														Apr-May	Oct-Nov	-
	Shearwaters														May	Oct	-
	Red-necked phalarope														May	Oct	-
	American black duck														Sep-Mar	-	-
	Diving ducks														Sep-Apr	-	-
	Geese														May	Sep-Nov	-
	Sea ducks														Mar-May	Sep-Oct	-
															-	-	-

Massachusetts and Rhode Island: Map 21C

FISH





Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	Diadromous													-	-	-	Jan-Dec	Jan-Dec
	Alewife													-	-	-	Jan-Dec	Jan-Dec
	American eel													-	-	-	Jan-Dec	Jan-Dec
	American shad													-	-	-	Jan-Dec	Jan-Dec
	Atlantic shad													Sep-Dec	Sep-Mar	Feb-Jul	Jan-Dec	Jan-Dec
	Blueback herring													-	-	-	Jan-Dec	Jan-Dec
	Striped bass													-	-	-	Apr-Nov	Apr-Nov
	Atlantic herring													Aug-Nov	Aug-Nov	Oct-Dec	Jan-Dec	Jan-Dec
	Bay anchovy													Jun-Aug	Jun-Aug	Jun-Sep	Jan-Dec	Jan-Dec
	Black sea bass													Feb-Jul	Feb-Jul	Mar-Jul	Jan-Dec	Jan-Dec
	Bluefish													-	-	Jun-Aug	May-Nov	May-Nov
	Northern kingfish													Jun-Jul	Jun-Jul	Jun-Aug	May-Nov	May-Nov
	Scup													May-Aug	May-Aug	Jun-Aug	May-Oct	May-Oct
	Summer flounder													Aug-Nov	Aug-Nov	Sep-Nov	Apr-Nov	Apr-Nov
	Windowpane													May-Aug	May-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Winter flounder													Jan-May	Jan-May	Feb-May	Jan-Dec	Jan-Dec
	Atlantic cod													Nov-Mar	Nov-Mar	Dec-Mar	Jan-Dec	Jan-Dec
	Atlantic cod													-	-	-	Apr-Aug	Apr-Aug
	Atlantic halibut													Apr-Sep	Apr-Sep	Apr-Sep	Jan-Dec	Jan-Dec
	Atlantic wolffish													Mar-Aug	Mar-Aug	Mar-Sep	Jan-Dec	Jan-Dec
	Goosefish													-	-	-	-	Jan-Jun
	Goosefish													-	-	-	-	Jan-Dec
	Haddock													Feb-Jun	Feb-Jun	Mar-Jun	Jan-Dec	Jan-Dec
	Little skate													Jan-Dec	Jan-Dec	-	Jan-Dec	Jan-Dec
	Pollock													-	-	-	Apr-Oct	Apr-Oct
	Red hake													Jun-Sep	Jun-Sep	Jul-Nov	Jan-Dec	Jan-Dec
	Red hake													-	-	-	Dec-May	Dec-May
	Red hake													Jun-Sep	Jun-Sep	Jul-Nov	Jun-Nov	Jun-Nov
	Rock gunnel													Nov-Mar	Nov-Apr	Jan-Jun	Jan-Dec	Jan-Dec
	Searobins													Jun-Sep	Jun-Sep	Jun-Oct	Jan-Dec	Jan-Dec
	Silver hake													-	-	-	Jan-Jun	Jan-Jun
	Silver hake													Jul-Oct	Jul-Oct	Aug-Oct	Jan-Dec	Jan-Dec
	Silver hake													Jul-Oct	Jul-Oct	Aug-Oct	Jul-Dec	Jul-Dec
	Tautog													May-Aug	May-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	White hake													Apr-Sep	May-Nov	May-Nov	Jan-Dec	Jan-Dec
	Winter skate													-	-	-	Jan-Dec	Jan-Dec
	Yellowtail flounder													Mar-Jul	Mar-Jul	Apr-Jul	Jan-Dec	Jan-Dec
	Atlantic mackerel													May-Jul	May-Aug	May-Aug	Mar-Dec	Mar-Dec
	Spiny dogfish													-	-	-	Jan-Dec	Jan-Dec
	Tunas													-	-	-	Jun-Sep	-

REPTILES & AMPHIBIANS




Subelement	Species	Monthly Presence												Nest	Hatch	Interest	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	Eastern box turtle													Jun-Jul	Aug-Oct	-	Jan-Dec	Jan-Dec

Massachusetts and Rhode Island: Map 21C

INVERTEBRATES

Subelement	Species	Monthly Presence												Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D				
	Bivalve													Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Atlantic surfclam													-	-	-	-
	Sea scallop													Jul-Oct	Jul-Oct	Jan-Dec	Jan-Dec
	Longfin squid													May-Aug	May-Aug	Apr-Nov	Apr-Nov
	Atlantic rock crab													May-Oct	Jun-Oct	Jan-Dec	Jan-Dec
	Blue crab													-	Jun-Aug	Jan-Dec	Jan-Dec
	Horseshoe crab													May-Jul	May-Jul	Jan-Dec	Jan-Dec
	Jonah crab													May-Oct	May-Oct	Jan-Dec	Jan-Dec
	American lobster													Aug-Nov	Jan-Dec	Jan-Dec	Jan-Dec
	Northern shrimp													-	Dec-Feb	Nov-Feb	Dec-Feb
	Sevenspine bay shrimp													May-Jul	May-Jul	Jan-Dec	Jan-Dec

MARINE MAMMALS

Subelement	Species	Monthly Presence												Mating	Calving	Pupping	Molt
		J	F	M	A	M	J	J	A	S	O	N	D				
	Dolphin													-	-	-	-
	Atl. spotted dolphin													-	-	-	-
	Atl. wht.-side dolphin													-	-	-	-
	Bottlenose dolphin													-	-	-	-
	Harbor porpoise													-	-	-	-
	Risso's dolphin													-	-	-	-
	Short-beaked common dolphin													-	-	-	-
	Striped dolphin													-	-	-	-
	White-beaked dolphin													-	-	-	-
	Gray seal													Dec-Feb	Dec-Feb	Mar-May	-
	Harbor seal													-	-	-	-
	Harp seal													-	-	-	-
	Hooded seal													-	-	-	-
	Minke whale													-	-	-	-
	Pilot whales													-	-	-	-

For additional information about species locations and extent, reference the underlying GIS data available from response.restoration.noaa.gov

ESI POLYGON HABITAT TYPES

ESI Rank	Habitat Classification	Area (Acres)	Area (Sq. Miles)
10B	Freshwater Marshes	22.74	0.04
10C	Swamps	3.00	0.00
10D	Scrub and Shrub Wetlands	113.97	0.18



ESI SHORELINE HABITAT TYPES

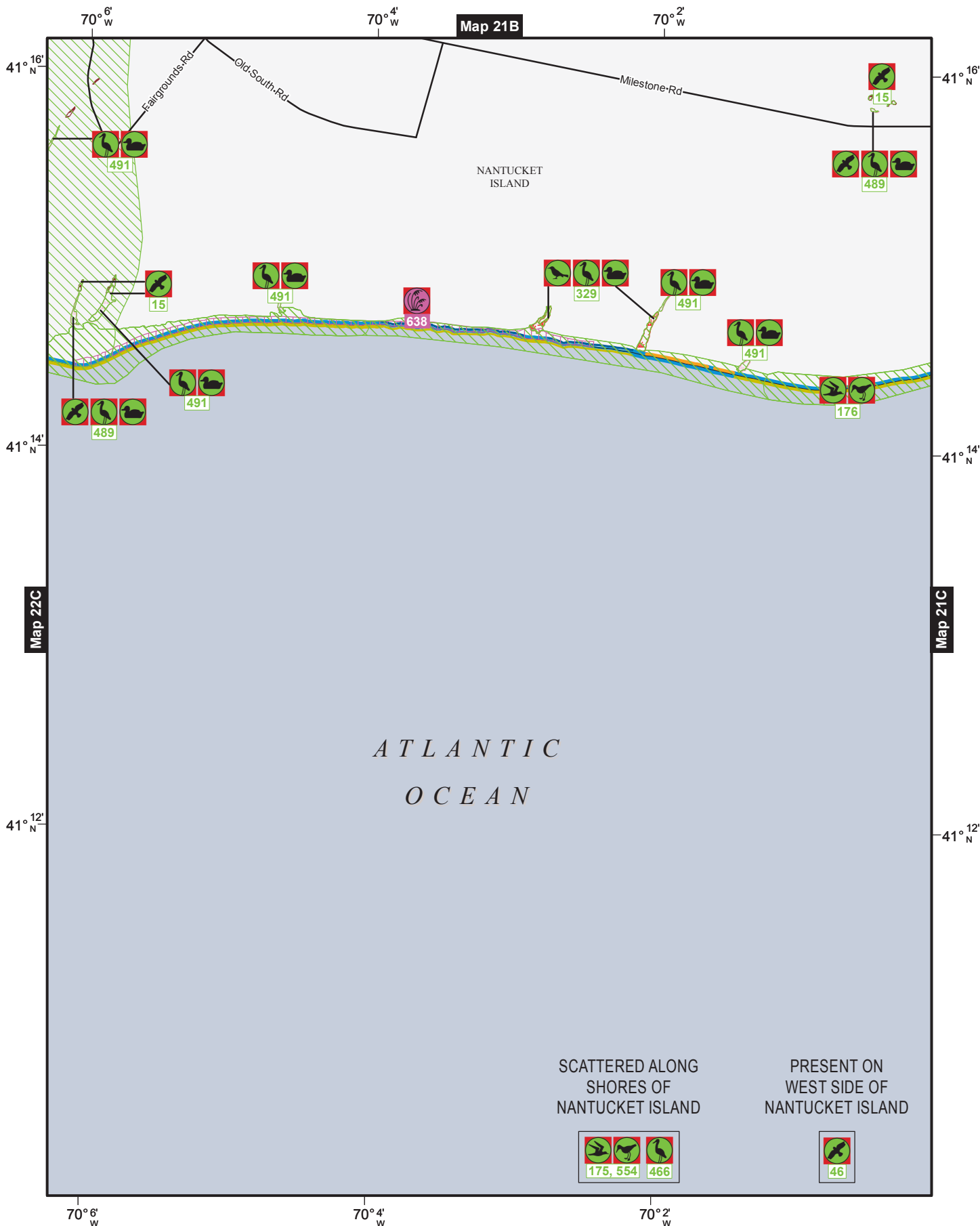
ESI Rank	Shoreline Habitat Classification	Length (Meters)	Length (Miles)	% of ESI Shoreline
7	Exposed Tidal Flats	5,328.24	3.31	47%
4	Coarse Grained Sand Beaches	5,328.24	3.31	47%
3B	Scarps and Steep Slopes (Sand)	726.20	0.45	6%

Total ESI Shoreline: 11,382.68 Total ESI Shoreline: 7.07
Total Shoreline: 5,328.24 Total Shoreline: 3.31

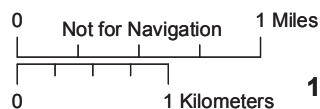
Note: A shoreline segment may include multiple shoreline habitats. If any segments include multiple habitats, the combined length of all habitats may exceed the length of the mapped shoreline, and the percent of ESI shoreline values will sum to greater than 100%

All underlying GIS data can be obtained from response.restoration.noaa.gov





SEE BACK OF MAP
for details about mapped species and
other species that occur in mapped area.
Data Published: November 2016



1:50,000



Map 21D
Massachusetts and Rhode Island

BIOLOGICAL RESOURCES

Note: An asterisk (*) indicates that life stage occurs in this range but not in all months included

DISPLAYED ON MAP





BIRDS

Map ID	Subelement	Species	Mapping Qualifier	MA/RI S F	Concentration	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt
						J	F	M	A	M	J	J	A	S	O	N	D				
15	Raptor	Northern harrier	Nesting	T/E	Rare													Mar-Jul	-	-	-
46	Raptor	Barn owl	Nesting	C/E	Common													Apr-Sep	-	-	-
175	Gull/Tern	Rare tern	Nesting	C/-	Rare													May-Aug	-	-	-
176	Shorebird	Piping plover	Nesting	T/E	Common													Mar-Aug	Mar-Apr	Jul-Oct	-
	Gull/Tern	Rare tern	Nesting	C/-	Rare													May-Aug	-	-	-
	Shorebird	Piping plover	Nesting	T/E	Common													Mar-Aug	Mar-Apr	Jul-Oct	-
	Shorebird	Red knot	Migration	T	Common													-	May-Jun	Jul-Sep	-
329	Shorebird	Shorebirds	Migration		Common													-	Mar-Jun	Jul-Nov	Aug
	Passerine	Marsh passerines	General Distribution	-/C	Common													Apr-Aug	Apr-May	Aug-Nov	Sep-Oct
	Wading	Egrets	General Distribution	-/C	Common													Apr-Jul	Mar-May	Aug-Sep	-
	Wading	Marsh birds	General Distribution	C/C	Common													-	Mar-May	Aug-Nov	Jul-Aug
466	Waterfowl	Waterfowl	General Distribution	C/C	Common													May-Jul	Apr-May	Aug-Oct	Aug-Sep
	Wading	Wading birds	General Distribution	-/C	Common													-	Mar-May	Jul-Oct	-
489	Raptor	Northern harrier	Nesting	T/E	Rare													Mar-Jul	-	-	-
491	Wading	Marsh birds	General Distribution	C/C	Common													-	Mar-May	Aug-Nov	Jul-Aug
	Waterfowl	Waterfowl	General Distribution	C/C	Common													May-Jul	Apr-May	Aug-Oct	Aug-Sep
	Wading	Marsh birds	General Distribution	C/C	Common													-	Mar-May	Aug-Nov	Jul-Aug
	Waterfowl	Waterfowl	General Distribution	C/C	Common													May-Jul	Apr-May	Aug-Oct	Aug-Sep
554	Shorebird	Eskimo curlew	General Distribution	E	Rare													-	-	Aug-Sep	-


HABITATS & RARE PLANTS

Map ID	Subelement	Species	Mapping Qualifier	MA/RI S F	Concentration	Monthly Presence											
						J	F	M	A	M	J	J	A	S	O	N	D
638	Plant	Rare plant	Vulnerable Occurrence	T/C	-												

BIRDS

Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence												Nest	Mig. (S)	Mig. (F)	Juveniles	Adults
							J	F	M	A	M	J	J	A	S	O	N	D					
	Aldid	Wintering				Common													-	-	Oct-Nov	-	-
	Razorbill	General Distribution				Common													-	-	Mar-Jun	Sep-Dec	Jan-Mar
	Diving	Migration				Common													-	-	Mar-Jun	Sep-Dec	Jan-Mar
	Loons	General Distribution				Common													-	-	Apr-May	Jul-Sep	-
	Gull/Tern	General Distribution				Rare													-	-	Apr-May	Jul-Sep	-
	Rare tern	General Distribution				Common													-	-	Apr-May	Jul-Sep	-
	Roseate tern	General Distribution				Common													-	-	Apr-May	Jul-Sep	-
	Roseate tern	General Distribution				Rare													-	-	Apr-May	Jul-Sep	-
	Waterfowl	Wintering				Abundant													-	-	Mar-May	Sep-Oct	-


REPTILES & AMPHIBIANS

Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence												Nest	Hatch	Internest	Juveniles	Adults
							J	F	M	A	M	J	J	A	S	O	N	D					
	Amphibian	Vulnerable Occurrence				-													Apr-Jun	May-Jul	-	Jan-Dec	Jan-Dec
	Turtle	General Distribution				Regular													-	-	-	May-Nov	May-Nov
	Eastern spadefoot	General Distribution				Regular													-	-	-	May-Nov	May-Nov
	K. ridley sea turtle	General Distribution				Regular													-	-	-	May-Nov	May-Nov
	Leatherback sea turtle	General Distribution				Regular													-	-	-	May-Nov	May-Nov
	Loggerhead sea turtle	General Distribution				Regular													-	-	-	May-Nov	May-Nov

INVERTEBRATES

Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
	Cephalopod	Concentration Area				Common													May-Aug	May-Aug	May-Aug	Apr-Nov	Apr-Nov

MARINE MAMMALS

Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence												Mating	Calving	Pupping	Molt
							J	F	M	A	M	J	J	A	S	O	N	D				
	Whale	General Distribution				Common													-	-	-	-
	Fin whale	General Distribution				Rare													-	-	-	-
	Humpback whale	General Distribution				Common													-	-	-	-
	N.A. right whale	General Distribution				Common													-	-	-	-
	Sei whale	General Distribution				Rare													-	-	-	-
	Sei whale	General Distribution				Common													-	-	-	-
	Sperm whale	General Distribution				Rare													-	-	-	-

TERRESTRIAL MAMMALS

Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence											
	Small Mammal	General Distribution				Rare												

BIRDS

Subelement	Species	Monthly Presence												Nest	Mig. (S)	Mig. (F)	Molt
		J	F	M	A	M	J	J	A	S	O	N	D				
Alcid	Atlantic puffin													-	Mar	Sep	-
	Razorbill													-	May-Jun	-	-
Diving	D. crested cormorant													Apr-Jun	-	-	-
	D. crested cormorant													-	Mar-Apr	Sep-Oct	-
Gull/Tern	Gulls													-	Apr-May	Aug-Nov	-
Pelagic	Northern gannet													-	Apr-May	Oct-Nov	-
	Shearwaters													-	May	Oct	-
Shorebird	Red-necked phalarope													-	May	Oct	-
	Shorebirds													Apr-Aug	Mar-Dec	-	Aug
Waterfowl	American black duck													Mar-Jul	Sep-Mar	-	-
	Diving ducks													Mar-Apr	Sep-Apr	-	-
	Geese													May	Mar-May	Sep-Nov	-
	Sea ducks													-	Mar-May	Sep-Oct	-

FISH

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
Diadromous	Alewife													-	-	-	Jan-Dec	Jan-Dec
	American eel													-	-	-	Jan-Dec	Jan-Dec
	American shad													-	-	-	Jan-Dec	Jan-Dec
	Atlantic salmon													Sep-Dec	Sep-Mar	Feb-Jul	Jan-Dec	Jan-Dec
	Blueback herring													-	-	-	Jan-Dec	Jan-Dec
	Striped bass													-	-	-	Apr-Nov	Apr-Nov
Estuarine Nursery	Atlantic herring													Aug-Nov	Aug-Nov	Oct-Dec	Jan-Dec	Jan-Dec
	Bay anchovy													Jun-Aug	Jun-Aug	Jun-Sep	Jan-Dec	Jan-Dec
	Black sea bass													Feb-Jul	Feb-Jul	Mar-Jul	Jan-Dec	Jan-Dec
	Bluefish													-	-	Jun-Aug	May-Nov	May-Nov
	Northern kingfish													Jun-Jul	Jun-Jul	Jun-Aug	May-Nov	May-Nov
	Scup													May-Aug	May-Aug	Jun-Aug	May-Oct	May-Oct
	Summer flounder													Aug-Nov	Aug-Nov	Sep-Nov	Apr-Nov	Apr-Nov
	Windowpane													May-Aug	May-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Winter flounder													Jan-May	Jan-May	Feb-May	Jan-Dec	Jan-Dec
	Atlantic cod													-	-	-	Apr-Aug	Apr-Aug
Marine Benthic	Atlantic cod													Nov-Mar	Nov-Mar	Dec-Mar	Jan-Dec	Jan-Dec
	Atlantic halibut													Apr-Sep	Apr-Sep	Apr-Sep	Jan-Dec	Jan-Dec
	Atlantic wolffish													Mar-Aug	Mar-Aug	Mar-Sep	Jan-Dec	Jan-Dec
	Goosefish													-	-	-	Jan-Dec	Jan-Dec
	Goosefish													-	-	-	-	-
	Haddock													Feb-Jun	Feb-Jun	Mar-Jun	Jan-Dec	Jan-Dec
	Little skate													Jan-Dec	Jan-Dec	-	Jan-Dec	Jan-Dec
	Pollock													-	-	-	Apr-Oct	Apr-Oct
	Red hake													-	-	-	Dec-May	Dec-May

FISH (continued)

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	Red hake													Jun-Sep	Jun-Sep	Jul-Nov	Jun-Nov	Jun-Nov
	Red hake													Jun-Sep	Jun-Sep	Jul-Nov	Jun-Dec	Jan-Dec
	Rock gunnel													Nov-Mar	Nov-Apr	Jan-Jun	Jan-Dec	Jan-Dec
	Searobins													Jun-Sep	Jun-Sep	Jun-Oct	Jan-Dec	Jan-Dec
	Silver hake													Jul-Oct	Jul-Oct	Aug-Oct	Jul-Dec	Jul-Dec
	Silver hake													-	-	-	Jan-Jun	Jan-Jun
	Silver hake													Jul-Oct	Jul-Oct	Aug-Oct	Jan-Dec	Jan-Dec
	Tautog													May-Aug	May-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	White hake													Apr-Sep	May-Nov	May-Nov	Jan-Dec	Jan-Dec
	Winter skate													-	-	-	Jan-Dec	Jan-Dec
	Yellowtail flounder													Mar-Jul	Mar-Jul	Apr-Jul	Jan-Dec	Jan-Dec
	Atlantic mackerel													May-Jul	May-Aug	May-Aug	Mar-Dec	Mar-Dec
	Spiny dogfish													-	-	-	Jan-Dec	Jan-Dec
	Tunas													-	-	-	Jun-Sep	-




REPTILES & AMPHIBIANS

Subelement	Species	Monthly Presence												Nest	Hatch	Interest	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
Turtle	Eastern box turtle													Jun-Jul	Aug-Oct	-	Jan-Dec	Jan-Dec

INVERTEBRATES

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
Bivalve	Atlantic surfclam													Jun-Aug	Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Sea scallop													Jul-Oct	Jul-Oct	Jul-Oct	Jan-Dec	Jan-Dec
Cephalopod	Longfin squid													May-Aug	May-Aug	May-Aug	Apr-Nov	Apr-Nov
Crab	Atlantic rock crab													May-Oct	Jun-Oct	Jun-Oct	Jan-Dec	Jan-Dec
	Blue crab													-	Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Horseshoe crab													May-Jul	May-Jul	-	Jan-Dec	Jan-Dec
	Jonah crab													May-Oct	May-Oct	May-Oct	Jan-Dec	Jan-Dec
Lobster	American lobster													Aug-Nov	Jan-Dec	Jun-Oct	Jan-Dec	Jan-Dec
Shrimp	Northern shrimp													-	Dec-Feb	Nov-Feb	Nov-Feb	Dec-Feb
	Sevenspine bay shrimp													May-Jul	May-Jul	May-Jul	Jan-Dec	Jan-Dec

MARINE MAMMALS

Subelement	Species	Monthly Presence												Mating	Calving	Pupping	Molt
		J	F	M	A	M	J	J	A	S	O	N	D				
	Atl. spotted dolphin													-	-	-	-
	Atl. wht.-side dolphin													-	-	-	-
	Bottlenose dolphin													-	-	-	-
	Harbor porpoise													-	-	-	-
	Risso's dolphin													-	-	-	-
	Short-beaked common dolphin													-	-	-	-
	Striped dolphin													-	-	-	-
	White-beaked dolphin													-	-	-	-
	Gray seal													Dec-Feb	Dec-Feb	Dec-Feb	Mar-May
	Harbor seal													-	-	-	-
	Harp seal													-	-	-	-
	Hooded seal													-	-	-	-
	Minke whale													-	-	-	-
	Pilot whales													-	-	-	-

For additional information about species locations and extent, reference the underlying GIS data available from response.restoration.noaa.gov

SHORELINE RESOURCES

ESI POLYGON HABITAT TYPES

ESI Rank	Habitat Classification	Area (Acres)	Area (Sq. Miles)
10A	Salt and Brackish Water Marshes	9.47	0.01
10B	Freshwater Marshes	13.45	0.02
10D	Scrub and Shrub Wetlands	3.37	0.01

ESI SHORELINE HABITAT TYPES

ESI Rank	Shoreline Habitat Classification	Length (Meters)	Length (Miles)	% of ESI Shoreline
9B	Vegetated Low Banks	790.58	0.49	4%
7	Exposed Tidal Flats	7,817.88	4.86	40%
4	Coarse Grained Sand Beaches	8,826.98	5.48	45%
3B	Scarps and Steep Slopes (Sand)	2,260.14	1.40	11%

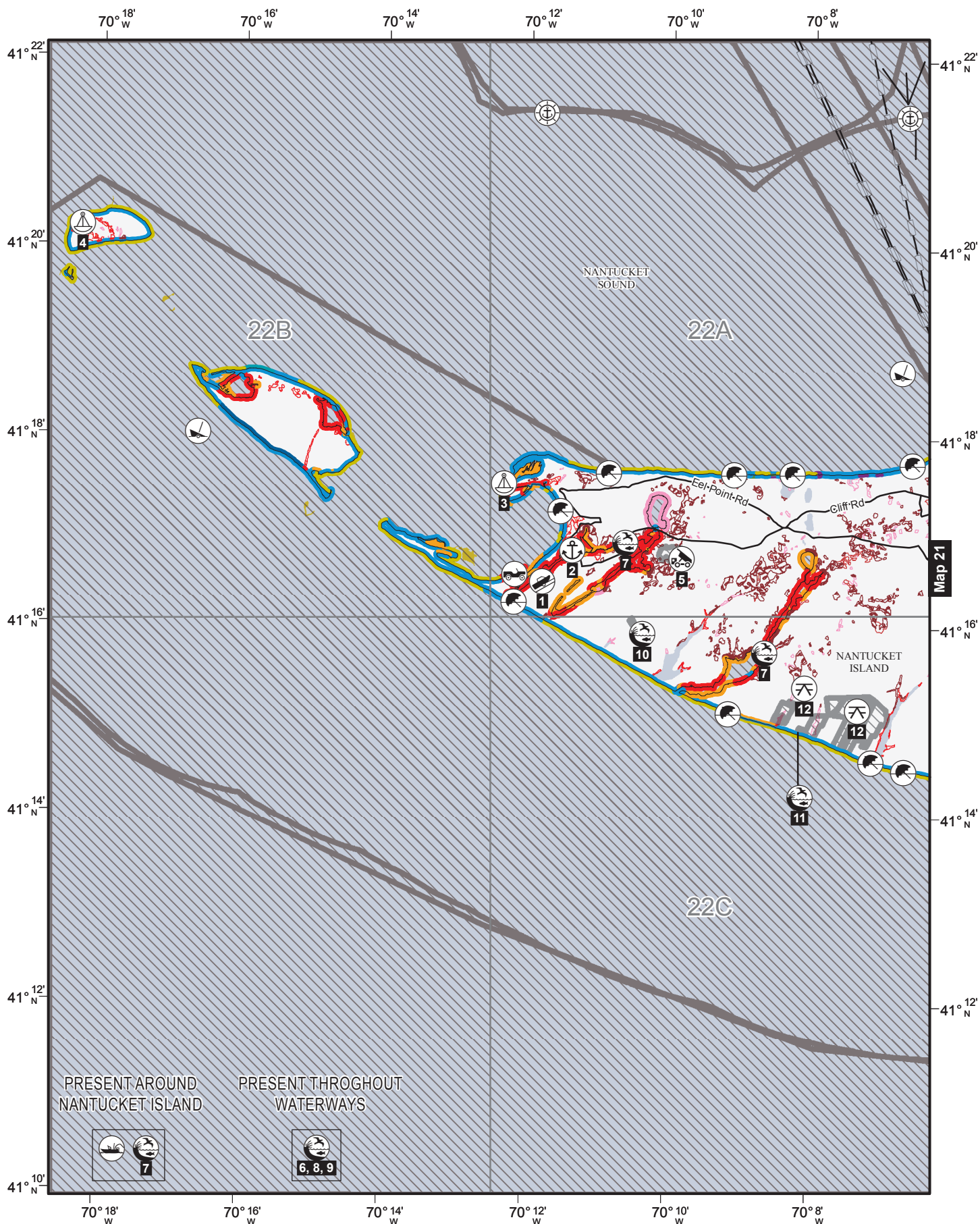
Total ESI Shoreline: 19,695.57
Total ESI Shoreline: 12.24

Total Shoreline: 8,826.98
Total Shoreline: 5.48

Note: A shoreline segment may include multiple shoreline habitats. If any segments include multiple habitats, the combined length of all habitats may exceed the length of the mapped shoreline, and the percent of ESI shoreline values will sum to greater than 100%

All underlying GIS data can be obtained from response.restoration.noaa.gov





Map 22
Mass. / Rhode Island



SEE BACK OF MAP
for details about mapped resources and
other resources that occur in mapped area.
Data Published: November 2016

0 Not for Navigation 2 Miles
0 2 Kilometers

1:100,000

Map 22
Massachusetts and Rhode Island

HUMAN USE RESOURCES

DISPLAYED ON MAP (POINTS)						
Map ID	Type	Name	Contact	Phone		
1	BOAT RAMP	HITHER CREEK	MDFG, OFFICE OF FISHING AND BOATING ACCESS	508-389-7810		
2	MARINA	MADAKET MARINE				
3	REPEATED MEASUREMENT SITE	TIDE GAUGE - EEL POINT				
4	REPEATED MEASUREMENT SITE	TIDE GAUGE - MUSKEGET ISLAND, NORTH SIDE				
DISPLAYED ON MAP (POLYGONS)						
Map ID	Type	Name	Contact	Phone		
5	LANDFILL	NANTUCKET LANDFILL	WASTE OPTIONS NANTUCKET LLC	508-922-4825		
6	MANAGEMENT AREA	LOBSTER MANAGEMENT AREA 2				
7	MANAGEMENT AREA	NORTHERN INSHORE STATE TRAP/POT WATERS AREA				
8	MANAGEMENT AREA	NORTHERN NEARSHORE TRAP/POT WATERS AREA				
9	MANAGEMENT AREA	OTHER NORTHEAST GILLNET WATERS AREA				
10	MANAGEMENT AREA	HEAD OF THE PLAINS WMA			EOEEA, DEPARTMENT OF FISH AND GAME	617-626-1500
11	MANAGEMENT AREA	MIACOMET HEATH WMA			EOEEA, DEPARTMENT OF FISH AND GAME	617-626-1500
12	REGIONAL OR STATE PARK	SMOOTH HUMMOCKS COASTAL PRESERVE			EOEEA, DEPT. OF CONSERVATION AND RECREATION	617-626-1250
ALSO PRESENT IN MAPPED AREA (POINTS)						
Type	Name				Contact	Phone
ESSENTIAL HABITAT	FAIRY SHRIMP -VERNAL POOL				MA DFW NHESP, WESTBOROUGH, MA	508-389-6375
ALSO PRESENT IN MAPPED AREA (POLYGONS)						
Type	Name		Contact	Phone		
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: ATLANTIC COD		NORTHEAST FISHERIES MANAGEMENT COUNCIL			
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: ATLANTIC HERRING		NORTHEAST FISHERIES MANAGEMENT COUNCIL			
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: ATLANTIC WOLFFISH		NORTHEAST FISHERIES MANAGEMENT COUNCIL			
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: HADDOCK		NORTHEAST FISHERIES MANAGEMENT COUNCIL			
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: LITTLE SKATE		NORTHEAST FISHERIES MANAGEMENT COUNCIL			
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: MONKFISH		NORTHEAST FISHERIES MANAGEMENT COUNCIL			
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: OCEAN POUT		NORTHEAST FISHERIES MANAGEMENT COUNCIL			
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: RED HAKE		NORTHEAST FISHERIES MANAGEMENT COUNCIL			
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: SILVER HAKE		NORTHEAST FISHERIES MANAGEMENT COUNCIL			
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: WINDOW PANE FLOUNDER		NORTHEAST FISHERIES MANAGEMENT COUNCIL			
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: WINTER FLOUNDER		NORTHEAST FISHERIES MANAGEMENT COUNCIL			
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: WINTER SKATE		NORTHEAST FISHERIES MANAGEMENT COUNCIL			
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: YELLOWTAIL FLOUNDER		NORTHEAST FISHERIES MANAGEMENT COUNCIL			
MANAGEMENT AREA	PRIORITY HABITAT		MDFW NHESP	508-389-6380		
JURISDICTIONS						
COUNTY:	NANTUCKET		FEMA:	REGION I		
COAST GUARD:	DISTRICT 1, SECTOR SE NEW ENGLAND		EPA:	REGION 1		
USACE:	NORTH ATLANTIC DIVISION, NEW ENGLAND DISTRICT					

SHORELINE RESOURCES

ESI POLYGON HABITAT TYPES

<i>ESI Rank</i>	<i>Habitat Classification</i>	<i>Area (Acres)</i>	<i>Area (Sq. Miles)</i>
10A	Salt and Brackish Water Marshes	318.17	0.50
10B	Freshwater Marshes	92.44	0.14
10C	Swamps	39.39	0.06
10D	Scrub and Shrub Wetlands	550.63	0.86
9A	Sheltered Tidal Flats	56.40	0.09
7	Exposed Tidal Flats	53.45	0.08



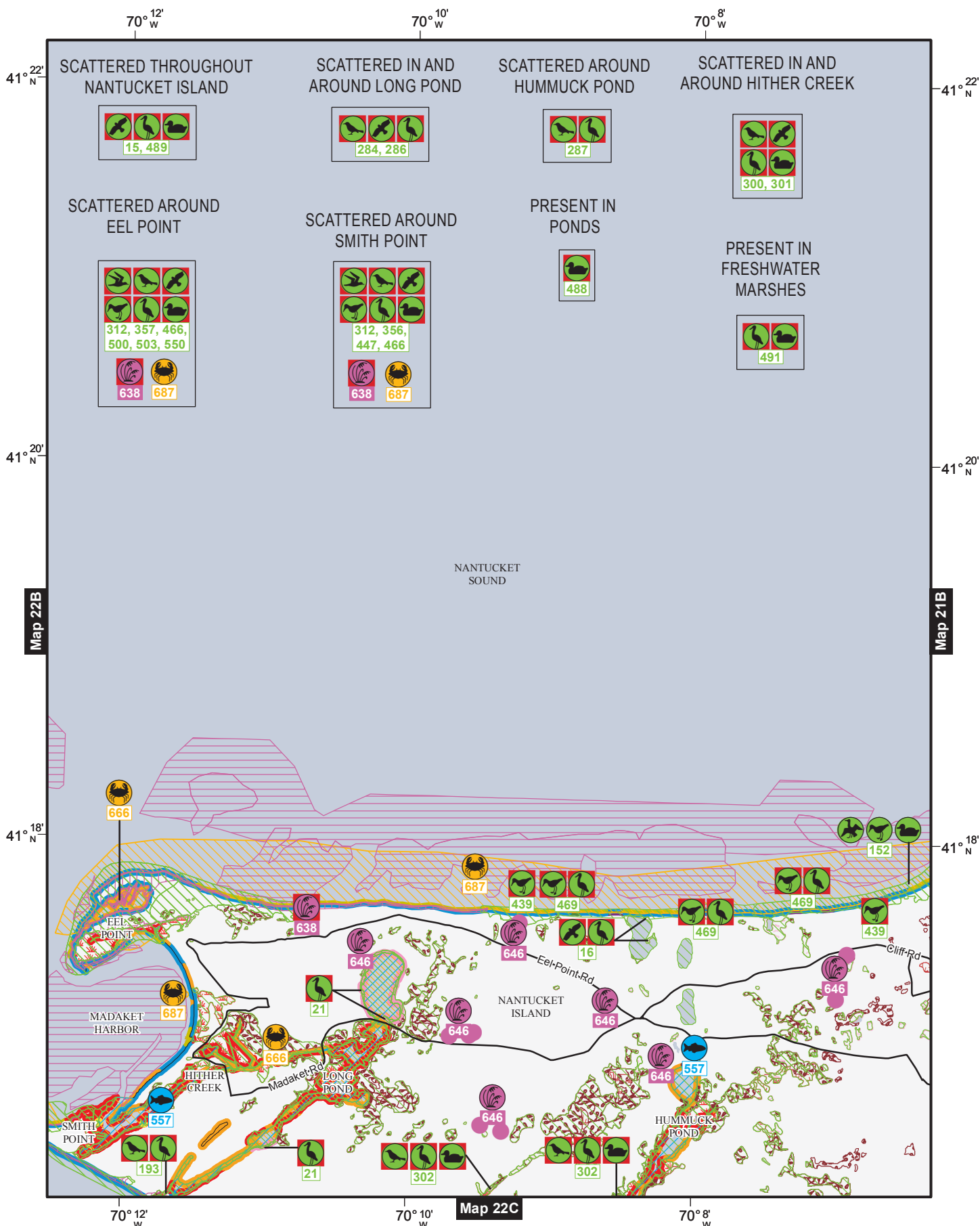
ESI SHORELINE HABITAT TYPES

<i>ESI Rank</i>	<i>Shoreline Habitat Classification</i>	<i>Length (Meters)</i>	<i>Length (Miles)</i>	<i>% of ESI Shoreline</i>
10A	Salt and Brackish Water Marshes	28,398.90	17.65	19%
10B	Freshwater Marshes	2,214.94	1.38	2%
10C	Swamps	71.17	0.04	< 1%
10D	Scrub and Shrub Wetlands	2,922.42	1.82	2%
9A	Sheltered Tidal Flats	16,476.69	10.24	11%
9B	Vegetated Low Banks	12,294.29	7.64	8%
8B	Sheltered, Solid Man-Made Structures	450.13	0.28	< 1%
7	Exposed Tidal Flats	29,164.27	18.12	20%
6B	Riprap	298.84	0.19	< 1%
5	Mixed Sand and Gravel Beaches	706.92	0.44	< 1%
4	Coarse Grained Sand Beaches	51,120.77	31.77	35%
3B	Scarps and Steep Slopes (Sand)	1,987.34	1.23	1%
1B	Exposed, Solid Man-Made Structures	540.53	0.34	< 1%
Total ESI Shoreline:		146,647.22	91.12	
Total Shoreline:		89,984.25	55.91	

Note: A shoreline segment may include multiple shoreline habitats. If any segments include multiple habitats, the combined length of all habitats may exceed the length of the mapped shoreline, and the percent of ESI shoreline values will sum to greater than 100%

All underlying GIS data can be obtained from response.restoration.noaa.gov





Map 22A
Massachusetts and Rhode Island

BIOLOGICAL RESOURCES

Note: An asterisk (*) indicates that life stage occurs in this range but not in all months included

DISPLAYED ON MAP

BENTHIC

Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence											
						J	F	M	A	M	J	J	A	S	O	N	D
SAV	Eelgrass	High Ecological Value			Potential												
SAV	Eelgrass	High Ecological Value			Present												
SAV	Rare aquatic/wetland plant	High Ecological Value			Present												

BIRDS

Map ID	Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence										Nest	Mig. (S)	Mig. (F)	Molt
								J	F	M	A	M	J	J	A	S	O				
15	Raptor	Northern harrier	Nesting		T/E		Rare											Mar-Jul	-	-	-
16	Raptor	Northern harrier	Nesting		T/E		Rare											Mar-Jul	-	-	-
21	Wading	Marsh birds	General Distribution		C/C		Common											-	Mar-May	Aug-Nov	Jul-Aug
21	Wading	Marsh birds	General Distribution		C/C		Common											-	Mar-May	Aug-Nov	Jul-Aug
152	Diving	Great cormorant	Wintering				Common											-	Feb-Mar	Nov	-
	Shorebird	Purple sandpiper	Wintering				Common											-	Mar	Oct	-
	Waterfowl	Harlequin duck	Wintering				Rare											-	Mar-Apr	Nov	-
193	Passerine	Marsh passerines	General Distribution		-C		Common											Apr-Aug	Apr-May	Aug-Nov	Sep-Oct
	Passerine	Saltmarsh sparrow	Nesting		-C		Common											May-Jul	May	-	-
	Wading	Egrets	Migration		-C		Common											Apr-Jul	Mar-May	Aug-Sep	-
	Wading	Marsh birds	General Distribution		C/C		Common											-	Mar-May	Aug-Nov	Jul-Aug
284	Passerine	Marsh passerines	General Distribution		-C		Common											Apr-Aug	Apr-May	Aug-Nov	Sep-Oct
	Passerine	Saltmarsh sparrow	Nesting		-C		Common											May-Jul	May	-	-
	Raptor	Northern harrier	Nesting		T/E		Rare											Mar-Jul	-	-	-
	Wading	Egrets	Migration		-C		Common											Apr-Jul	Mar-May	Aug-Sep	-
	Wading	Marsh birds	General Distribution		C/C		Common											-	Mar-May	Aug-Nov	Jul-Aug
	Wading	Wading birds	General Distribution		-C		Common											-	Mar-May	Jul-Oct	-
286	Passerine	Marsh passerines	General Distribution		-C		Common											Apr-Aug	Apr-May	Aug-Nov	Sep-Oct
	Passerine	Saltmarsh sparrow	Nesting		-C		Common											May-Jul	May	-	-
	Wading	Egrets	Migration		-C		Common											Apr-Jul	Mar-May	Aug-Sep	-
	Wading	Marsh birds	General Distribution		C/C		Common											-	Mar-May	Aug-Nov	Jul-Aug
	Wading	Wading birds	General Distribution		-C		Common											-	Mar-May	Jul-Oct	-
287	Passerine	Marsh passerines	General Distribution		-C		Common											Apr-Aug	Apr-May	Aug-Nov	Sep-Oct
	Passerine	Saltmarsh sparrow	Nesting		-C		Common											May-Jul	May	-	-
	Wading	Egrets	General Distribution		-C		Common											Apr-Jul	Mar-May	Aug-Sep	-
	Wading	Marsh birds	General Distribution		C/C		Common											-	Mar-May	Aug-Nov	Jul-Aug
	Wading	Wading birds	General Distribution		-C		Common											-	Mar-May	Jul-Oct	-
300	Passerine	Marsh passerines	General Distribution		-C		Common											Apr-Aug	Apr-May	Aug-Nov	Sep-Oct
	Passerine	Saltmarsh sparrow	Nesting		-C		Common											May-Jul	May	-	-
	Raptor	Northern harrier	Nesting		T/E		Rare											Mar-Jul	-	-	-

BIRDS (continued)

Map ID	Subelement	Species	Mapping Qualifier	MA/R/I		Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt
				S	F	J	F	M	A	M	J	J	A	S	O	N	D				
	Wading	Egrets	Migration	-C													Apr-Jul	Mar-May	Aug-Sep	-	
	Wading	Marsh birds	General Distribution	C/C													-	Mar-May	Aug-Nov	Jul-Aug	
	Wading	Wading birds	General Distribution	-C													-	Mar-May	Jul-Oct	-	
	Waterfowl	Waterfowl	General Distribution	C/C													May-Jul	Apr-May	Aug-Oct	Aug-Sep	
301	Passerine	Marsh passerines	General Distribution	-C													Apr-Aug	Apr-May	Aug-Nov	Sep-Oct	
	Passerine	Saltmarsh sparrow	Nesting	-C													May-Jul	May	-	-	
	Wading	Egrets	Migration	-C													Apr-Jul	Mar-May	Aug-Sep	-	
	Wading	Marsh birds	General Distribution	C/C													-	Mar-May	Aug-Nov	Jul-Aug	
	Wading	Wading birds	General Distribution	-C													-	Mar-May	Jul-Oct	-	
	Waterfowl	Waterfowl	General Distribution	C/C													May-Jul	Apr-May	Aug-Oct	Aug-Sep	
302	Passerine	Marsh passerines	General Distribution	-C													Apr-Aug	Apr-May	Aug-Nov	Sep-Oct	
	Passerine	Saltmarsh sparrow	Nesting	-C													May-Jul	May	-	-	
	Wading	Egrets	General Distribution	-C													Apr-Jul	Mar-May	Aug-Sep	-	
	Wading	Marsh birds	General Distribution	C/C													-	Mar-May	Aug-Nov	Jul-Aug	
	Wading	Wading birds	General Distribution	-C													-	Mar-May	Jul-Oct	-	
	Waterfowl	Waterfowl	General Distribution	C/C													May-Jul	Apr-May	Aug-Oct	Aug-Sep	
312	Passerine	Marsh passerines	General Distribution	-C													Apr-Aug	Apr-May	Aug-Nov	Sep-Oct	
	Passerine	Saltmarsh sparrow	Nesting	-C													May-Jul	May	-	-	
	Raptor	Northern harrier	Nesting	T/E													Mar-Jul	-	-	-	
	Wading	Egrets	Migration	-C													Apr-Jul	Mar-May	Aug-Sep	-	
	Wading	Marsh birds	General Distribution	C/C													-	Mar-May	Aug-Nov	Jul-Aug	
	Waterfowl	Waterfowl	General Distribution	C/C													May-Jul	Apr-May	Aug-Oct	Aug-Sep	
356	Passerine	Marsh passerines	General Distribution	-C													Apr-Aug	Apr-May	Aug-Nov	Sep-Oct	
	Passerine	Saltmarsh sparrow	Nesting	-C													May-Jul	May	-	-	
	Raptor	Northern harrier	Nesting	T/E													Mar-Jul	-	-	-	
	Wading	Egrets	Migration	-C													Apr-Jul	Mar-May	Aug-Sep	-	
	Wading	Marsh birds	General Distribution	C/C													-	Mar-May	Aug-Nov	Jul-Aug	
	Waterfowl	Waterfowl	General Distribution	C/C													May-Jul	Apr-May	Aug-Oct	Aug-Sep	
356	Gull/Tern	Rare tern	Migration	C/-													May-Aug	Apr-May	Jul-Sep	-	
	Gull/Tern	Roseate tern	Migration	E/-													-	Apr-May	Jul-Sep	-	
	Shorebird	American oystercatcher	Nesting	-C													May-Aug	May	-	-	
	Shorebird	Eskimo curlew	General Distribution	E													-	-	Aug-Sep	-	
	Shorebird	Piping plover	Nesting	T/E													Mar-Aug	Mar-Apr	Jul-Oct	-	
	Shorebird	Red knot	Migration	T													-	May-Jun	Jul-Sep	-	
	Shorebird	Shorebirds	Migration														-	Mar-Jun	Jul-Nov	Aug	
357	Shorebird	American oystercatcher	Nesting	-C													May-Aug	May	-	-	
	Shorebird	Eskimo curlew	General Distribution	E													-	-	Aug-Sep	-	
	Shorebird	Piping plover	Nesting	T/E													Mar-Aug	Mar-Apr	Jul-Oct	-	
	Shorebird	Red knot	Migration	T													-	May-Jun	Jul-Sep	-	
	Shorebird	Shorebirds	Migration														-	Mar-Jun	Jul-Nov	Aug	
439	Shorebird	Piping plover	Nesting	T/E													Mar-Aug	Mar-Apr	Jul-Oct	-	
447	Shorebird	Eskimo curlew	General Distribution	E													-	-	Aug-Sep	-	
	Shorebird	Piping plover	Nesting	T/E													Mar-Aug	Mar-Apr	Jul-Oct	-	
	Shorebird	Red knot	Migration	T													-	May-Jun	Jul-Sep	-	
	Shorebird	Shorebirds	Migration														-	Mar-Jun	Jul-Nov	Aug	
466	Wading	Shorebirds	Migration														-	Mar-Jun	Jul-Nov	Aug	
469	Shorebird	Wading birds	General Distribution	-C													-	Mar-May	Jul-Oct	-	
	Shorebird	Eskimo curlew	General Distribution	E													-	-	Aug-Sep	-	
	Shorebird	Ruddy turnstone	Wintering														-	-	-	-	
	Wading	Wading birds	General Distribution	-C													-	Mar-May	Jul-Oct	-	
488	Waterfowl	Waterfowl	General Distribution	C/C													May-Jul	Apr-May	Aug-Oct	Aug-Sep	

BIRDS (continued)

Map ID	Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt
								J	F	M	A	M	J	J	A	S	O	N	D				
489	Raptor	Northern harrier	Nesting		T/E		Rare													Mar-Jul	-	-	-
	Wading	Marsh birds	General Distribution		C/C		Common													-	Mar-May	Aug-Nov	Jul-Aug
	Waterfowl	Waterfowl	General Distribution		C/C		Common													May-Jul	Apr-May	Aug-Oct	Aug-Sep
491	Wading	Marsh birds	General Distribution		C/C		Common													-	Mar-May	Aug-Nov	Jul-Aug
	Waterfowl	Waterfowl	General Distribution		C/C		Common													May-Jul	Apr-May	Aug-Oct	Aug-Sep
500	Gull/Tern	Rare tern	Migration		C/-		Common													May-Aug	Apr-May	Jul-Sep	-
503	Gull/Tern	Roseate tern	Migration		E/-	E	Common													-	Apr-May	Jul-Sep	-
550	Gull/Tern	Rare tern	Nesting		C/-		Rare													May-Aug	Apr-May	Jul-Sep	-

FISH

Map ID	Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
								J	F	M	A	M	J	J	A	S	O	N	D					
557	Diadromous	Alewife	Spawning Area				-													Apr-Jun	Apr-Jun	Apr-Jun	-	Apr-Jun
	Diadromous	American eel	Migration				-													-	-	-	Jan-Dec	Jan-Dec
	Diadromous	Blueback herring	Spawning Area				-													Apr-Jun	Apr-Jun	Apr-Jun	-	Apr-Jun

HABITATS & RARE PLANTS

Map ID	Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence											
								J	F	M	A	M	J	J	A	S	O	N	D
638	Plant	Rare plant	Vulnerable Occurrence		T/C		-												
646	Wetland	Vernal pool	Vulnerable Occurrence				-												

INVERTEBRATES



Map ID	Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
								J	F	M	A	M	J	J	A	S	O	N	D					
666	Crab	Blue crab	Nursery				Common													Jun-Aug	-	Jun-Aug	Jan-Dec	Jan-Dec
	Crab	Horseshoe crab	Nursery				Abundant													May-Jul	May-Jul	-	Jan-Dec	Jan-Dec
687	Crab	Horseshoe crab	Spawning				Abundant													May-Jul	May-Jul	-	May-Jul	May-Jul

WIDESPREAD IN MAPPED AREA (> 10 SQUARE KILOMETERS)



BIRDS

Map ID	Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt
								J	F	M	A	M	J	J	A	S	O	N	D				
	Alcid	Razorbill	Wintering				Common													-	-	Oct-Nov	-
	Diving	Loons	Migration		C/-		Common													-	Mar-Jun	Sep-Dec	Jan-Mar
	Gull/Tern	Rare tern	General Distribution		C/-		Common													-	Apr-May	Jul-Sep	-
		Roseate tern	General Distribution		E/-	E	Common													-	Apr-May	Jul-Sep	-
	Raptor	Barn owl	Nesting		C/E		Common													Apr-Sep	-	-	-
	Waterfowl	Sea ducks	Wintering				Abundant													-	Mar-May	Sep-Oct	-


REPTILES & AMPHIBIANS

Subelement	Species	Mapping Qualifier	MA/RI		Concentration	Monthly Presence												Hatch	Internest	Juveniles	Adults	
			S	F		J	F	M	A	M	J	J	A	S	O	N	D					
 	Amphibian	Eastern spadefoot			-													Apr-Jun	May-Jul	-	Jan-Dec	Jan-Dec
	Turtle	Green sea turtle		T/E	T	Regular												-	-	-	May-Nov	May-Nov
	K. ridley sea turtle	General Distribution		E/E	E	Regular												-	-	-	May-Nov	May-Nov
		General Distribution		E/E	E	Regular												-	-	-	May-Nov	May-Nov
		General Distribution		E/E	E	Regular												-	-	-	May-Nov	May-Nov
	Loggerhead sea turtle	General Distribution		T/E	T	Regular												-	-	-	May-Nov	May-Nov

INVERTEBRATES

	Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
								J	F	M	A	M	J	J	A	S	O	N	D					
	Cephalopod	Longfin squid	Concentration Area				Common											May-Aug	May-Aug	May-Aug	Apr-Nov	Apr-Nov		
	Crab	Horseshoe crab	Concentration Area				Medium											May-Jul	May-Jul	-	Apr-Oct	Apr-Oct		
	Gastropod	Channeled whelk	Concentration Area				Med-Low											Jun-Jul	Aug-Oct	-	May-Oct	May-Oct		
		Channeled whelk	Concentration Area				High											Jun-Jul	Aug-Oct	-	May-Oct	May-Oct		
		Knobbed whelk	Concentration Area				Medium											Jun-Jul	Aug-Oct	-	May-Oct	May-Oct		
	Knobbed whelk	Concentration Area				High												Jun-Jul	Aug-Oct	-	May-Oct	May-Oct		

MARINE MAMMALS







Subelement	Species	Mapping Qualifier	MA/RI		Concentration	Monthly Presence												Mating	Calving	Pupping	Molt
			S	F		J	F	M	A	M	J	J	A	S	O	N	D				
	Fin whale	General Distribution	E/E	E	Rare													-	-		
	Humpback whale	General Distribution	E/E	E	Common													-	-		
	N.A. right whale	General Distribution	E/E	E	Common													-	-		
	Sei whale	General Distribution	E/-	E	Rare													-	-		

TERRESTRIAL MAMMALS

	Subelement	Species	Mapping Qualifier	MA/RI		Monthly Presence												
				S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N	D
	Small Mammal	New England cottontail	General Distribution	-/C		Rare												

ALSO PRESENT IN MAPPED AREA (GENERAL DISTRIBUTION)

BIRDS

Subelement	Species	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt
		J	F	M	A	M	J	J	A	S	O	N	D				
	Alcid													-	Mar	Sep	-
	Diving													-	Mar-Apr	Sep-Oct	-
	Gull/Tern													-	Apr-May	Aug-Nov	-
	Pelagic													-	Apr-May	Oct-Nov	-
	Shearwaters													-	May	Oct	-
	Shorebird													-	May	Oct	-
	Shorebirds													Apr-Aug	Mar-Dec	-	Aug
	Waterfowl													Mar-Jul	Sep-Mar	-	-
	American black duck													Mar-Apr	Sep-Apr	-	-
	Diving ducks													May	Mar-May	Sep-Nov	-
	Geese																-

FISH

Monthly Presence





Subelement	Species	J	F	M	A	M	J	J	A	S	O	N	D	Spawn	Eggs	Larvae	Juveniles	Adults
	Diadromous													-	-	-	Jan-Dec	Jan-Dec
	Alewife													-	-	-	Jan-Dec	Jan-Dec
	American eel													-	-	-	Jan-Dec	Jan-Dec
	American shad													-	-	-	Jan-Dec	Jan-Dec
	Atlantic salmon													Sep-Dec	Sep-Mar	Feb-Jul	Jan-Dec	Jan-Dec
	Blueback herring													-	-	-	Jan-Dec	Jan-Dec
	Striped bass													-	-	-	Apr-Nov	Apr-Nov
	Atlantic herring													Aug-Nov	Aug-Nov	Oct-Dec	Jan-Dec	Jan-Dec
	Bay anchovy													Jun-Aug	Jun-Aug	Jun-Sep	Jan-Dec	Jan-Dec
	Black sea bass													Feb-Jul	Feb-Jul	Mar-Jul	Jan-Dec	Jan-Dec
	Bluefish													-	-	Jun-Aug	May-Nov	May-Nov
	Northern kingfish													Jun-Jul	Jun-Jul	Jun-Aug	May-Nov	May-Nov
	Scup													May-Aug	May-Aug	Jun-Aug	May-Oct	May-Oct
	Summer flounder													Aug-Nov	Aug-Nov	Sep-Nov	Apr-Nov	Apr-Nov
	Windowpane													May-Aug	May-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Winter flounder													Jan-May	Jan-May	Feb-May	Jan-Dec	Jan-Dec
	Atlantic silverside													May-Aug	May-Aug	May-Sep	Jan-Dec	Jan-Dec
	Fourspine stickleback													May-Jul	May-Jul	May-Aug	Jan-Dec	Jan-Dec
	Mummichog													May-Aug	Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Atlantic cod													-	-	-	Apr-Aug	Apr-Aug
	Atlantic tomcod													Dec-Feb	Dec-Mar	Dec-Apr	Dec-Jun	Dec-Jun
	Atlantic wolffish													Mar-Aug	Mar-Aug	Mar-Sep	Jan-Dec	Jan-Dec
	Goosefish													-	-	-	-	Jan-Dec
	Haddock													Feb-Jun	Feb-Jun	Mar-Jun	Jan-Dec	Jan-Dec
	Little skate													Jan-Dec	Jan-Dec	-	Jan-Dec	Jan-Dec
	Pollock													-	-	-	Apr-Oct	Apr-Oct
	Red hake													Jun-Sep	Jun-Sep	Jul-Nov	Jun-Nov	Jun-Nov
	Red hake													-	-	-	Dec-May	Dec-May
	Rock gunnel													Nov-Mar	Nov-Apr	Jan-Jun	Jan-Dec	Jan-Dec
	Searobins													Jun-Sep	Jun-Sep	Jun-Oct	Jan-Dec	Jan-Dec
	Silver hake													Jul-Oct	Jul-Oct	Aug-Oct	Jul-Dec	Jul-Dec
	Silver hake													-	-	-	Jan-Jun	Jan-Jun
	Tautog													May-Aug	May-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	White hake													Apr-Sep	May-Nov	May-Nov	Jan-Dec	Jan-Dec
	Winter skate													-	-	-	Jan-Dec	Jan-Dec
	Yellowtail flounder													Mar-Jul	Mar-Jul	Apr-Jul	Jan-Dec	Jan-Dec
	Atlantic mackerel													May-Jul	May-Aug	May-Aug	Mar-Dec	Mar-Dec
	Spiny dogfish													-	-	-	Jan-Dec	Jan-Dec
	Tunas													-	-	-	Jun-Sep	-
														-	-	-	-	-

REPTILES & AMPHIBIANS




Monthly Presence

Subelement	Species	J	F	M	A	M	J	J	A	S	O	N	D	Nest	Hatch	Interest	Juveniles	Adults
	Turtle													Jun-Jul	Aug-Oct	-	Jan-Dec	Jan-Dec
	Eastern box turtle													Jun-Jul	Aug-Oct	-	Jan-Dec	Jan-Dec

INVERTEBRATES

Subelement	Species	Monthly Presence												Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D				
	Bivalve													Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Atlantic surfclam													Jun-Sep	Jun-Sep	Jan-Dec	Jan-Dec
	Bay scallop													May-Nov	May-Nov	Jan-Dec	Jan-Dec
	Blue mussel													Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Northern quahog													Jul-Nov	Jul-Dec	Jan-Dec	Jan-Dec
	Ocean quahog													Jul-Oct	Jul-Oct	Jan-Dec	Jan-Dec
	Sea scallop													Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Softshell clam													May-Aug	May-Aug	Apr-Nov	Apr-Nov
	Cephalopod													Jun-Oct	Jun-Oct	Jan-Dec	Jan-Dec
	Crab													May-Jul	May-Jul	Jan-Dec	Jan-Dec
	Atlantic rock crab													Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Blue crab													May-Oct	May-Oct	Jan-Dec	Jan-Dec
	Horseshoe crab													May-Jul	May-Jul	Jan-Dec	Jan-Dec
	Jonah crab													May-Oct	May-Oct	Jan-Dec	Jan-Dec
	American lobster													Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Db grass shrimp													May-Jul	May-Jul	Jan-Dec	Jan-Dec
	Sevenspine bay shrimp													May-Jul	May-Jul	Jan-Dec	Jan-Dec

MARINE MAMMALS

Subelement	Species	Monthly Presence												Mating	Calving	Pupping	Molt
		J	F	M	A	M	J	J	A	S	O	N	D				
	Dolphin													-	-	-	-
	Atl. wht.-side dolphin													-	-	-	-
	Bottlenose dolphin													-	-	-	-
	Harbor porpoise													-	-	-	-
	Risso's dolphin													-	-	-	-
	Short-beaked common dolphin													-	-	-	-
	Gray seal													Dec-Feb	Dec-Feb	Mar-May	-
	Harbor seal													-	-	-	-
	Harp seal													-	-	-	-
	Hooded seal													-	-	-	-
	Minke whale													-	-	-	-
	Pilot whales													-	-	-	-

For additional information about species locations and extent, reference the underlying GIS data available from response.restoration.noaa.gov

SHORELINE RESOURCES

ESI POLYGON HABITAT TYPES

ESI Rank	Habitat Classification	Area (Acres)	Area (Sq. Miles)
10A	Salt and Brackish Water Marshes	208.98	0.33
10B	Freshwater Marshes	67.61	0.11
10C	Swamps	33.53	0.05
10D	Scrub and Shrub Wetlands	448.76	0.70
9A	Sheltered Tidal Flats	28.21	0.04
7	Exposed Tidal Flats	3.19	0.00

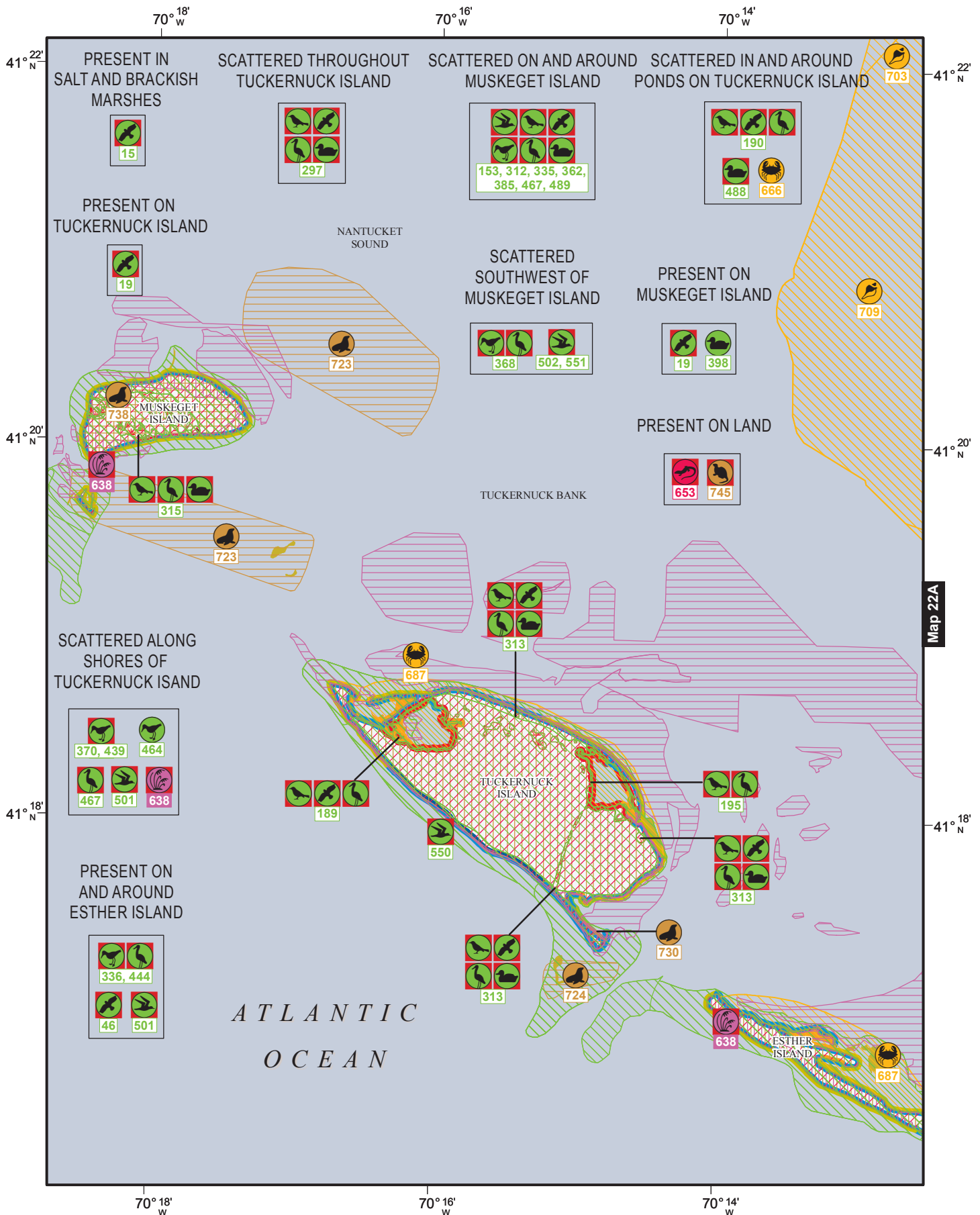
ESI SHORELINE HABITAT TYPES

ESI Rank	Shoreline Habitat Classification	Length (Meters)	Length (Miles)	% of ESI Shoreline
10A	Salt and Brackish Water Marshes	20,006.46	12.43	29%
10B	Freshwater Marshes	2,214.94	1.38	3%
10C	Swamps	71.17	0.04	< 1%
10D	Scrub and Shrub Wetlands	1,535.92	0.95	2%
9A	Sheltered Tidal Flats	11,907.96	7.40	18%
9B	Vegetated Low Banks	7,139.67	4.44	11%
8B	Sheltered, Solid Man-Made Structures	450.13	0.28	1%
7	Exposed Tidal Flats	5,905.26	3.67	9%
6B	Riprap	298.84	0.19	< 1%
4	Coarse Grained Sand Beaches	17,780.51	11.05	26%
1B	Exposed, Solid Man-Made Structures	540.53	0.34	1%
Total ESI Shoreline:		67,851.39	42.16	
Total Shoreline:		45,739.02	28.42	

Note: A shoreline segment may include multiple shoreline habitats. If any segments include multiple habitats, the combined length of all habitats may exceed the length of the mapped shoreline, and the percent of ESI shoreline values will sum to greater than 100%

All underlying GIS data can be obtained from response.restoration.noaa.gov

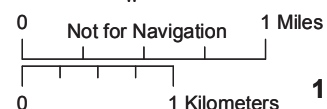




Map 22B
Mass. / Rhode Island



SEE BACK OF MAP
for details about mapped species and
other species that occur in mapped area.
Data Published: November 2016



1:50,000



Map 22B
Massachusetts and Rhode Island

BIOLOGICAL RESOURCES

Note: An asterisk (*) indicates that life stage occurs in this range but not in all months included

DISPLAYED ON MAP

BENTHIC

Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence											
							J	F	M	A	M	J	J	A	S	O	N	D
SAV	Eelgrass	High Ecological Value				Potential												
SAV	Eelgrass	High Ecological Value				Present												
SAV	Rare aquatic/wetland plant	High Ecological Value				Present												

BIRDS

Map ID	Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence											
								J	F	M	A	M	J	J	A	S	O	N	D
15	Raptor	Northern harrier	Nesting		T/E		Rare												
19	Raptor	Short-eared owl	Nesting		E/-		Common												
46	Raptor	Barn owl	Nesting		C/E		Common												
153	Gull/Tern	Rare tern	Nesting		C/-		Rare												
189	Passerine	Marsh passerines	General Distribution		-/C		Common												
	Passerine	Saltmarsh sparrow	Nesting		-/C		Common												
	Raptor	Northern harrier	Nesting		T/E		Rare												
	Raptor	Short-eared owl	Nesting		E/-		Common												
	Wading	Egrets	Migration		-/C		Common												
	Wading	Marsh birds	General Distribution		C/C		Common												
	Wading	YC night-heron	Nesting		-/C		Rare												
190	Passerine	Marsh passerines	General Distribution		-/C		Common												
	Passerine	Saltmarsh sparrow	Nesting		-/C		Common												
	Raptor	Northern harrier	Nesting		T/E		Rare												
	Wading	Egrets	Migration		-/C		Common												
	Wading	Marsh birds	General Distribution		C/C		Common												
	Wading	YC night-heron	Nesting		-/C		Rare												
195	Passerine	Marsh passerines	General Distribution		-/C		Common												
	Passerine	Saltmarsh sparrow	Nesting		-/C		Common												
	Wading	Egrets	Migration		-/C		Common												
	Wading	Marsh birds	General Distribution		C/C		Common												
	Wading	YC night-heron	Nesting		-/C		Rare												
297	Passerine	Marsh passerines	General Distribution		-/C		Common												
	Passerine	Saltmarsh sparrow	Nesting		-/C		Common												
	Raptor	Northern harrier	Nesting		T/E		Rare												
	Wading	BC night-heron	Nesting		-/C		Common												
	Wading	Egrets	Migration		-/C		Common												
	Wading	Marsh birds	General Distribution		C/C		Common												
	Wading	Wading birds	General Distribution		-/C		Common												
	Wading	YC night-heron	Nesting		-/C		Rare												

BIRDS (continued)

Map ID	Subelement	Species	Mapping Qualifier	MA/RI		Monthly Presence												Nest	Mig. (S)	Mig. (F)	Molt
				S	F	J	F	M	A	M	J	J	A	S	O	N	D				
312	Waterfowl	Waterfowl	General Distribution	C/C													May-Jul	Apr-May	Aug-Oct	Aug-Sep	
	Passerine	Marsh passerines	General Distribution	-/C													Apr-Aug	Apr-May	Aug-Nov	Sep-Oct	
	Passerine	Saltmarsh sparrow	Nesting	-/C													May-Jul	May	-	-	
	Raptor	Northern harrier	Nesting	T/E													Mar-Jul	-	-	-	
313	Wading	Egrets	Migration	-/C													Apr-Jul	Mar-May	Aug-Sep	-	
	Wading	Marsh birds	General Distribution	C/C													-	Mar-May	Aug-Nov	Jul-Aug	
	Waterfowl	Waterfowl	General Distribution	C/C													May-Jul	Apr-May	Aug-Oct	Aug-Sep	
	Passerine	Marsh passerines	General Distribution	-/C													Apr-Aug	Apr-May	Aug-Nov	Sep-Oct	
	Passerine	Saltmarsh sparrow	Nesting	-/C													May-Jul	May	-	-	
	Raptor	Northern harrier	Nesting	T/E													Mar-Jul	-	-	-	
315	Wading	Egrets	Migration	-/C													Apr-Jul	Mar-May	Aug-Sep	-	
	Wading	Marsh birds	General Distribution	C/C													-	Mar-May	Aug-Nov	Jul-Aug	
	Wading	YC night-heron	Nesting	-/C													Apr-Jun	Apr-May	-	-	
	Waterfowl	Waterfowl	General Distribution	C/C													May-Jul	Apr-May	Aug-Oct	Aug-Sep	
	Passerine	Marsh passerines	General Distribution	-/C													Apr-Aug	Apr-May	Aug-Nov	Sep-Oct	
	Passerine	Saltmarsh sparrow	Nesting	-/C													May-Jul	May	-	-	
335	Wading	Egrets	Migration	-/C													Apr-Jul	Mar-May	Aug-Sep	-	
	Wading	Marsh birds	General Distribution	C/C													-	Mar-May	Aug-Nov	Jul-Aug	
	Waterfowl	Waterfowl	General Distribution	C/C													May-Jul	Apr-May	Aug-Oct	Aug-Sep	
	Gull/Tern	Roseate tern	Nesting	E/-	E												May-Aug	-	-	-	
336	Shorebird	American oystercatcher	Nesting	-/C													May-Aug	May	-	-	
362	Shorebird	American oystercatcher	Nesting	-/C													May-Aug	May	-	-	
368	Shorebird	Eskimo curlew	General Distribution	E													-	-	Aug-Sep	-	
	Shorebird	Piping plover	Nesting	T/E	T												Mar-Aug	Mar-Apr	Jul-Oct	-	
	Shorebird	American oystercatcher	Nesting	-/C													May-Aug	May	-	-	
	Shorebird	Eskimo curlew	General Distribution	E													-	-	Aug-Sep	-	
370	Shorebird	Red knot	Migration	T													-	May-Jun	Jul-Sep	-	
	Shorebird	Shorebirds	Migration														-	Mar-Jun	Jul-Nov	Aug	
	Wading	BC night-heron	Nesting	-/C													May-Aug	Mar-Apr	Sep-Oct	-	
	Wading	Wading birds	General Distribution	-/C													-	Mar-May	Jul-Oct	-	
370	Shorebird	American oystercatcher	Nesting	-/C													May-Aug	May	-	-	
398	Shorebird	Eskimo curlew	General Distribution	E													-	-	Aug-Sep	-	
	Shorebird	Eskimo curlew	General Distribution	E													-	-	Aug-Sep	-	
	Shorebird	Red knot	Migration	T													-	May-Jun	Jul-Sep	-	
	Shorebird	Red knot	Migration	T													-	May-Jun	Jul-Sep	-	
398	Waterfowl	Common eider	Nesting														-	Mar-Apr	Sep-Oct	Aug	
439	Shorebird	Piping plover	Nesting	T/E	T												Apr-Jul	Mar-Apr	Sep-Oct	-	
444	Shorebird	Eskimo curlew	General Distribution	E													-	-	Aug-Sep	-	
464	Shorebird	Piping plover	Nesting	T/E	T												Mar-Aug	Mar-Apr	Jul-Oct	-	
	Shorebird	Piping plover	Nesting	T													-	May-Jun	Jul-Sep	-	
	Shorebird	Shorebirds	Migration														-	Mar-Jun	Jul-Nov	Aug	
	Wading	Wading birds	General Distribution	-/C													-	Mar-May	Jul-Oct	-	
464	Shorebird	Shorebirds	Migration														-	Mar-May	Jul-Nov	Aug	
467	Wading	BC night-heron	Nesting	-/C													May-Aug	Mar-Apr	Sep-Oct	-	
488	Wading	Wading birds	General Distribution	-/C													-	Mar-May	Jul-Oct	-	
	Wading	Wading birds	General Distribution	C/C													May-Jul	Apr-May	Aug-Oct	Aug-Sep	
	Waterfowl	Waterfowl	General Distribution														-	-	-	-	
	Waterfowl	Waterfowl	General Distribution														-	-	-	-	

BIRDS (continued)

Map ID	Subelement	Species	MA/RI	Mapping Qualifier	S	F	Concentration	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt
								J	F	M	A	M	J	J	A	S	O	N	D				
489	Raptor	Northern harrier		Nesting	T/E		Rare													Mar-Jul	-	-	-
	Wading	Marsh birds		General Distribution	C/C		Common													-	Mar-May	Aug-Nov	Jul-Aug
	Waterfowl	Waterfowl		General Distribution	C/C		Common													May-Jul	Apr-May	Aug-Oct	Aug-Sep
501	Gull/Tern	Rare tern		Migration	C/-		Common													May-Aug	Apr-May	Jul-Sep	-
	Gull/Tern	Roseate tern		Migration	E/-	E	Common													-	Apr-May	Jul-Sep	-
502	Gull/Tern	Rare tern		Migration	C/-		Common													May-Aug	Apr-May	Jul-Sep	-
	Gull/Tern	Roseate tern		Migration	E/-	E	Common													May-Aug	Apr-May	Jul-Sep	-
550	Gull/Tern	Rare tern		Nesting	C/-		Rare													May-Aug	Apr-May	Jul-Sep	-
551	Gull/Tern	Rare tern		Nesting	C/-		Rare													May-Aug	Apr-May	Jul-Sep	-
	Gull/Tern	Roseate tern		Nesting	E/-	E	Rare													May-Aug	Apr-May	Jul-Sep	-

HABITATS & RARE PLANTS

Map ID	Subelement	Species	Mapping Qualifier	MA/RI		Concentration	Monthly Presence																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
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638	Plant	Rare plant	Vulnerable Occurrence	T/C		-																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							

REPTILES & AMPHIBIANS

Map ID	Subelement	Species	MA/RI	Mapping Qualifier	S	F	Concentration	Monthly Presence												Nest	Hatch	Interest	Juveniles	Adults
								J	F	M	A	M	J	J	A	S	O	N	D					
653	Amphibian	Eastern spadefoot		Vulnerable Occurrence	T/E		-													Apr-Jun	May-Jul	-	Jan-Dec	Jan-Dec

INVERTEBRATES

Map ID	Subelement	Species	MA/RI	Mapping Qualifier	S	F	Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
								J	F	M	A	M	J	J	A	S	O	N	D					
666	Crab	Blue crab		Nursery			Common													Jun-Aug	-	Jun-Aug	Jan-Dec	Jan-Dec
	Crab	Horseshoe crab		Nursery			Abundant													May-Jul	May-Jul	-	Jan-Dec	Jan-Dec
687	Crab	Horseshoe crab		Spawning			Abundant													May-Jul	May-Jul	-	May-Jul	May-Jul
703	Gastropod	Channeled whelk		Concentration Area			High													Jun-Jul	Aug-Oct	-	May-Oct	May-Oct
709	Gastropod	Knobbed whelk		Concentration Area			High													Jun-Jul	Aug-Oct	-	May-Oct	May-Oct





MARINE MAMMALS

Map ID	Subelement	Species	MA/RI	Mapping Qualifier	S	F	Concentration	Monthly Presence												Mating	Calving	Pupping	Molt
								J	F	M	A	M	J	J	A	S	O	N	D				
723	Pinniped	Gray seal		Haul Out			High													-	-	-	-
	Pinniped	Harbor seal		Haul Out			Low													-	-	-	-
724	Pinniped	Gray seal		Haul Out			Low													-	-	-	-
	Pinniped	Harbor seal		Haul Out			Low													-	-	-	-
730	Pinniped	Gray seal		Haul Out			Low													-	-	-	-
	Pinniped	Harbor seal		Haul Out			Low													-	-	-	-
738	Pinniped	Gray seal		Haul Out			High													Dec-Feb	Dec-Feb	Dec-Feb	-


TERRESTRIAL MAMMALS

Map ID	Subelement	Species	Mapping Qualifier	MA/RI		Concentration	Monthly Presence																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
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745	Small Mammal	New England cottontail	General Distribution	-/C		Rare																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							</




BIRDS

Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence												Nest	Mig. (S)	Mig. (F)	Molt
							J	F	M	A	M	J	J	A	S	O	N	D				
 Alcids	Razorbill	Wintering				Common													-	-	Oct-Nov	-
 Diving	Loons	Migration		C/-		Common													-	Mar-Jun	Sep-Dec	Jan-Mar
 Gull/Tern	Rare tern	General Distribution		C/-		Common													-	Apr-May	Jul-Sep	-
	Roseate tern	General Distribution		E/-	E	Common													-	Apr-May	Jul-Sep	-
 Waterfowl	Sea ducks	Wintering				Abundant													-	Mar-May	Sep-Oct	-


REPTILES & AMPHIBIANS

Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence												Nest	Hatch	Interst	Juveniles	Adults
							J	F	M	A	M	J	J	A	S	O	N	D					
 Turtle	Green sea turtle	General Distribution		T/E	T	Regular													-	-	-	May-Nov	May-Nov
	K. ridley sea turtle	General Distribution		E/E	E	Regular													-	-	-	May-Nov	May-Nov
	Leatherback sea turtle	General Distribution		E/E	E	Regular													-	-	-	May-Nov	May-Nov
	Loggerhead sea turtle	General Distribution		T/E	T	Regular													-	-	-	May-Nov	May-Nov







INVERTEBRATES

Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
							J	F	M	A	M	J	J	A	S	O	N	D					
 Cephalopod	Longfin squid	Concentration Area				Common													May-Aug	May-Aug	May-Aug	Apr-Nov	Apr-Nov
 Crab	Horseshoe crab	Concentration Area				Medium													May-Jul	May-Jul	-	Apr-Oct	Apr-Oct
 Gastropod	Channeled whelk	Concentration Area				Med-Low													Jun-Jul	Aug-Oct	-	May-Oct	May-Oct
	Knobbed whelk	Concentration Area				Medium													Jun-Jul	Aug-Oct	-	May-Oct	May-Oct





MARINE MAMMALS

Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence												Mating	Calving	Pupping	Molt
							J	F	M	A	M	J	J	A	S	O	N	D				
 Whale	Fin whale	General Distribution		E/E	E	Rare													-	-	-	-
	Humpback whale	General Distribution		E/E	E	Common													-	-	-	-
	N.A. right whale	General Distribution		E/E	E	Common													-	-	-	-
	Sei whale	General Distribution		E/-	E	Rare													-	-	-	-

BIRDS

Subelement	Species	Monthly Presence												Nest	Mig. (S)	Mig. (F)	Molt
		J	F	M	A	M	J	J	A	S	O	N	D				
 Alcid	Atlantic puffin													-	Mar	Sep	-
 Diving	D. crested cormorant													-	Mar-Apr	Sep-Oct	-
 Gull/Tern	Gulls													-	Apr-May	Aug-Nov	-
 Pelagic	Northern gannet													-	Apr-May	Oct-Nov	-
	Shearwaters													-	May	Oct	-
 Shorebird	Red-necked phalarope													-	May	Oct	-
	Shorebirds													Apr-Aug	Mar-Dec	-	Aug
 Waterfowl	American black duck													Mar-Jul	Sep-Mar	-	-
	Diving ducks													Mar-Apr	Sep-Apr	-	-
	Geese													May	Mar-May	Sep-Nov	-

FISH

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
 Diadromous	Alewife													-	-	-	Jan-Dec	Jan-Dec
	American eel													-	-	-	Jan-Dec	Jan-Dec
	American shad													-	-	-	Jan-Dec	Jan-Dec
	Atlantic salmon													Sep-Dec	Sep-Mar	Feb-Jul	Jan-Dec	Jan-Dec
	Blueback herring													-	-	-	Jan-Dec	Jan-Dec
	Striped bass													-	-	-	Apr-Nov	Apr-Nov
 Estuarine Nursery	Atlantic herring													Aug-Nov	Aug-Nov	Oct-Dec	Jan-Dec	Jan-Dec
	Bay anchovy													Jun-Aug	Jun-Aug	Jun-Sep	Jan-Dec	Jan-Dec
	Black sea bass													Feb-Jul	Feb-Jul	Mar-Jul	Jan-Dec	Jan-Dec
	Bluefish													-	-	Jun-Aug	May-Nov	May-Nov
	Northern kingfish													Jun-Jul	Jun-Jul	Jun-Aug	May-Nov	May-Nov
	Scup													May-Aug	May-Aug	Jun-Aug	May-Oct	May-Oct
	Summer flounder													Aug-Nov	Aug-Nov	Sep-Nov	Apr-Nov	Apr-Nov
	Windowpane													May-Aug	May-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Winter flounder													Jan-May	Jan-May	Feb-May	Jan-Dec	Jan-Dec
 Estuarine Resident	Atlantic silverside													May-Aug	May-Aug	May-Sep	Jan-Dec	Jan-Dec
	Fourspine stickleback													May-Jul	May-Jul	May-Aug	Jan-Dec	Jan-Dec
	Mummichog													May-Aug	Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
 Marine Benthic	Atlantic cod													-	-	-	Apr-Aug	Apr-Aug
	Atlantic tomcod													Dec-Feb	Dec-Mar	Dec-Apr	Dec-Jun	Dec-Jun
	Atlantic wolffish													Mar-Aug	Mar-Aug	Mar-Sep	Jan-Dec	Jan-Dec
	Goosefish													-	-	-	-	Jan-Dec
	Haddock													Feb-Jun	Feb-Jun	Mar-Jun	Jan-Dec	Jan-Dec
	Little skate													Jan-Dec	Jan-Dec	-	Jan-Dec	Jan-Dec
	Pollock													-	-	-	Apr-Oct	Apr-Oct
	Red hake													Jun-Sep	Jun-Sep	Jul-Nov	Jun-Nov	Jun-Nov
	Red hake													-	-	-	Dec-May	Dec-May
	Rock gunnel													Nov-Mar	Nov-Apr	Jan-Jun	Jan-Dec	Jan-Dec

FISH (continued)

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	Searobins													Jun-Sep	Jun-Sep	Jun-Oct	Jan-Dec	Jan-Dec
	Silver hake													Jul-Oct	Jul-Oct	Aug-Oct	Jul-Dec	Jul-Dec
	Silver hake													-	-	-	Jan-Jun	Jan-Jun
	Tautog													May-Aug	May-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	White hake													Apr-Sep	May-Nov	May-Nov	Jan-Dec	Jan-Dec
	Winter skate													-	-	-	Jan-Dec	Jan-Dec
	Yellowtail flounder													Mar-Jul	Mar-Jul	Apr-Jul	Jan-Dec	Jan-Dec
	Atlantic mackerel													May-Jul	May-Aug	May-Aug	Mar-Dec	Mar-Dec
	Spiny dogfish													-	-	-	Jan-Dec	Jan-Dec
	Tunas													-	-	-	Jun-Sep	-




REPTILES & AMPHIBIANS

Subelement	Species	Monthly Presence												Nest	Hatch	Internest	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	Eastern box turtle													Jun-Jul	Aug-Oct	-	Jan-Dec	Jan-Dec

INVERTEBRATES

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	Atlantic surfclam													Jun-Aug	Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Bay scallop													Jun-Sep	Jun-Sep	Jun-Sep	Jan-Dec	Jan-Dec
	Blue mussel													May-Nov	May-Nov	May-Nov	Jan-Dec	Jan-Dec
	Northern quahog													Jun-Aug	Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Ocean quahog													Jul-Nov	Jul-Nov	Jul-Dec	Jan-Dec	Jan-Dec
	Sea scallop													Jul-Oct	Jul-Oct	Jul-Oct	Jan-Dec	Jan-Dec
	Softshell clam													Jun-Aug	Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Longfin squid													May-Aug	May-Aug	May-Aug	Apr-Nov	Apr-Nov
	Atlantic rock crab													May-Oct	Jun-Oct	Jun-Oct	Jan-Dec	Jan-Dec
	Blue crab													-	Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Horseshoe crab													May-Jul	May-Jul	-	Jan-Dec	Jan-Dec
	Jonah crab													May-Oct	May-Oct	May-Oct	Jan-Dec	Jan-Dec
	American lobster													Aug-Nov	Jan-Dec	Jun-Oct	Jan-Dec	Jan-Dec
	Db grass shrimp													May-Jul	May-Jul	May-Jul	Jan-Dec	Jan-Dec
	Sevenspine bay shrimp													May-Jul	May-Jul	May-Jul	Jan-Dec	Jan-Dec

MARINE MAMMALS

Subelement	Species	Monthly Presence												Mating	Calving	Pupping	Molt
		J	F	M	A	M	J	J	A	S	O	N	D				
	Atl. wht.-side dolphin													-	-	-	-
	Bottlenose dolphin													-	-	-	-
	Harbor porpoise													-	-	-	-
	Risso's dolphin													-	-	-	-
	Short-beaked common dolphin													-	-	-	-
	Gray seal													Dec-Feb	Dec-Feb	Dec-Feb	Mar-May
	Harbor seal													-	-	-	-
	Harp seal													-	-	-	-
	Hooded seal													-	-	-	-
	Minke whale													-	-	-	-
	Pilot whales													-	-	-	-
														-	-	-	-

For additional information about species locations and extent, reference the underlying GIS data available from response.restoration.noaa.gov

SHORELINE RESOURCES

ESI POLYGON HABITAT TYPES		
ESI Rank	Habitat Classification	Area (Sq. Miles)
10A	Salt and Brackish Water Marshes	64.57
10B	Freshwater Marshes	2.48
10D	Scrub and Shrub Wetlands	1.90
9A	Sheltered Tidal Flats	27.42
7	Exposed Tidal Flats	48.75

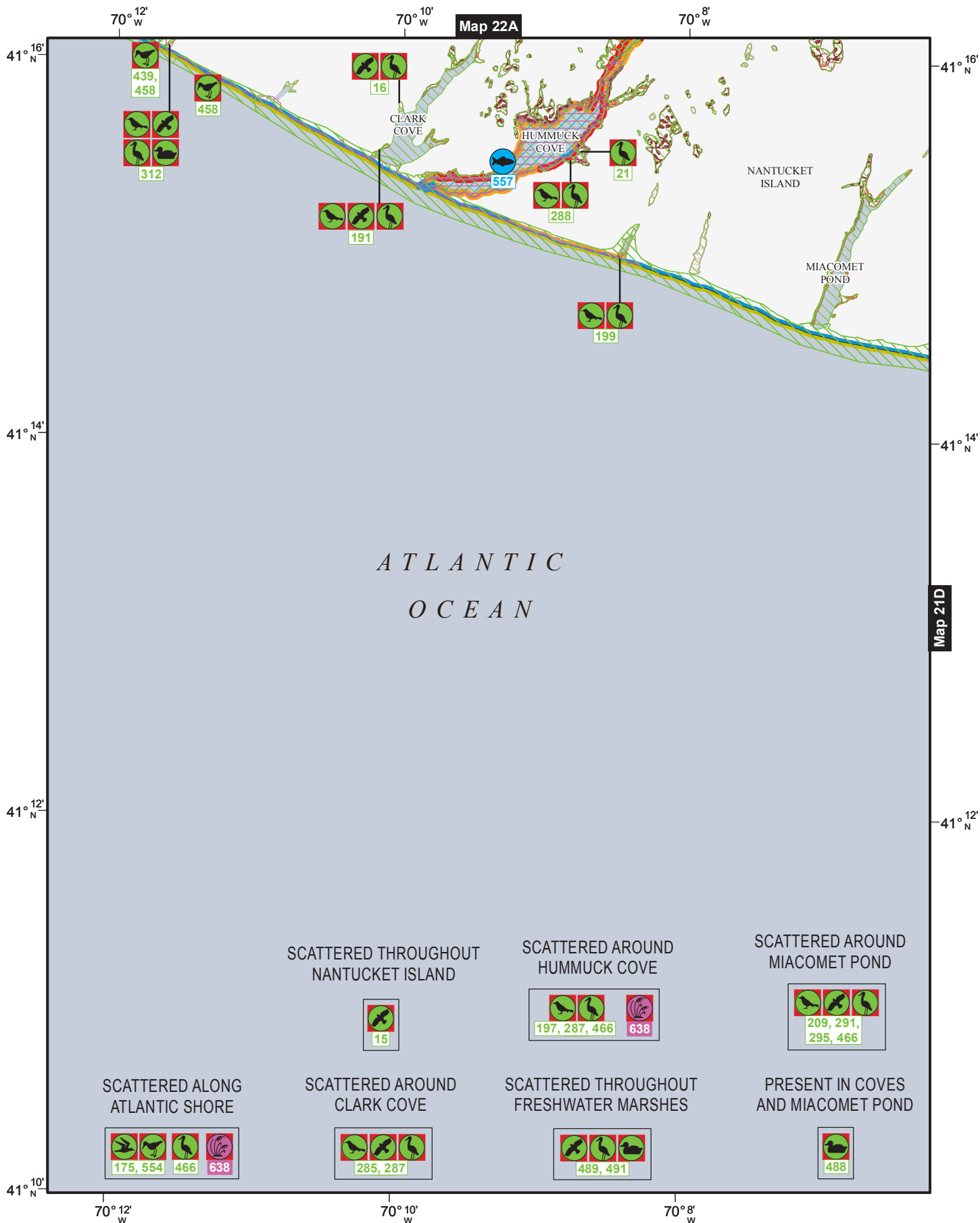
ESI SHORELINE HABITAT TYPES		
ESI Rank	Shoreline Habitat Classification	% of ESI Shoreline
10A	Salt and Brackish Water Marshes	10%
10D	Scrub and Shrub Wetlands	< 1%
9A	Sheltered Tidal Flats	8%
9B	Vegetated Low Banks	1%
7	Exposed Tidal Flats	29%
5	Mixed Sand and Gravel Beaches	1%
4	Coarse Grained Sand Beaches	47%
3B	Scarps and Steep Slopes (Sand)	4%

Total ESI Shoreline: 52,703.27
Total ESI Shoreline: 32.75
Total Shoreline: 29,415.31
Total Shoreline: 18.28

Note: A shoreline segment may include multiple shoreline habitats. If any segments include multiple habitats, the combined length of all habitats may exceed the length of the mapped shoreline, and the percent of ESI shoreline values will sum to greater than 100%

All underlying GIS data can be obtained from response.restoration.noaa.gov

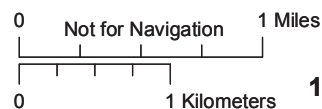




Map 22C
Mass. / Rhode Island



SEE BACK OF MAP
for details about mapped species and
other species that occur in mapped area.
Data Published: November 2016



1:50,000



Map 22C
Massachusetts and Rhode Island

BIOLOGICAL RESOURCES

Note: An asterisk (*) indicates that life stage occurs in this range but not in all months included

DISPLAYED ON MAP

BENTHIC

Subelement	Species	Mapping Qualifier	MA/RI	Monthly Presence											
				S	F	Concentration	J	F	M	A	M	J	J	A	S
SAV	Rare aquatic/wetland plant	High Ecological Value				Present									

BIRDS

Map ID	Subelement	Species	Mapping Qualifier	MA/RI	Monthly Presence												Nest	Mig. (S)	Mig. (F)	Molt
					S	F	Concentration	J	F	M	A	M	J	J	A	S				
15	Raptor	Northern harrier	Nesting	T/E			Rare										Mar-Jul	-	-	-
16	Raptor	Northern harrier	Nesting	T/E			Rare										Mar-Jul	-	-	-
21	Wading	Marsh birds	General Distribution	C/C			Common										-	Mar-May	Aug-Nov	Jul-Aug
175	Wading	Marsh birds	General Distribution	C/C			Common										-	Mar-May	Aug-Nov	Jul-Aug
175	Gull/Tern	Rare tern	Nesting	C/-			Rare										May-Aug	-	-	-
	Shorebird	Piping plover	Nesting	T/E			Common										Mar-Apr	Jul-Oct	-	-
191	Passerine	Marsh passerines	General Distribution	-/C			Common										Apr-Aug	Aug-Nov	Sep-Oct	-
	Passerine	Saltmarsh sparrow	Nesting	-/C			Common										May-Jul	-	-	-
	Raptor	Northern harrier	Nesting	T/E			Rare										Mar-Jul	-	-	-
	Wading	Egrets	General Distribution	-/C			Common										Apr-Jul	Aug-Sep	-	-
	Wading	Marsh birds	General Distribution	C/C			Common										-	Mar-May	Aug-Nov	Jul-Aug
197	Passerine	Marsh passerines	General Distribution	-/C			Common										Apr-Aug	Aug-Nov	Sep-Oct	-
	Passerine	Saltmarsh sparrow	Nesting	-/C			Common										May-Jul	-	-	-
	Wading	Egrets	General Distribution	-/C			Common										Apr-Jul	Aug-Sep	-	-
	Wading	Marsh birds	General Distribution	C/C			Common										-	Mar-May	Aug-Nov	Jul-Aug
199	Passerine	Marsh passerines	General Distribution	-/C			Common										Apr-Aug	Aug-Nov	Sep-Oct	-
	Passerine	Saltmarsh sparrow	Nesting	-/C			Common										May-Jul	-	-	-
	Wading	Egrets	General Distribution	-/C			Common										Apr-Jul	Aug-Sep	-	-
209	Passerine	Marsh passerines	General Distribution	-/C			Common										Apr-Aug	Aug-Nov	Sep-Oct	-
	Wading	Egrets	General Distribution	-/C			Common										Apr-Jul	Aug-Sep	-	-
	Wading	Marsh birds	General Distribution	C/C			Common										-	Mar-May	Aug-Nov	Jul-Aug
285	Passerine	Marsh passerines	General Distribution	-/C			Common										Apr-Aug	Aug-Nov	Sep-Oct	-
	Passerine	Saltmarsh sparrow	Nesting	-/C			Common										May-Jul	-	-	-
	Raptor	Northern harrier	Nesting	T/E			Rare										Mar-Jul	-	-	-
	Wading	Egrets	General Distribution	-/C			Common										Apr-Jul	Aug-Sep	-	-
	Wading	Marsh birds	General Distribution	C/C			Common										-	Mar-May	Aug-Nov	Jul-Aug
	Wading	Wading birds	General Distribution	-/C			Common										Mar-May	Jul-Oct	-	-
287	Passerine	Marsh passerines	General Distribution	-/C			Common										Apr-Aug	Aug-Nov	Sep-Oct	-
	Passerine	Saltmarsh sparrow	Nesting	-/C			Common										May-Jul	-	-	-
	Wading	Egrets	General Distribution	-/C			Common										Apr-Jul	Aug-Sep	-	-
	Wading	Marsh birds	General Distribution	C/C			Common										-	Mar-May	Aug-Nov	Jul-Aug
	Wading	Wading birds	General Distribution	-/C			Common										Mar-May	Jul-Oct	-	-

BIRDS (continued)

Map ID	Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt
								J	F	M	A	M	J	J	A	S	O	N	D				
288	Passerine	Marsh passerines	General Distribution	-/C	-/C	-/C	Common													Apr-Aug	Apr-May	Aug-Nov	Sep-Oct
	Passerine	Saltmarsh sparrow	Nesting	-/C	-/C	-/C	Common													May-Jul	May	-	-
	Wading	Egrets	General Distribution	-/C	-/C	-/C	Common													Apr-Jul	Mar-May	Aug-Sep	-
291	Wading	Wading birds	General Distribution	-/C	-/C	-/C	Common													-	Mar-May	Jul-Oct	-
	Passerine	Marsh passerines	General Distribution	-/C	-/C	-/C	Common													Apr-Aug	Apr-May	Aug-Nov	Sep-Oct
	Raptor	Northern harrier	Nesting	T/E	-/C	-/C	Rare													Mar-Jul	-	-	-
	Wading	Egrets	General Distribution	-/C	-/C	-/C	Common													Apr-Jul	Mar-May	Aug-Sep	-
	Wading	Marsh birds	General Distribution	C/C	-/C	-/C	Common													-	Mar-May	Aug-Nov	Jul-Aug
	Wading	Wading birds	General Distribution	-/C	-/C	-/C	Common													-	Mar-May	Jul-Oct	-
295	Passerine	Marsh passerines	General Distribution	-/C	-/C	-/C	Common													Apr-Aug	Apr-May	Aug-Nov	Sep-Oct
	Wading	Egrets	General Distribution	-/C	-/C	-/C	Common													Apr-Jul	Mar-May	Aug-Sep	-
	Wading	Marsh birds	General Distribution	C/C	-/C	-/C	Common													-	Mar-May	Aug-Nov	Jul-Aug
312	Wading	Wading birds	General Distribution	-/C	-/C	-/C	Common													-	Mar-May	Jul-Oct	-
	Passerine	Marsh passerines	General Distribution	-/C	-/C	-/C	Common													Apr-Aug	Apr-May	Aug-Nov	Sep-Oct
	Passerine	Saltmarsh sparrow	Nesting	-/C	-/C	-/C	Common													May-Jul	May	-	-
	Raptor	Northern harrier	Nesting	T/E	-/C	-/C	Rare													Mar-Jul	-	-	-
	Wading	Egrets	Migration	-/C	-/C	-/C	Common													Apr-Jul	Mar-May	Aug-Sep	-
	Wading	Marsh birds	General Distribution	C/C	-/C	-/C	Common													-	Mar-May	Aug-Nov	Jul-Aug
439	Waterfowl	Waterfowl	General Distribution	C/C	-/C	-/C	Common													May-Jul	Apr-May	Aug-Oct	Aug-Sep
	Shorebird	Piping plover	Nesting	T/E	-/C	-/C	Common													Mar-Aug	Mar-Apr	Jul-Oct	-
	Shorebird	Red knot	Migration	T	-/C	-/C	Common													-	May-Jun	Jul-Sep	-
458	Shorebird	Shorebirds	Migration	-/C	-/C	-/C	Common													-	Mar-Jun	Jul-Nov	Aug
	Wading	Wading birds	General Distribution	-/C	-/C	-/C	Common													-	Mar-May	Jul-Oct	-
	Waterfowl	Waterfowl	General Distribution	C/C	-/C	-/C	Common													May-Jul	Apr-May	Aug-Oct	Aug-Sep
489	Raptor	Northern harrier	Nesting	T/E	-/C	-/C	Rare													Mar-Jul	-	-	-
	Wading	Marsh birds	General Distribution	C/C	-/C	-/C	Common													-	Mar-May	Aug-Nov	Jul-Aug
	Waterfowl	Waterfowl	General Distribution	C/C	-/C	-/C	Common													May-Jul	Apr-May	Aug-Oct	Aug-Sep
491	Wading	Marsh birds	General Distribution	C/C	-/C	-/C	Common													-	Mar-May	Aug-Nov	Jul-Aug
	Waterfowl	Waterfowl	General Distribution	C/C	-/C	-/C	Common													May-Jul	Apr-May	Aug-Oct	Aug-Sep
	Shorebird	Eskimo curlew	General Distribution	E	-/C	-/C	Rare													-	-	Aug-Sep	-

FISH

Map ID	Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
								J	F	M	A	M	J	J	A	S	O	N	D					
557	Diadromous	Alewife	Spawning Area	-	-	-	-													Apr-Jun	Apr-Jun	Apr-Jun	-	Apr-Jun
	Diadromous	American eel	Migration	-	-	-	-													-	-	-	Jan-Dec	Jan-Dec
	Diadromous	Blueback herring	Spawning Area	-	-	-	-													Apr-Jun	Apr-Jun	Apr-Jun	-	Apr-Jun



HABITATS & RARE PLANTS

Map ID	Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence											
								J	F	M	A	M	J	J	A	S	O	N	D
638	Plant	Rare plant	Vulnerable Occurrence	-	-	-	-												

BIRDS

Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt
							J	F	M	A	M	J	J	A	S	O	N	D				
 Alcide	Razorbill	Wintering				Common													-	-	Oct-Nov	-
 Diving	Loons	General Distribution	C/-			Common													-	Mar-Jun	Sep-Dec	Jan-Mar
	Loons	Migration	C/-			Common													-	Mar-Jun	Sep-Dec	Jan-Mar
 Gull/Tern	Rare tern	General Distribution	C/-			Common													-	Apr-May	Jul-Sep	-
	Rare tern	General Distribution	C/-			Rare													-	Apr-May	Jul-Sep	-
	Roseate tern	General Distribution	E/-	E		Rare													-	Apr-May	Jul-Sep	-
	Roseate tern	General Distribution	E/-	E		Common													-	Apr-May	Jul-Sep	-
 Raptor	Barn owl	Nesting	C/E			Common													-	Apr-May	Jul-Sep	-
 Waterfowl	Sea ducks	Wintering				Abundant													-	Mar-May	Sep-Oct	-


REPTILES & AMPHIBIANS

Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence												Nest	Hatch	Internest	Juveniles	Adults
							J	F	M	A	M	J	J	A	S	O	N	D					
 Amphibian	Eastern spadefoot	Vulnerable Occurrence	T/E			-													Apr-Jun	May-Jul	-	Jan-Dec	Jan-Dec
 Turtle	Green sea turtle	General Distribution	T/E	T		Regular													-	-	-	May-Nov	May-Nov
	K. ridley sea turtle	General Distribution	E/E	E		Regular													-	-	-	May-Nov	May-Nov
	Leatherback sea turtle	General Distribution	E/E	E		Regular													-	-	-	May-Nov	May-Nov
	Loggerhead sea turtle	General Distribution	T/E	T		Regular													-	-	-	May-Nov	May-Nov

INVERTEBRATES

Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
 Cephalopod	Longfin squid	Concentration Area				Common													May-Aug	May-Aug	May-Aug	Apr-Nov	Apr-Nov

MARINE MAMMALS

Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence												Mating	Calving	Pupping	Molt
							J	F	M	A	M	J	J	A	S	O	N	D				
 Whale	Fin whale	General Distribution	E/E	E		Rare													-	-	-	-
	Fin whale	General Distribution	E/E	E		Common													-	-	-	-
	Humpback whale	General Distribution	E/E	E		Common													-	-	-	-
	N.A. right whale	General Distribution	E/E	E		Common													-	-	-	-
	Sei whale	General Distribution	E/-	E		Rare													-	-	-	-
	Sei whale	General Distribution	E/-	E		Common													-	-	-	-
	Sperm whale	General Distribution	E/-	E		Rare													-	-	-	-

TERRESTRIAL MAMMALS

Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence															
 Small Mammal	New England cottontail	General Distribution		-/C		Rare																

BIRDS

Subelement	Species	Monthly Presence												Nest	Mig. (S)	Mig. (F)	Molt
		J	F	M	A	M	J	J	A	S	O	N	D				
Alcid	Atlantic puffin													-	Mar	Sep	-
	Razorbill													-	May-Jun	-	-
Diving	D. crested cormorant													Apr-Jun	-	-	-
	D. crested cormorant													-	Mar-Apr	Sep-Oct	-
Gull/Tern	Gulls													-	Apr-May	Aug-Nov	-
Pelagic	Northern gannet													-	Apr-May	Oct-Nov	-
	Shearwaters													-	May	Oct	-
Shorebird	Red-necked phalarope													-	May	Oct	-
	Shorebirds													Apr-Aug	Mar-Dec	-	Aug
Waterfowl	American black duck													Mar-Jul	Sep-Mar	-	-
	Diving ducks													Mar-Apr	Sep-Apr	-	-
	Geese													May	Mar-May	Sep-Nov	-
	Sea ducks													-	Mar-May	Sep-Oct	-

FISH

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
Diadromous	Alewife													-	-	-	Jan-Dec	Jan-Dec
	American eel													-	-	-	Jan-Dec	Jan-Dec
	American shad													-	-	-	Jan-Dec	Jan-Dec
	Atlantic salmon													Sep-Dec	Sep-Mar	Feb-Jul	Jan-Dec	Jan-Dec
	Blueback herring													-	-	-	Jan-Dec	Jan-Dec
	Striped bass													-	-	-	Apr-Nov	Apr-Nov
Estuarine Nursery	Atlantic herring													Aug-Nov	Aug-Nov	Oct-Dec	Jan-Dec	Jan-Dec
	Bay anchovy													Jun-Aug	Jun-Aug	Jun-Sep	Jan-Dec	Jan-Dec
	Black sea bass													Feb-Jul	Feb-Jul	Mar-Jul	Jan-Dec	Jan-Dec
	Bluefish													-	-	Jun-Aug	May-Nov	May-Nov
	Northern kingfish													Jun-Jul	Jun-Jul	Jun-Aug	May-Nov	May-Nov
	Scup													May-Aug	May-Aug	Jun-Aug	May-Oct	May-Oct
	Summer flounder													Aug-Nov	Aug-Nov	Sep-Nov	Apr-Nov	Apr-Nov
	Windowpane													May-Aug	May-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Winter flounder													Jan-May	Jan-May	Feb-May	Jan-Dec	Jan-Dec
	Atlantic cod													-	-	-	Apr-Aug	Apr-Aug
Marine Benthic	Atlantic cod													Nov-Mar	Nov-Mar	Dec-Mar	Jan-Dec	Jan-Dec
	Atlantic halibut													Apr-Sep	Apr-Sep	Apr-Sep	Jan-Dec	Jan-Dec
	Atlantic wolffish													Mar-Aug	Mar-Aug	Mar-Sep	Jan-Dec	Jan-Dec
	Goosefish													-	-	-	-	Jan-Dec
	Goosefish													-	-	-	-	Jan-Jun
	Haddock													Feb-Jun	Feb-Jun	Mar-Jun	Jan-Dec	Jan-Dec
	Little skate													Jan-Dec	Jan-Dec	-	Jan-Dec	Jan-Dec
	Pollock													-	-	-	Apr-Oct	Apr-Oct
	Red hake													-	-	-	Dec-May	Dec-May

FISH (continued)

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	Red hake													Jun-Sep	Jun-Sep	Jul-Nov	Jun-Nov	Jun-Nov
	Red hake													Jun-Sep	Jun-Sep	Jul-Nov	Jun-Dec	Jan-Dec
	Rock gunnel													Nov-Mar	Nov-Apr	Jan-Jun	Jan-Dec	Jan-Dec
	Searobins													Jun-Sep	Jun-Sep	Jun-Oct	Jan-Dec	Jan-Dec
	Silver hake													Jul-Oct	Jul-Oct	Aug-Oct	Jul-Dec	Jul-Dec
	Silver hake													-	-	-	Jan-Jun	Jan-Jun
	Silver hake													Jul-Oct	Jul-Oct	Aug-Oct	Jan-Dec	Jan-Dec
	Tautog													May-Aug	May-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	White hake													Apr-Sep	May-Nov	May-Nov	Jan-Dec	Jan-Dec
	Winter skate													-	-	-	Jan-Dec	Jan-Dec
Marine Pelagic	Yellowtail flounder													Mar-Jul	Mar-Jul	Apr-Jul	Jan-Dec	Jan-Dec
	Atlantic mackerel													May-Jul	May-Aug	May-Aug	Mar-Dec	Mar-Dec
	Spiny dogfish													-	-	-	Jan-Dec	Jan-Dec
	Tunas													-	-	-	Jun-Sep	-




REPTILES & AMPHIBIANS

Subelement	Species	Monthly Presence												Nest	Hatch	Interest	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
Turtle	Eastern box turtle													Jun-Jul	Aug-Oct	-	Jan-Dec	Jan-Dec

INVERTEBRATES

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
Bivalve	Atlantic surfclam													Jun-Aug	Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Sea scallop													Jul-Oct	Jul-Oct	Jul-Oct	Jan-Dec	Jan-Dec
Cephalopod	Longfin squid													May-Aug	May-Aug	May-Aug	Apr-Nov	Apr-Nov
	Atlantic rock crab													May-Oct	Jun-Oct	Jun-Oct	Jan-Dec	Jan-Dec
Crab	Blue crab													-	Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Horseshoe crab													May-Jul	May-Jul	-	Jan-Dec	Jan-Dec
Lobster	Jonah crab													May-Oct	May-Oct	May-Oct	Jan-Dec	Jan-Dec
	American lobster													Aug-Nov	Jan-Dec	Jun-Oct	Jan-Dec	Jan-Dec
Shrimp	Northern shrimp													-	Dec-Feb	Nov-Feb	Nov-Feb	Dec-Feb
	Sevenspine bay shrimp													May-Jul	May-Jul	May-Jul	Jan-Dec	Jan-Dec

MARINE MAMMALS

Subelement	Species	Monthly Presence												Mating	Calving	Pupping	Molt
		J	F	M	A	M	J	J	A	S	O	N	D				
	Atl. spotted dolphin													-	-	-	-
	Atl. wht.-side dolphin													-	-	-	-
	Bottlenose dolphin													-	-	-	-
	Harbor porpoise													-	-	-	-
	Risso's dolphin													-	-	-	-
	Short-beaked common dolphin													-	-	-	-
	Striped dolphin													-	-	-	-
	White-beaked dolphin													-	-	-	-
	Gray seal													Dec-Feb	Dec-Feb	Dec-Feb	Mar-May
	Harbor seal													-	-	-	-
	Harp seal													-	-	-	-
	Hooded seal													-	-	-	-
	Minke whale													-	-	-	-
	Pilot whales													-	-	-	-

For additional information about species locations and extent, reference the underlying GIS data available from response.restoration.noaa.gov

ESI POLYGON HABITAT TYPES

<i>ESI Rank</i>	<i>Habitat Classification</i>	<i>Area (Acres)</i>	<i>Area (Sq. Miles)</i>
10A	Salt and Brackish Water Marshes	44.61	0.07
10B	Freshwater Marshes	22.35	0.03
10C	Swamps	5.86	0.01
10D	Scrub and Shrub Wetlands	99.99	0.16
9A	Sheltered Tidal Flats	0.77	0.00
7	Exposed Tidal Flats	1.51	0.00

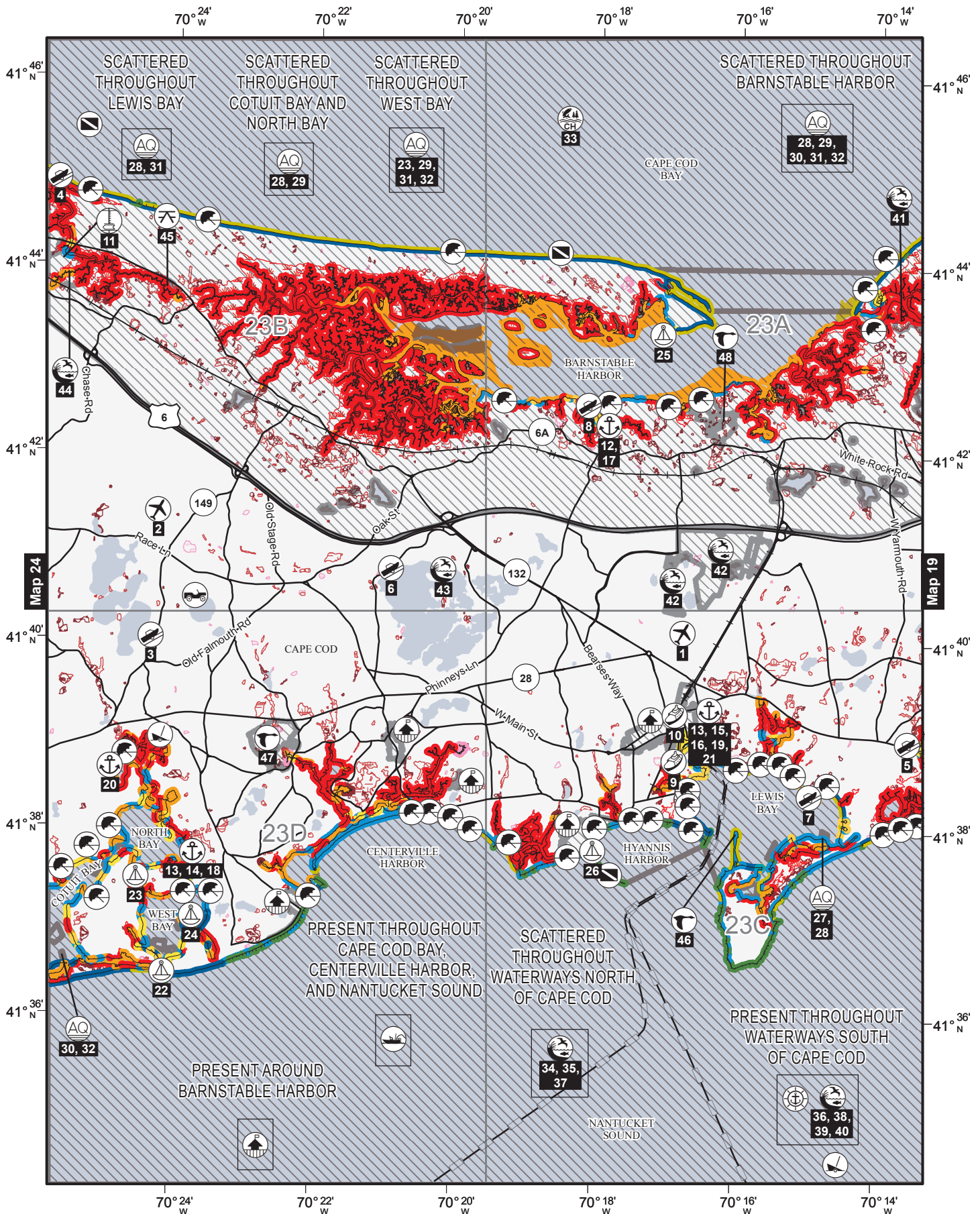
ESI SHORELINE HABITAT TYPES

<i>ESI Rank</i>	<i>Shoreline Habitat Classification</i>	<i>Length (Meters)</i>	<i>Length (Miles)</i>	<i>% of ESI Shoreline</i>
10A	Salt and Brackish Water Marshes	3,123.63	1.94	12%
10D	Scrub and Shrub Wetlands	1,291.69	0.80	5%
9A	Sheltered Tidal Flats	306.86	0.19	1%
9B	Vegetated Low Banks	4,418.74	2.75	17%
7	Exposed Tidal Flats	8,230.83	5.11	32%
4	Coarse Grained Sand Beaches	8,721.93	5.42	33%
Total ESI Shoreline:		26,093.68	Total ESI Shoreline:	16.21
		14,830.48	Total Shoreline:	9.22

Note: A shoreline segment may include multiple shoreline habitats. If any segments include multiple habitats, the combined length of all habitats may exceed the length of the mapped shoreline, and the percent of ESI shoreline values will sum to greater than 100%

All underlying GIS data can be obtained from response.restoration.noaa.gov





Map 23
Mass. / Rhode Island



SEE BACK OF MAP
for details about mapped resources and
other resources that occur in mapped area.
Data Published: November 2016

0 Not for Navigation 2 Miles
0 2 Kilometers

1:100,000



Map 23
Massachusetts and Rhode Island

HUMAN USE RESOURCES

DISPLAYED ON MAP (POINTS)			
Map ID	Type	Name	Contact Phone
1	AIRPORT	BARNSTABLE MUNICIPAL AIRPORT	
2	AIRPORT	MARSTONS MILLS-CAPE COD AIRPORT	
3	BOAT RAMP	HAMBLIN POND	MDFG, OFFICE OF FISHING AND BOATING ACCESS 508-389-7810
4	BOAT RAMP	SCORTON CREEK	MDFG, OFFICE OF FISHING AND BOATING ACCESS 508-389-7810
5	BOAT RAMP	PARKERS RIVER SPORTFISHING PIER	MDFG, OFFICE OF FISHING AND BOATING ACCESS 508-389-7810
6	BOAT RAMP	WEQUAQUET LAKE	MDFG, OFFICE OF FISHING AND BOATING ACCESS 508-389-7810
7	BOAT RAMP	LEWIS BAY(ENGLEWOOD BEACH)	MDFG, OFFICE OF FISHING AND BOATING ACCESS 508-389-7810
8	BOAT RAMP	BARNSTABLE HARBOR (BLISH POINT)	MDFG, OFFICE OF FISHING AND BOATING ACCESS 508-389-7810
9	FERRY	HYANNIS HI-LINE FERRY TERMINAL	
10	FERRY	HYANNIS STEAMSHIP FERRY TERMINAL	
11	LOCK AND DAM	THORTON BURGESS SOCIETY	
12	MARINA	BARNSTABLE TOWN DOCK	
13	MARINA	OYSTER HARBORS MARINE	
14	MARINA	NAUTICUS MARINA	
15	MARINA	LEWIS BAY AND DOCKSIDE INN	
16	MARINA	BRADBURY MARINE ANCHOR	
17	MARINA	MILLWAY MARINA	
18	MARINA	CROSBY YACHT YARD	
19	MARINA	HYANNIS MARINA	
20	MARINA	PRINCE'S COVE MARINA	
21	MARINA	GATEWAY MARINA	
22	REPEATED MEASUREMENT SITE	INVASIVES - DEAD NECK ISLAND	
23	REPEATED MEASUREMENT SITE	INVASIVES - SHIELDS DOCK	
24	REPEATED MEASUREMENT SITE	INVASIVES - WIANNO YACHT CLUB	
25	REPEATED MEASUREMENT SITE	TIDE GAUGE - BARNSTABLE HARBOR, BEACH POINT	
26	REPEATED MEASUREMENT SITE	TIDE GAUGE - HYANNIS PORT	

DISPLAYED ON MAP (POLYGONS)			
Map ID	Type	Name	Contact Phone
27	AQUACULTURE	BAY SCALLOP	CHRISTOPHER SCHILLACI, MA DMF, N. BEDFORD, MA 508-990-2860
28	AQUACULTURE	OYSTER	CHRISTOPHER SCHILLACI, MA DMF, N. BEDFORD, MA 508-990-2860
29	AQUACULTURE	PETIT OYSTER	CHRISTOPHER SCHILLACI, MA DMF, N. BEDFORD, MA 508-990-2860
30	AQUACULTURE	PETIT QUAHOG	CHRISTOPHER SCHILLACI, MA DMF, N. BEDFORD, MA 508-990-2860
31	AQUACULTURE	QUAHOG	CHRISTOPHER SCHILLACI, MA DMF, N. BEDFORD, MA 508-990-2860
32	AQUACULTURE	SOFT CLAM	CHRISTOPHER SCHILLACI, MA DMF, N. BEDFORD, MA 508-990-2860
33	CRITICAL HABITAT	CRITICAL HABITAT: NORTH ATLANTIC RIGHT WHALE	
34	MANAGEMENT AREA	NARW SMA - NE U.S. CAPE COD BAY	
35	MANAGEMENT AREA	LOBSTER MANAGEMENT AREA 1	
36	MANAGEMENT AREA	LOBSTER MANAGEMENT AREA 2	
37	MANAGEMENT AREA	CAPE COD BAY RESTRICTED AREA	

DISPLAYED ON MAP (POLYGONS) (continued)				
38	MANAGEMENT AREA	NORTHERN INSHORE STATE TRAP/POT WATERS AREA		
39	MANAGEMENT AREA	NORTHERN NEARSHORE TRAP/POT WATERS AREA		
40	MANAGEMENT AREA	OTHER NORTHEAST GILLNET WATERS AREA		
41	MANAGEMENT AREA	CHASE GARDEN CREEK WMA	EOEEA, DEPARTMENT OF FISH AND GAME	617-626-1500
42	MANAGEMENT AREA	HYANNIS PONDS WMA	EOEEA, DEPARTMENT OF FISH AND GAME	617-626-1500
43	MANAGEMENT AREA	BEARSE POND WMA	EOEEA, DEPARTMENT OF FISH AND GAME	617-626-1500
44	MANAGEMENT AREA	OLD SANDWICH GAME FARM WMA	EOEEA, DEPARTMENT OF FISH AND GAME	617-626-1500
45	REGIONAL OR STATE PARK	GOODELL PRESERVE	EOEEA, DEPT. OF CONSERVATION AND RECREATION	617-626-1250
46	WILDLIFE REFUGE	EGG ISLAND SHOAL WILDLIFE SANCTUARY	MASSACHUSETT'S AUDUBON SOCIETY	781-259-9500
47	WILDLIFE REFUGE	SKUNKNETT RIVER WILDLIFE SANCTUARY	MA AUD. SOC., LONG PASTURE WILDLIFE SANCT.	508-362-7475
48	WILDLIFE REFUGE	LONG PASTURE WILDLIFE SANCTUARY	MASSACHUSETT'S AUDUBON SOCIETY	508-362-7475
ALSO PRESENT IN MAPPED AREA (POINTS)				
Type	Name	Contact	Phone	
ESSENTIAL HABITAT	FACULTATIVE SPECIES -VERNAL POOL	MA DFW NHESP, WESTBOROUGH, MA	508-389-6375	
ESSENTIAL HABITAT	FAIRY SHRIMP -VERNAL POOL	MA DFW NHESP, WESTBOROUGH, MA	508-389-6375	
ESSENTIAL HABITAT	OBLIGATE SPECIES -VERNAL POOL	MA DFW NHESP, WESTBOROUGH, MA	508-389-6375	
ESSENTIAL HABITAT	OBLIGATE SPECIES, FACULTATIVE SPECIES -VERNAL POOL	MA DFW NHESP, WESTBOROUGH, MA	508-389-6375	
ESSENTIAL HABITAT	OBLIGATE SPECIES, FAIRY SHRIMP -VERNAL POOL	MA DFW NHESP, WESTBOROUGH, MA	508-389-6375	
ALSO PRESENT IN MAPPED AREA (POLYGONS)				
Type	Name	Contact	Phone	
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: AMERICAN PLAICE	NORTHEAST FISHERIES MANAGEMENT COUNCIL		
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: ATLANTIC COD	NORTHEAST FISHERIES MANAGEMENT COUNCIL		
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: ATLANTIC HALIBUT	NORTHEAST FISHERIES MANAGEMENT COUNCIL		
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: ATLANTIC HERRING	NORTHEAST FISHERIES MANAGEMENT COUNCIL		
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: ATLANTIC WOLFFISH	NORTHEAST FISHERIES MANAGEMENT COUNCIL		
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: HADDOCK	NORTHEAST FISHERIES MANAGEMENT COUNCIL		
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: LITTLE SKATE	NORTHEAST FISHERIES MANAGEMENT COUNCIL		
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: MONKFISH	NORTHEAST FISHERIES MANAGEMENT COUNCIL		
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: OCEAN POUT	NORTHEAST FISHERIES MANAGEMENT COUNCIL		
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: POLLOCK	NORTHEAST FISHERIES MANAGEMENT COUNCIL		
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: RED HAKE	NORTHEAST FISHERIES MANAGEMENT COUNCIL		
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: SEA SCALLOP	NORTHEAST FISHERIES MANAGEMENT COUNCIL		
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: SILVER HAKE	NORTHEAST FISHERIES MANAGEMENT COUNCIL		
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: WHITE HAKE	NORTHEAST FISHERIES MANAGEMENT COUNCIL		
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: WINDOW PANE FLOUNDER	NORTHEAST FISHERIES MANAGEMENT COUNCIL		
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: WINTER FLOUNDER	NORTHEAST FISHERIES MANAGEMENT COUNCIL		
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: WINTER SKATE	NORTHEAST FISHERIES MANAGEMENT COUNCIL		
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: YELLOWTAIL FLOUNDER	NORTHEAST FISHERIES MANAGEMENT COUNCIL		
MANAGEMENT AREA	PRIORITY HABITAT	MDFW NHESP	508-389-6380	
STATE PROTECTED AREA	BARNSTABLE STATE FOREST	EOEEA, DEPT. OF CONSERVATION AND RECREATION	617-626-1250	
STATE PROTECTED AREA	SHAWME-CROWELL STATE FOREST	EOEEA, DEPT. OF CONSERVATION AND RECREATION	617-626-1250	

JURISDICTIONS

COUNTY: BARNSTABLE
COAST GUARD: DISTRICT 1, SECTOR SE NEW ENGLAND
USACE: NORTH ATLANTIC DIVISION, NEW ENGLAND DISTRICT

FEMA: REGION I
EPA: REGION 1

SHORELINE RESOURCES

ESI POLYGON HABITAT TYPES

ESI Rank	Habitat Classification	Area (Acres)	Area (Sq. Miles)
10A	Salt and Brackish Water Marshes	4,793.73	7.49
10B	Freshwater Marshes	145.20	0.23
10C	Swamps	833.98	1.30
10D	Scrub and Shrub Wetlands	655.16	1.02
9A	Sheltered Tidal Flats	1,122.30	1.75
7	Exposed Tidal Flats	84.77	0.13
5	Mixed Sand and Gravel Beaches	0.91	0.00

ESI SHORELINE HABITAT TYPES

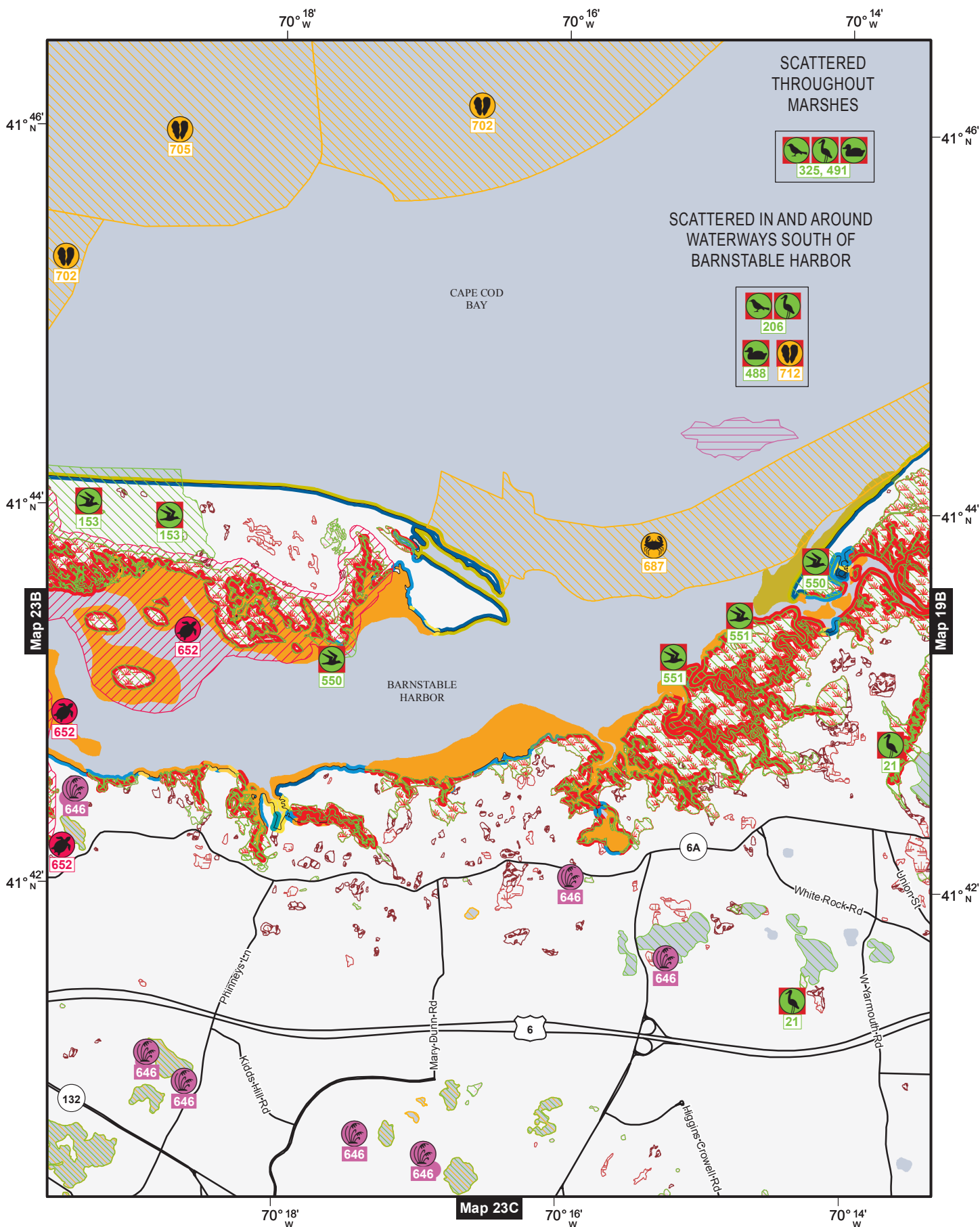
ESI Rank	Shoreline Habitat Classification	Length (Meters)	Length (Miles)	% of ESI Shoreline
10A	Salt and Brackish Water Marshes	433,599.88	269.43	60%
10B	Freshwater Marshes	2,193.81	1.36	< 1%
10C	Swamps	1,434.44	0.89	< 1%
10D	Scrub and Shrub Wetlands	2,624.80	1.63	< 1%
9A	Sheltered Tidal Flats	119,432.37	74.21	17%
9B	Vegetated Low Banks	23,107.47	14.36	3%
8A	Sheltered, Impermeable, Rocky Shores	44.56	0.03	< 1%
8B	Sheltered, Solid Man-Made Structures	11,530.71	7.16	2%
8C	Sheltered Riprap	5,629.67	3.50	1%
8D	Sheltered, Rocky, Rubble Shores	71.67	0.04	< 1%
7	Exposed Tidal Flats	29,006.31	18.02	4%
6B	Gravel Beaches (Cobbles/Boulders)	1,769.16	1.10	< 1%
6B	Riprap	8,687.34	5.40	1%
5	Mixed Sand and Gravel Beaches	783.64	0.49	< 1%
4	Coarse Grained Sand Beaches	42,906.15	26.66	6%
3A	Fine to Medium Grained Sand Beaches	34,960.89	21.72	5%
1B	Exposed, Solid Man-Made Structures	609.13	0.38	< 1%

Total ESI Shoreline: 718,391.99 Total ESI Shoreline: 446.39
 Total Shoreline: 555,070.67 Total Shoreline: 344.90

Note: A shoreline segment may include multiple shoreline habitats. If any segments include multiple habitats, the combined length of all habitats may exceed the length of the mapped shoreline, and the percent of ESI shoreline values will sum to greater than 100%

All underlying GIS data can be obtained from response.restoration.noaa.gov

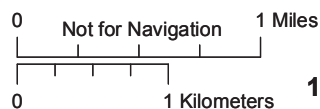




Map 23A
Mass. / Rhode Island



SEE BACK OF MAP
for details about mapped species and
other species that occur in mapped area.
Data Published: November 2016



1:50,000

Map 23A
Massachusetts and Rhode Island

BIOLOGICAL RESOURCES

Note: An asterisk (*) indicates that life stage occurs in this range but not in all months included

DISPLAYED ON MAP

BENTHIC

Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence
SAV	Eelgrass	High Ecological Value				Present	J F M A M J J A S O N D

BIRDS

Map ID	Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence	Nest	Mig. (S)	Mig. (F)	Molt
21	Wading	Marsh birds	General Distribution		C/C		Common		-	Mar-May	Aug-Nov	Jul-Aug
153	Gull/Tern	Rare tern	Nesting		C/-		Rare		May-Aug	-	-	-
206	Passerine	Marsh passerines	General Distribution		-/C		Common		Apr-Aug	Apr-May	Aug-Nov	Sep-Oct
	Wading	Egrets	Migration		-/C		Common		Apr-Jul	Mar-May	Aug-Sep	-
325	Passerine	Marsh passerines	General Distribution		-/C		Common		Apr-Aug	Apr-May	Aug-Nov	Sep-Oct
	Wading	Egrets	Migration		-/C		Common		Apr-Jul	Mar-May	Aug-Sep	-
	Wading	Marsh birds	General Distribution		C/C		Common		-	Mar-May	Aug-Nov	Jul-Aug
	Waterfowl	Waterfowl	General Distribution		C/C		Common		May-Jul	Apr-May	Aug-Oct	Aug-Sep
488	Waterfowl	Waterfowl	General Distribution		C/C		Common		May-Jul	Apr-May	Aug-Oct	Aug-Sep
491	Wading	Marsh birds	General Distribution		C/C		Common		-	Mar-May	Aug-Nov	Jul-Aug
	Waterfowl	Waterfowl	General Distribution		C/C		Common		May-Jul	Apr-May	Aug-Oct	Aug-Sep
550	Gull/Tern	Rare tern	Nesting		C/-		Rare		May-Aug	Apr-May	Jul-Sep	-
551	Gull/Tern	Rare tern	Nesting		C/-		Rare		May-Aug	Apr-May	Jul-Sep	-
	Gull/Tern	Roseate tern	Nesting		E/-	E	Rare		May-Aug	Apr-May	Jul-Sep	-

HABITATS & RARE PLANTS

Map ID	Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence
646	Wetland	Vernal pool	Vulnerable Occurrence				-	J F M A M J J A S O N D





REPTILES & AMPHIBIANS

Map ID	Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence	Nest	Hatch	Internest	Juveniles	Adults
652	Turtle	Rare reptile	Vulnerable Occurrence				-	J F M A M J J A S O N D	-	Apr-Jul	Jun-Nov	Jan-Dec	Jan-Dec



INVERTEBRATES

Map ID	Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence	Spawn	Eggs	Larvae	Juveniles	Adults
687	Crab	Horseshoe crab	Spawning				Abundant		May-Jul	May-Jul	-	May-Jul	May-Jul
702	Bivalve	Sea scallop	Concentration Area				Medium		Jul-Oct	Jul-Oct	Jul-Oct	May-Oct	May-Oct
705	Bivalve	Sea scallop	Concentration Area				High		Jul-Oct	Jul-Oct	Jul-Oct	May-Oct	May-Oct
712	Bivalve	Rare freshwater mussel	General Distribution		C/C		-		Aug-Sep	Aug-May	Jun-Jul	Jan-Dec	Jan-Dec


BIRDS

Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt
							J	F	M	A	M	J	J	A	S	O	N	D				
	Alcid	Razorbill				Common													-	-	Oct-Nov	-
	Diving	Great cormorant				Common													-	Feb-Mar	Nov	-
		Loons		C/-		Common													-	Mar-Jun	Sep-Dec	Jan-Mar
		Rare tern		C/-		Common													-	Apr-May	Jul-Sep	-
	Gull/Tern	Rare tern		C/-		Common													May-Aug	Apr-May	Jul-Sep	-
	Shorebird	Roseate tern		E/-	E	Common													-	Apr-May	Jul-Sep	-
		Roseate tern		E/-	E	Common													-	Apr-May	Jul-Sep	-
		Piping plover		T/E	T	Common													Mar-Aug	Mar-Apr	Jul-Oct	-
		Purple sandpiper				Common													-	Mar	Oct	-
	Wading	Red knot			T	Common													-	May-Jun	Jul-Sep	-
		Shorebirds				Common													-	Mar-Jun	Jul-Nov	Aug
	Waterfowl	Willet		-/C		Common													Apr-May	Apr-May	Aug-Oct	-
		Wading birds		-/C		Common													-	Mar-May	Jul-Oct	-
		American black duck				Common													Mar-Apr	Sep-Apr	-	-
	Diving ducks	Winterting				Common													Mar-Apr	Sep-Apr	-	-
		Geese				Common													May	Mar-May	Sep-Nov	-


FISH

Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
							J	F	M	A	M	J	J	A	S	O	N	D					
	Diadromous	Alewife				-													Apr-Jun	Apr-Jun	Apr-Jun	-	Apr-Jun
	American eel	Spawning Area				-													-	-	-	Jan-Dec	Jan-Dec
		Migration				-													-	-	-	-	-
	American shad	Spawning Area				-													Apr-Jun	Apr-Jun	Apr-Jun	-	Apr-Jun
	Blueback herring	Spawning Area				-													Apr-Jun	Apr-Jun	Apr-Jun	-	Apr-Jun
		Spawning Area				-													-	-	-	-	-


REPTILES & AMPHIBIANS

Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence												Nest	Hatch	Internest	Juveniles	Adults
							J	F	M	A	M	J	J	A	S	O	N	D					
	Amphibian	Eastern spadefoot		T/E		-													Apr-Jun	May-Jul	-	Jan-Dec	Jan-Dec
	Turtle	Green sea turtle		T/E	T	Regular													-	-	-	May-Nov	May-Nov
		K. ridley sea turtle		E/E	E	Regular													-	-	-	May-Nov	May-Nov
	Loggerhead sea turtle	Leatherback sea turtle		E/E	E	Regular													-	-	-	May-Nov	May-Nov
		Loggerhead sea turtle		T/E	T	Regular													-	-	-	May-Nov	May-Nov
																			-	-	-	May-Nov	May-Nov

INVERTEBRATES

Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
							J	F	M	A	M	J	J	A	S	O	N	D					
	Cephalopod	Longfin squid				Common													May-Aug	May-Aug	May-Aug	Apr-Nov	Apr-Nov
	Crab	Blue crab				Common													Jun-Aug	-	Jun-Aug	Jan-Dec	Jan-Dec
		Horseshoe crab				High													May-Jul	May-Jul	-	Apr-Oct	Apr-Oct
	Horseshoe crab	Concentration Area				Medium													May-Jul	May-Jul	-	Apr-Oct	Apr-Oct
		Nursery				Abundant													May-Jul	May-Jul	-	Jan-Dec	Jan-Dec
	Jonah crab	Concentration Area				Low													May-Oct	May-Oct	May-Oct	Apr-Oct	Apr-Oct

MARINE MAMMALS





Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence												Mating	Calving	Pupping	Molt
							J	F	M	A	M	J	J	A	S	O	N	D				
	Fin whale	General Distribution	E/E	E	Rare														-	-	-	-
	Humpback whale	General Distribution	E/E	E	Common														-	-	-	-
	N.A. right whale	Concentration Area	E/E	E	Common														-	-	-	-
	Sei whale	General Distribution	E/-	E	Rare														-	-	-	-

TERRESTRIAL MAMMALS



Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence												Mating	Calving	Pupping	Molt
							J	F	M	A	M	J	J	A	S	O	N	D				
	New England cottontail	General Distribution	-/C		Rare																	

ALSO PRESENT IN MAPPED AREA (GENERAL DISTRIBUTION)



BIRDS

Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence												Nest	Mig. (S)	Mig. (F)	Molt
							J	F	M	A	M	J	J	A	S	O	N	D				
	Atlantic puffin																		-	Mar	Sep	-
	D. crested cormorant																		-	Mar-Apr	Sep-Oct	-
	Gulls																		-	Apr-May	Aug-Nov	-
	Northern gannet																		-	Apr-May	Oct-Nov	-
	Shearwaters																		-	May	Oct	-
	Red-necked phalarope																		-	May	Oct	-
	American black duck																		Mar-Jul	Sep-Mar	-	-
	Diving ducks																		Mar-Apr	Sep-Apr	-	-
	Geese																		May	Mar-May	Sep-Nov	-
	Sea ducks																		-	Mar-May	Sep-Oct	-

FISH

Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
							J	F	M	A	M	J	J	A	S	O	N	D					
	Alewife																		-	-	-	Jan-Dec	Jan-Dec
	American eel																		-	-	-	Jan-Dec	Jan-Dec
	American shad																		-	-	-	Jan-Dec	Jan-Dec
	Atlantic salmon																		Sep-Dec	Sep-Mar	Feb-Jul	Jan-Dec	Jan-Dec
	Blueback herring																		-	-	-	Jan-Dec	Jan-Dec
	Striped bass																		-	-	-	Jan-Dec	Jan-Dec
	Atlantic herring																		Aug-Nov	Aug-Nov	Oct-Dec	Jan-Dec	Jan-Dec
	Bay anchovy																		Jun-Aug	Jun-Aug	Jun-Sep	Jan-Dec	Jan-Dec
	Black sea bass																		Feb-Jul	Feb-Jul	Mar-Jul	Jan-Dec	Jan-Dec
	Bluefish																		-	-	Jun-Aug	May-Nov	May-Nov
	Northern kingfish																		Jun-Jul	Jun-Jul	Jun-Aug	May-Nov	May-Nov
	Scup																		May-Aug	May-Aug	Jun-Aug	May-Oct	May-Oct
	Summer flounder																		Aug-Nov	Aug-Nov	Sep-Nov	Apr-Nov	Apr-Nov
	Windowpane																		May-Aug	May-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Winter flounder																		Jan-May	Jan-May	Feb-May	Jan-Dec	Jan-Dec




FISH (continued)

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	Freshwater																	
	Marine Benthic																	
	Rainbow smelt													Feb-Jun	Feb-Jun	Mar-Jul	Jan-Dec	Jan-Dec
	American plaice													Nov-Mar	Nov-Mar	Dec-Mar	Jan-Dec	Jan-Dec
	Atlantic cod													Apr-Sep	Apr-Sep	Mar-Apr	Jan-Dec	Jan-Dec
	Atlantic halibut													Dec-Feb	Dec-Mar	Dec-Apr	Dec-Jun	Dec-Jun
	Atlantic tomcod													Mar-Aug	Mar-Aug	Mar-Sep	Jan-Dec	Jan-Dec
	Atlantic wolffish																	
	Goosefish																	
	Haddock													Feb-Jun	Feb-Jun	Mar-Jun	Jan-Dec	Jan-Dec
	Little skate													Jan-Dec	Jan-Dec		Jan-Dec	Jan-Dec
	Longhorn sculpin													Dec-Feb	Dec-Feb	Jan-Jun	Jan-Dec	Jan-Dec
	Ocean pout													Aug-Oct	Aug-Dec	Sep-Feb	Jan-Dec	Jan-Dec
	Pollock																Apr-Oct	Apr-Oct
	Red hake													Jun-Sep	Jun-Sep	Jul-Nov	Jan-Dec	Jan-Dec
	Rock gunnel													Nov-Mar	Nov-Apr	Jan-Jun	Jan-Dec	Jan-Dec
	Searobins													Jun-Sep	Jun-Sep	Jun-Oct	Jan-Dec	Jan-Dec
	Silver hake													Jul-Oct	Jul-Oct	Aug-Oct	Jan-Dec	Jan-Dec
	Tautog													May-Aug	May-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	White hake													Apr-Sep	May-Nov	May-Nov	Jan-Dec	Jan-Dec
	Winter skate																Jan-Dec	Jan-Dec
	Witch flounder													May-Aug	May-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Yellowtail flounder													Mar-Jul	Mar-Jul	Apr-Jul	Jan-Dec	Jan-Dec
	Atlantic mackerel													May-Jul	May-Aug	May-Aug	Mar-Dec	Mar-Dec
	Spiny dogfish																Jan-Dec	Jan-Dec
	Tunas																Jun-Sep	-



REPTILES & AMPHIBIANS

Subelement	Species	Monthly Presence												Nest	Hatch	Internest	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	Turtle													Jun-Jul	Aug-Oct	-	Jan-Dec	Jan-Dec
	Eastern box turtle																	




INVERTEBRATES

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	Bivalve													Apr-May	Apr-May	Apr-May	Jan-Dec	Jan-Dec
	Atl. jackknife clam													Jun-Aug	Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Atlantic surfclam													Jun-Sep	Jun-Sep	Jun-Sep	Jan-Dec	Jan-Dec
	Bay scallop													May-Nov	May-Nov	May-Nov	Jan-Dec	Jan-Dec
	Blue mussel													Jun-Aug	Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Eastern oyster													Jul-Nov	Jul-Nov	Jul-Dec	Jan-Dec	Jan-Dec
	Northern quahog													Jul-Oct	Jul-Oct	Jul-Oct	Jan-Dec	Jan-Dec
	Ocean quahog													Jun-Aug	Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Sea scallop													Jun-Oct	Jun-Oct	Jun-Oct	Jan-Dec	Jan-Dec
	Softshell clam																Apr-Nov	Apr-Nov
	Cephalopod																	
	Northern shortfin squid																	
	Crab													May-Oct	Jun-Oct	Jun-Oct	Jan-Dec	Jan-Dec
	Atlantic rock crab																	

INVERTEBRATES (continued)

Subelement	Species	Monthly Presence												Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D				
	Blue crab													Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Horseshoe crab													May-Jul	-	Jan-Dec	Jan-Dec
	American lobster													Aug-Nov	Jun-Oct	Jan-Dec	Jan-Dec
	Db grass shrimp													May-Jul	May-Jul	Jan-Dec	Jan-Dec
	Northern shrimp													-	Jan-Dec	Jan-Dec	Dec-Apr
	Sevenspine bay shrimp													May-Jul	May-Jul	Jan-Dec	Jan-Dec

MARINE MAMMALS

Subelement	Species	Monthly Presence												Mating	Calving	Pupping	Molt
		J	F	M	A	M	J	J	A	S	O	N	D				
	Atl. wht.-side dolphin													-	-	-	-
	Bottlenose dolphin													-	-	-	-
	Harbor porpoise													-	-	-	-
	Risso's dolphin													-	-	-	-
	Short-beaked common dolphin													-	-	-	-
	Gray seal													Dec-Feb	Dec-Feb	Dec-Feb	Mar-May
	Harbor seal													-	-	-	-
	Harp seal													-	-	-	-
	Hooded seal													-	-	-	-
	Minke whale													-	-	-	-
	Pilot whales													-	-	-	-
														-	-	-	-

For additional information about species locations and extent, reference the underlying GIS data available from response.restoration.noaa.gov

ESI POLYGON HABITAT TYPES

<i>ESI Rank</i>	<i>Habitat Classification</i>	<i>Area (Acres)</i>	<i>Area (Sq. Miles)</i>
10A	Salt and Brackish Water Marshes	1,286.35	2.01
10B	Freshwater Marshes	36.04	0.06
10C	Swamps	109.92	0.17
10D	Scrub and Shrub Wetlands	162.37	0.25
9A	Sheltered Tidal Flats	681.04	1.06
7	Exposed Tidal Flats	76.24	0.12

ESI SHORELINE HABITAT TYPES

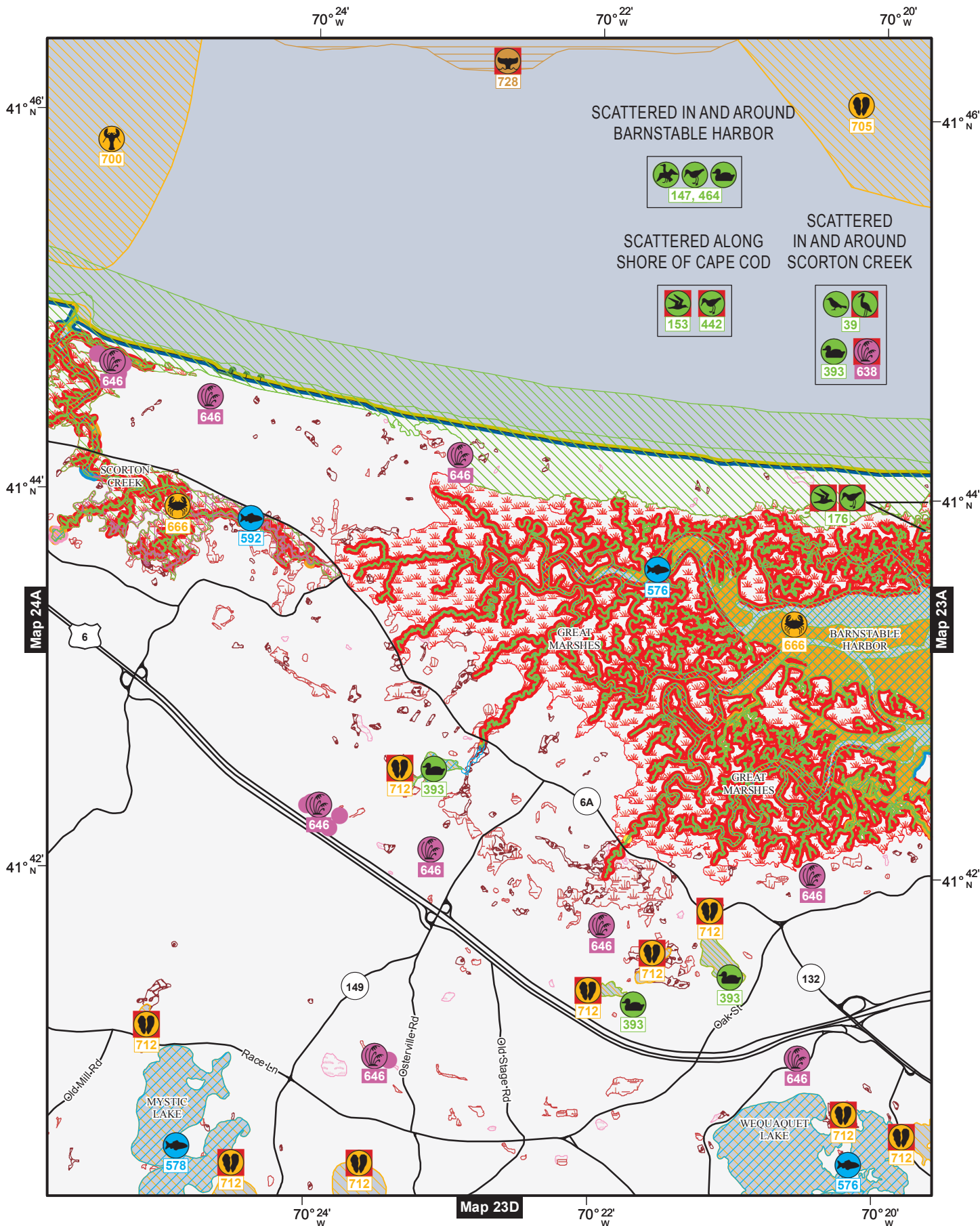
<i>ESI Rank</i>	<i>Shoreline Habitat Classification</i>	<i>Length (Meters)</i>	<i>Length (Miles)</i>	<i>% of ESI Shoreline</i>
10A	Salt and Brackish Water Marshes	101,273.81	62.93	54%
9A	Sheltered Tidal Flats	54,043.62	33.58	29%
9B	Vegetated Low Banks	203.60	0.13	< 1%
8B	Sheltered, Solid Man-Made Structures	1,443.86	0.90	1%
8C	Sheltered Riprap	588.27	0.37	< 1%
8D	Sheltered, Rocky, Rubble Shores	71.67	0.04	< 1%
7	Exposed Tidal Flats	11,179.28	6.95	6%
6B	Riprap	88.44	0.05	< 1%
5	Mixed Sand and Gravel Beaches	128.39	0.08	< 1%
4	Coarse Grained Sand Beaches	8,150.96	5.06	4%
3A	Fine to Medium Grained Sand Beaches	11,252.36	6.99	6%

Total ESI Shoreline: 188,424.26 Total ESI Shoreline: 117.08
 Total Shoreline: 120,425.58 Total Shoreline: 74.83

Note: A shoreline segment may include multiple shoreline habitats. If any segments include multiple habitats, the combined length of all habitats may exceed the length of the mapped shoreline, and the percent of ESI shoreline values will sum to greater than 100%

All underlying GIS data can be obtained from response.restoration.noaa.gov

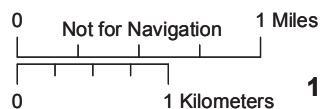




Map 23B
Mass. / Rhode Island



SEE BACK OF MAP
for details about mapped species and
other species that occur in mapped area.
Data Published: November 2016



1:50,000

Map 23B
Massachusetts and Rhode Island

BIOLOGICAL RESOURCES

Note: An asterisk (*) indicates that life stage occurs in this range but not in all months included

DISPLAYED ON MAP

BENTHIC

Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N	D	Monthly Presence
SAV	Rare aquatic/wetland plant	High Ecological Value				Present													

BIRDS

Map ID	Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N	D	Nest	Mig.(S)	Mig.(F)	Molt
39	Passerine	Seaside sparrow	Nesting				Rare													May-Aug	May	Aug	-
	Wading	Egrets	General Distribution			-/C	Common													Apr-Jul	Mar-May	Aug-Sep	-
147	Diving	Great cormorant	Wintering				Common													-	Feb-Mar	Nov	-
	Shorebird	Purple sandpiper	Wintering				Common													-	Mar	Oct	-
	Waterfowl	American black duck	Wintering				Common													Mar-Apr	Sep-Apr	-	-
	Waterfowl	Diving ducks	Wintering				Common													Mar-Apr	Sep-Apr	-	-
	Waterfowl	Geese	Wintering				Common													May	Mar-May	Sep-Nov	-
153	Gull/Tern	Rare tern	Nesting			C/-	Rare													May-Aug	-	-	-
176	Gull/Tern	Rare tern	Nesting			C/-	Rare													May-Aug	-	-	-
	Shorebird	Piping plover	Nesting			T/E	Common													Mar-Aug	Mar-Apr	Jul-Oct	-
	Shorebird	Red knot	Migration			T	Common													-	May-Jun	Jul-Sep	-
	Shorebird	Shorebirds	Migration				Common													-	Mar-Jun	Jul-Nov	Aug
393	Waterfowl	American black duck	Wintering				Common													Mar-Apr	Sep-Apr	-	-
	Waterfowl	Diving ducks	Wintering				Common													Mar-Apr	Sep-Apr	-	-
	Waterfowl	Geese	Wintering				Common													May	Mar-May	Sep-Nov	-
442	Shorebird	Piping plover	Nesting			T/E	Common													Mar-Aug	Mar-Apr	Jul-Oct	-
	Shorebird	Red knot	Migration			T	Common													-	May-Jun	Jul-Sep	-
	Shorebird	Shorebirds	Migration				Common													-	Mar-Jun	Jul-Nov	Aug
464	Shorebird	Shorebirds	Migration				Common													-	Mar-Jun	Jul-Nov	Aug

FISH

Map ID	Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N	D	Spawn	Eggs	Larvae	Juveniles	Adults
576	Diadromous	Alewife	Spawning Area				-													Apr-Jun	Apr-Jun	Apr-Jun	-	Apr-Jun
	Diadromous	American eel	Migration				-													-	-	-	Jan-Dec	Jan-Dec
	Diadromous	American shad	Spawning Area				-													Apr-Jun	Apr-Jun	Apr-Jun	-	Apr-Jun
	Diadromous	Blueback herring	Spawning Area				-													Apr-Jun	Apr-Jun	Apr-Jun	-	Apr-Jun
578	Diadromous	Alewife	Spawning Area				-													Apr-Jun	Apr-Jun	Apr-Jun	-	Apr-Jun
	Diadromous	American eel	Migration				-													-	-	-	Jan-Dec	Jan-Dec
	Diadromous	American shad	Spawning Area				-													Apr-Jun	Apr-Jun	Apr-Jun	-	Apr-Jun
	Diadromous	Blueback herring	Spawning Area				-													Apr-Jun	Apr-Jun	Apr-Jun	-	Apr-Jun
	Diadromous	Sea lamprey	Vulnerable Occurrence				-													Jun-Aug	Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec

FISH (continued)

Map ID	Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
								J	F	M	A	M	J	J	A	S	O	N	D					
	Freshwater	Blacknose dace	Vulnerable Occurrence				-													Mar-Jun	Mar-Jun	Apr-Jun	Jan-Dec	Jan-Dec
	Freshwater	Brook trout	Vulnerable Occurrence				-													Sep-Nov	Sep-Nov	Nov-Dec	Jan-Dec	Jan-Dec
	Freshwater	Common shiner	Vulnerable Occurrence				-													May-Aug	May-Aug	May-Aug	Jan-Dec	Jan-Dec
	Freshwater	Creek chub	Vulnerable Occurrence				-													May-Aug	May-Aug	May-Aug	Jan-Dec	Jan-Dec
	Freshwater	Fallfish	Vulnerable Occurrence				-													-	-	-	Jan-Dec	Jan-Dec
	Freshwater	Longnose dace	Vulnerable Occurrence				-													-	-	-	Jan-Dec	Jan-Dec
	Freshwater	Slimy sculpin	Vulnerable Occurrence				-													-	-	-	Jan-Dec	Jan-Dec
	Freshwater	Tessellated darter	Vulnerable Occurrence				-													May-Jul	May-Jul	May-Aug	Jan-Dec	Jan-Dec
	Freshwater	White sucker	Vulnerable Occurrence				-													Apr-May	May-Jul	May-Jul	Jan-Dec	Jan-Dec
592	Diadromous	American eel	Migration				-													-	-	-	Jan-Dec	Jan-Dec

HABITATS & RARE PLANTS

Map ID	Subelement	Species	Mapping Qualifier	MA/RI	Monthly Presence																				
					S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N	D						
638	Plant	Rare plant	Vulnerable Occurrence				-																		
646	Wetland	Vernal pool	Vulnerable Occurrence				-																		

INVERTEBRATES







Map ID	Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
								J	F	M	A	M	J	J	A	S	O	N	D					
666	Crab	Blue crab	Nursery				Common													Jun-Aug	-	Jun-Aug	Jan-Dec	Jan-Dec
	Crab	Horseshoe crab	Nursery				Abundant													May-Jul	May-Jul	-	Jan-Dec	Jan-Dec
700	Lobster	American lobster	Concentration Area				High													Aug-Sep	Jun-Sep	Jun-Sep	Jun-Sep	Jun-Sep
705	Bivalve	Sea scallop	Concentration Area				High													Jul-Oct	Jul-Oct	Jul-Oct	May-Oct	May-Oct
712	Bivalve	Rare freshwater mussel	General Distribution				-													Aug-Sep	Aug-May	Jun-Jul	Jan-Dec	Jan-Dec

MARINE MAMMALS

Map ID	Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence												Mating	Calving	Pupping	Molt
								J	F	M	A	M	J	J	A	S	O	N	D				
728	Whale	Fin whale	General Distribution				Common													-	-	-	-
	Whale	Sei whale	General Distribution				Common													-	-	-	-
	Whale	Sperm whale	General Distribution				Rare													-	-	-	-

WIDESPREAD IN MAPPED AREA (> 10 SQUARE KILOMETERS)

BIRDS




Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence												Nest	Mig. (S)	Mig. (F)	Molt
							J	F	M	A	M	J	J	A	S	O	N	D				
	Alcid	Razorbill	Wintering				Common												-	-	Oct-Nov	-
	Diving	Loons	Migration				Common												-	Mar-Jun	Sep-Dec	Jan-Mar
	Gull/Tern	Rare tern	General Distribution				Common												-	Apr-May	Jul-Sep	-
		Roseate tern	General Distribution				Common												-	Apr-May	Jul-Sep	-
	Passerine	Marsh passerines	General Distribution				Common												Apr-Aug	Apr-May	Aug-Nov	Sep-Oct
	Shorebird	Willet	Nesting				Common												Apr-May	Apr-May	Aug-Oct	-
	Wading	Egrets	Migration				Common												Apr-Jul	Mar-May	Aug-Sep	-
		Marsh birds	General Distribution				Common												-	Mar-May	Aug-Nov	Jul-Aug

Massachusetts and Rhode Island: Map 23B




BIRDS (continued)

Subelement	Species	Mapping Qualifier	MA/RI		Concentration	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt
			S	F		J	F	M	A	M	J	J	A	S	O	N	D				
	Wading birds	General Distribution	-/C		Common																
	Waterfowl	General Distribution	C/C		Common																


REPTILES & AMPHIBIANS

Subelement	Species	Mapping Qualifier	MA/RI	Monthly Presence												Nest	Hatch	Internet	Juveniles	Adults
				S	F	Concentration	J	F	M	A	M	J	J	A	S					
	Eastern spadefoot	Vulnerable Occurrence	T/E			-														
	Green sea turtle	General Distribution	T/E			Regular														
	K. ridley sea turtle	General Distribution	E/E			Regular														
	Leatherback sea turtle	General Distribution	E/E			Regular														
	Loggerhead sea turtle	General Distribution	T/E			Regular														
	Rare reptile	Vulnerable Occurrence				-														
																				</

INVERTEBRATES

	Subelement	Species	Mapping Qualifier	MA/RI		Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
				S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N					
	Bivalve	Sea scallop	Concentration Area			Medium											Jul-Oct	Jul-Oct	May-Oct	May-Oct		
	Cephalopod	Longfin squid	Concentration Area			Common											May-Aug	May-Aug	Apr-Nov	Apr-Nov		
	Crab	Horseshoe crab	Concentration Area			Medium												May-Jul	May-Jul	Apr-Oct	Apr-Oct	
		Horseshoe crab	Concentration Area			High												May-Jul	May-Jul	Apr-Oct	Apr-Oct	
	Lobster	Jonah crab	Concentration Area			Low												May-Oct	May-Oct	Apr-Oct	Apr-Oct	
		American lobster	Concentration Area			Medium												Aug-Sep	Jun-Sep	Jun-Sep	Jun-Sep	

MARINE MAMMALS




Subelement	Species	Mapping Qualifier	MA/RI		Concentration	Monthly Presence												Mating	Calving	Pupping	Molt
			S	F		J	F	M	A	M	J	J	A	S	O	N	D				
	Fin whale	General Distribution	E/E	E	Rare																
	Humpback whale	General Distribution	E/E	E	Common																
	N.A. right whale	Concentration Area	E/E	E	Common																
	Sei whale	General Distribution	E/-	E	Rare																

TERRESTRIAL MAMMALS

Subelement	Species	Mapping Qualifier	MA/RI		Monthly Presence												
			S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N	D
	New England cottontail	General Distribution	-/C		Rare												

ALSO PRESENT IN MAPPED AREA (GENERAL DISTRIBUTION)





BIRDS

Subelement	Species	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt
		J	F	M	A	M	J	J	A	S	O	N	D				
	Atlantic puffin																
	D. crested cormorant																
	Gulls																

BIRDS (continued)

Subelement	Species	Monthly Presence											
		J	F	M	A	M	J	J	A	S	O	N	D
	Northern gannet												
	Shearwaters												
	Red-necked phalarope												
	American black duck												
	Diving ducks												
	Geese												
	Sea ducks												

FISH

Subelement	Species	Monthly Presence											
		J	F	M	A	M	J	J	A	S	O	N	D
	Alewife												
	American eel												
	American shad												
	Atlantic salmon												
	Blueback herring												
	Striped bass												
	Atlantic herring												
	Bay anchovy												
	Black sea bass												
	Black sea bass												
	Black sea bass												
	Bluefish												
	Northern kingfish												
	Scup												
	Summer flounder												
	Windowpane												
	Winter flounder												
	Rainbow smelt												
	American plaice												
	Atlantic cod												
	Atlantic halibut												
	Atlantic tomcod												
	Atlantic wolffish												
	Goosefish												
	Haddock												
	Haddock												
	Haddock												
	Little skate												
	Longhorn sculpin												
	Ocean pout												
	Pollock												
	Red hake												
	Rock gunnel												




FISH (continued)

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	Searobins													Jun-Sep	Jun-Sep	Jun-Oct	Jan-Dec	Jan-Dec
	Silver hake													Jul-Oct	Jul-Oct	Aug-Oct	Jan-Dec	Jan-Dec
	Tautog													May-Aug	May-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	White hake													Apr-Sep	May-Nov	May-Nov	Jan-Dec	Jan-Dec
	Winter skate													-	-	-	Jan-Dec	Jan-Dec
	Witch flounder													May-Aug	May-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Yellowtail flounder													Mar-Jul	Mar-Jul	Apr-Jul	Jan-Dec	Jan-Dec
	Atlantic mackerel													May-Jul	May-Aug	May-Aug	Mar-Dec	Mar-Dec
	Spiny dogfish													-	-	-	Jan-Dec	Jan-Dec
	Tunas													-	-	-	Jun-Sep	-




REPTILES & AMPHIBIANS

Subelement	Species	Monthly Presence												Nest	Hatch	Internest	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	Eastern box turtle													Jun-Jul	Aug-Oct	-	Jan-Dec	Jan-Dec

INVERTEBRATES

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	Atl. jackknife clam													Apr-May	Apr-May	Apr-May	Jan-Dec	Jan-Dec
	Atlantic surfclam													Jun-Aug	Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Blue mussel													May-Nov	May-Nov	May-Nov	Jan-Dec	Jan-Dec
	Eastern oyster													Jun-Aug	Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Northern quahog													Jun-Aug	Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Ocean quahog													Jul-Nov	Jul-Nov	Jul-Dec	Jan-Dec	Jan-Dec
	Sea scallop													Jul-Oct	Jul-Oct	Jul-Oct	Jan-Dec	Jan-Dec
	Softshell clam													Jun-Aug	Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Longfin squid													May-Aug	May-Aug	May-Aug	Apr-Nov	Apr-Nov
	Northern shortfin squid													-	-	-	Apr-Nov	Apr-Nov
	Atlantic rock crab													May-Oct	Jun-Oct	Jun-Oct	Jan-Dec	Jan-Dec
	Blue crab													-	Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Horseshoe crab													May-Jul	May-Jul	-	Jan-Dec	Jan-Dec
	American lobster													Aug-Nov	Jan-Dec	Jun-Oct	Jan-Dec	Jan-Dec
	Db grass shrimp													May-Jul	May-Jul	May-Jul	Jan-Dec	Jan-Dec
	Northern shrimp													-	Dec-Apr	Jan-Dec	Jan-Dec	Dec-Apr
	Sevenspine bay shrimp													May-Jul	May-Jul	May-Jul	Jan-Dec	Jan-Dec

MARINE MAMMALS

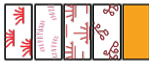
	Subelement	Species	Monthly Presence												Mating	Calving	Pupping	Molt
			J	F	M	A	M	J	J	A	S	O	N	D				
	Dolphin	Atl. spotted dolphin													-	-	-	-
		Atl. wht.-side dolphin													-	-	-	-
		Bottlenose dolphin													-	-	-	-
		Harbor porpoise													-	-	-	-
		Risso's dolphin													-	-	-	-
		Short-beaked common dolphin													-	-	-	-
		Striped dolphin													-	-	-	-
	Pinniped	White-beaked dolphin													-	-	-	-
		Gray seal													Dec-Feb	Dec-Feb	Dec-Feb	Mar-May
		Harbor seal													-	-	-	-
		Harp seal													-	-	-	-
		Hooded seal													-	-	-	-
	Whale	Minke whale													-	-	-	-
		Pilot whales													-	-	-	-

For additional information about species locations and extent, reference the underlying GIS data available from response.restoration.noaa.gov

SHORELINE RESOURCES

ESI POLYGON HABITAT TYPES

<i>ESI Rank</i>	<i>Habitat Classification</i>	<i>Area (Acres)</i>	<i>Area (Sq. Miles)</i>
10A	Salt and Brackish Water Marshes	2,880.86	4.50
10B	Freshwater Marshes	51.39	0.08
10C	Swamps	256.23	0.40
10D	Scrub and Shrub Wetlands	169.49	0.26
9A	Sheltered Tidal Flats	395.34	0.62



ESI SHORELINE HABITAT TYPES

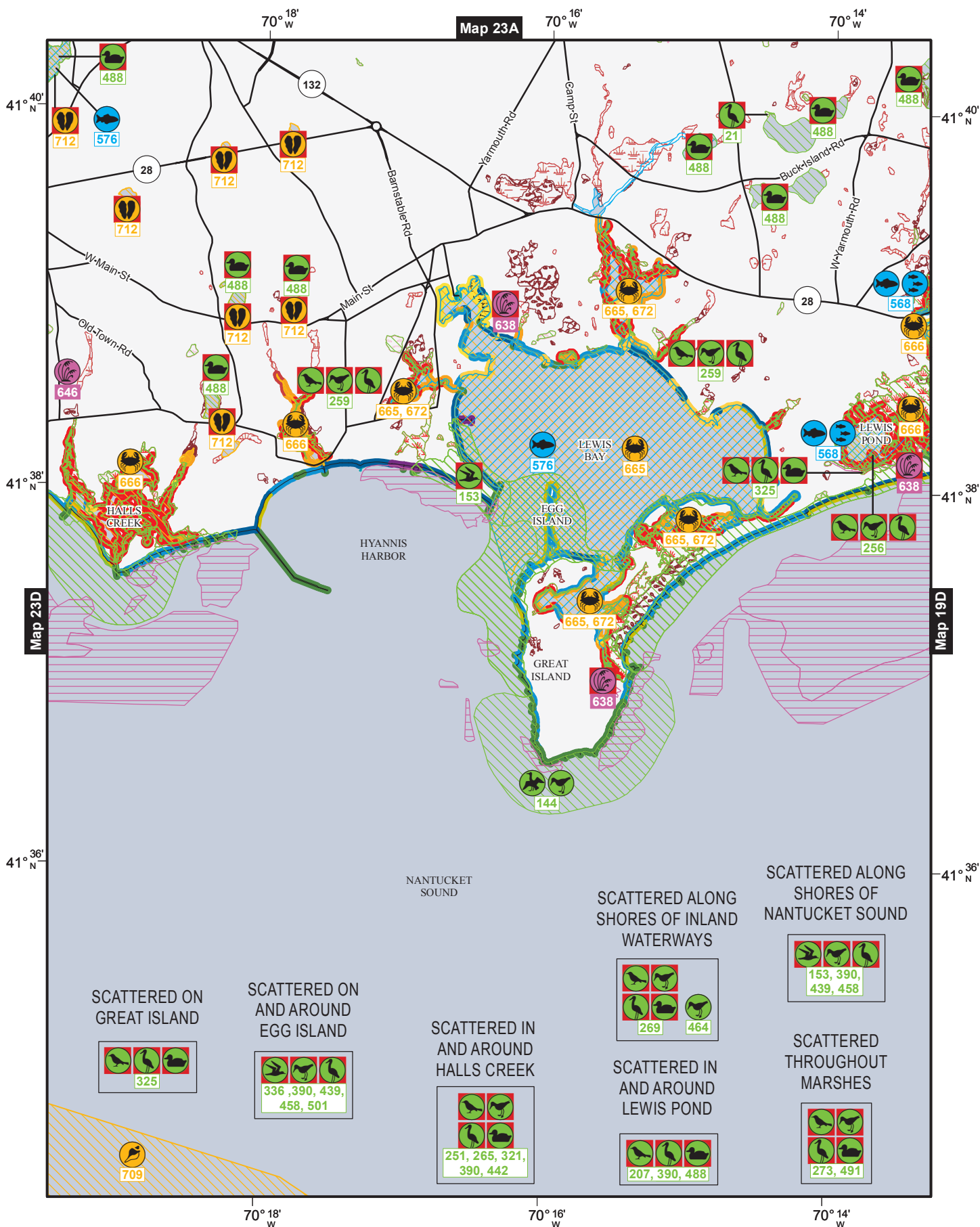
<i>ESI Rank</i>	<i>Shoreline Habitat Classification</i>	<i>Length (Meters)</i>	<i>Length (Miles)</i>	<i>% of ESI Shoreline</i>
10A	Salt and Brackish Water Marshes	246,917.06	153.43	77%
10B	Freshwater Marshes	325.12	0.20	< 1%
10C	Swamps	365.59	0.23	< 1%
10D	Scrub and Shrub Wetlands	293.47	0.18	< 1%
9A	Sheltered Tidal Flats	50,992.47	31.69	16%
9B	Vegetated Low Banks	1,151.54	0.72	< 1%
8B	Sheltered, Solid Man-Made Structures	138.43	0.09	< 1%
8C	Sheltered Riprap	32.59	0.02	< 1%
7	Exposed Tidal Flats	9,316.49	5.79	3%
6B	Riprap	281.27	0.17	< 1%
4	Coarse Grained Sand Beaches	600.24	0.37	< 1%
3A	Fine to Medium Grained Sand Beaches	9,316.49	5.79	3%

Total ESI Shoreline: 319,730.77 Total ESI Shoreline: 198.67
 Total Shoreline: 258,591.03 Total Shoreline: 160.68

Note: A shoreline segment may include multiple shoreline habitats. If any segments include multiple habitats, the combined length of all habitats may exceed the length of the mapped shoreline, and the percent of ESI shoreline values will sum to greater than 100%

All underlying GIS data can be obtained from response.restoration.noaa.gov





Map 23C
Mass. / Rhode Island



SEE BACK OF MAP
for details about mapped species and
other species that occur in mapped area.
Data Published: November 2016

0 Not for Navigation 1 Miles
0 1 Kilometers

1:50,000

Map 23C
Massachusetts and Rhode Island

BIOLOGICAL RESOURCES

Note: An asterisk (*) indicates that life stage occurs in this range but not in all months included

DISPLAYED ON MAP

BENTHIC

Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence											
						J	F	M	A	M	J	J	A	S	O	N	D
SAV	Eelgrass	High Ecological Value			Potential												
SAV	Eelgrass	High Ecological Value			Present												

BIRDS

Map ID	Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence										Nest	Mig. (S)	Mig. (F)	Molt
								J	F	M	A	M	J	J	A	S	O				
144	Diving	Marsh birds	General Distribution		C/C		Common											-	Mar-May	Aug-Nov	Jul-Aug
		Great cormorant	Wintering				Common											-	Feb-Mar	Nov	-
		Purple sandpiper	Wintering				Common											-	Mar	Oct	-
153	Gull/Tern	Rare tern	Nesting		C/-		Rare											May-Aug	-	-	-
207	Passerine	Marsh passerines	General Distribution		-C		Common											Apr-Aug	Apr-May	Aug-Nov	Sep-Oct
		Egrets	Migration		-C		Common											Apr-Jul	Mar-May	Aug-Sep	-
		Marsh birds	General Distribution		C/C		Common											-	Mar-May	Aug-Nov	Jul-Aug
251	Passerine	Marsh passerines	General Distribution		-C		Common											Apr-Aug	Apr-May	Aug-Nov	Sep-Oct
		Saltmarsh sparrow	Nesting		-C		Common											May-Jul	May	-	-
		Willet	Nesting		-C		Common											Apr-May	Apr-May	Aug-Oct	-
		Egrets	General Distribution		-C		Common											Apr-Jul	Mar-May	Aug-Sep	-
256	Wading	Wading birds	General Distribution		-C		Common											-	Mar-May	Jul-Oct	-
		Marsh passerines	General Distribution		-C		Common											Apr-Aug	Apr-May	Aug-Nov	Sep-Oct
		Willet	Nesting		-C		Common											Apr-May	Apr-May	Aug-Oct	-
		Egrets	Migration		-C		Common											Apr-Jul	Mar-May	Aug-Sep	-
		Marsh birds	General Distribution		C/C		Common											-	Mar-May	Aug-Nov	Jul-Aug
		Wading birds	General Distribution		-C		Common											-	Mar-May	Jul-Oct	-
259	Passerine	Marsh passerines	General Distribution		-C		Common											Apr-Aug	Apr-May	Aug-Nov	Sep-Oct
		Willet	Nesting		-C		Common											Apr-May	Apr-May	Aug-Oct	-
		Egrets	General Distribution		-C		Common											Apr-Jul	Mar-May	Aug-Sep	-
		Wading birds	General Distribution		-C		Common											-	Mar-May	Jul-Oct	-
265	Passerine	Marsh passerines	General Distribution		-C		Common											Apr-Aug	Apr-May	Aug-Nov	Sep-Oct
		Saltmarsh sparrow	Nesting		-C		Common											May-Jul	May	-	-
		Willet	Nesting		-C		Common											Apr-May	Apr-May	Aug-Oct	-
		Egrets	General Distribution		-C		Common											Apr-Jul	Mar-May	Aug-Sep	-
		Wading birds	General Distribution		-C		Common											-	Mar-May	Jul-Oct	-
269	Passerine	Marsh passerines	General Distribution		-C		Common											Apr-Aug	Apr-May	Aug-Nov	Sep-Oct
		Waterfowl	General Distribution		C/C		Common											May-Jul	Apr-May	Aug-Oct	Aug-Sep
		Marsh birds	General Distribution		-C		Common											Apr-Aug	Apr-May	Aug-Nov	Sep-Oct
		Willet	Nesting		-C		Common											Apr-May	Apr-May	Aug-Oct	-
		Egrets	Migration		-C		Common											Apr-Jul	Mar-May	Aug-Sep	-

BIRDS (continued)

Map ID	Subelement	Species	Mapping Qualifier	MA/RI S F	Concentration	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt
						J	F	M	A	M	J	J	A	S	O	N	D				
	Wading	Marsh birds	General Distribution	C/C	Common													-	Mar-May	Aug-Nov	Jul-Aug
	Wading	Wading birds	General Distribution	-/C	Common													-	Mar-May	Jul-Oct	-
	Waterfowl	Waterfowl	General Distribution	C/C	Common													May-Jul	Apr-May	Aug-Oct	Aug-Sep
273	Passerine	Marsh passerines	General Distribution	-/C	Common													Apr-Aug	Apr-May	Aug-Nov	Sep-Oct
	Shorebird	Willet	Nesting	-/C	Common													Apr-May	Apr-May	Aug-Oct	-
	Wading	Egrets	General Distribution	-/C	Common													Apr-Jul	Mar-May	Aug-Sep	-
	Wading	Marsh birds	General Distribution	C/C	Common													-	Mar-May	Aug-Nov	Jul-Aug
	Wading	Wading birds	General Distribution	-/C	Common													-	Mar-May	Jul-Oct	-
	Waterfowl	Waterfowl	General Distribution	C/C	Common													May-Jul	Apr-May	Aug-Oct	Aug-Sep
321	Passerine	Marsh passerines	General Distribution	-/C	Common													Apr-Aug	Apr-May	Aug-Nov	Sep-Oct
	Passerine	Saltmarsh sparrow	Nesting	-/C	Common													May-Jul	May	-	-
	Wading	Egrets	General Distribution	-/C	Common													Apr-Jul	Mar-May	Aug-Sep	-
	Wading	Marsh birds	General Distribution	C/C	Common													-	Mar-May	Aug-Nov	Jul-Aug
	Waterfowl	Waterfowl	General Distribution	C/C	Common													May-Jul	Apr-May	Aug-Oct	Aug-Sep
325	Passerine	Marsh passerines	General Distribution	-/C	Common													Apr-Aug	Apr-May	Aug-Nov	Sep-Oct
	Wading	Egrets	Migration	-/C	Common													Apr-Jul	Mar-May	Aug-Sep	-
	Wading	Marsh birds	General Distribution	C/C	Common													May-Jul	Mar-May	Aug-Nov	Jul-Aug
	Waterfowl	Waterfowl	General Distribution	C/C	Common													May-Aug	Apr-May	Aug-Oct	Aug-Sep
336	Shorebird	American oystercatcher	Nesting	-/C	Rare													May-Aug	May	-	-
390	Shorebird	Willet	Nesting	-/C	Common													Apr-May	Apr-May	Aug-Oct	-
	Wading	Wading birds	General Distribution	-/C	Common													-	Mar-May	Jul-Oct	-
	Shorebird	Piping plover	Nesting	T/E T	Common													Mar-Aug	Mar-Apr	Jul-Oct	-
	Shorebird	Piping plover	Nesting	T/E T	Common													Mar-Aug	Mar-Apr	Jul-Oct	-
	Shorebird	Red knot	Migration	T	Common													-	May-Jun	Jul-Sep	-
	Shorebird	Shorebirds	Migration		Common													-	Mar-Jun	Jul-Nov	Aug
458	Shorebird	Red knot	Migration	T	Common													-	May-Jun	Jul-Sep	-
	Shorebird	Shorebirds	Migration		Common													-	Mar-Jun	Jul-Nov	Aug
	Shorebird	Shorebirds	Migration		Common													-	Mar-Jun	Jul-Nov	Aug
	Shorebird	Shorebirds	Migration		Common													-	Mar-Jun	Jul-Nov	Aug
488	Waterfowl	Waterfowl	General Distribution	C/C	Common													May-Jul	Apr-May	Aug-Oct	Aug-Sep
	Wading	Marsh birds	General Distribution	C/C	Common													-	Mar-May	Aug-Nov	Jul-Aug
	Waterfowl	Waterfowl	General Distribution	C/C	Common													May-Jul	Apr-May	Aug-Oct	Aug-Sep
	Gull/Tern	Rare tern	Migration	C/-	Common													May-Aug	Apr-May	Jul-Sep	-
501	Gull/Tern	Roseate tern	Migration	E/- E	Common													-	Apr-May	Jul-Sep	-

FISH

Map ID	Subelement	Species	Mapping Qualifier	MA/RI S F	Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
						J	F	M	A	M	J	J	A	S	O	N	D					
568	Diadromous	Alewife	Spawning Area		-													Apr-Jun	Apr-Jun	Apr-Jun	-	Apr-Jun
	Diadromous	American eel	Migration		-													-	-	-	Jan-Dec	Jan-Dec
	Diadromous	American shad	Spawning Area		-													Apr-Jun	Apr-Jun	Apr-Jun	-	Apr-Jun
	Diadromous	Blueback herring	Spawning Area		-													Apr-Jun	Apr-Jun	Apr-Jun	-	Apr-Jun
576	Estuarine Nursery	White perch	Spawning Area		-													Apr-Aug	Apr-Aug	May-Sep	Jan-Dec	Jan-Dec
	Diadromous	Alewife	Spawning Area		-													Apr-Jun	Apr-Jun	Apr-Jun	-	Apr-Jun
	Diadromous	American eel	Migration		-													-	-	-	Jan-Dec	Jan-Dec

FISH (continued)

Map ID	Subelement	Species	Mapping Qualifier	MA/RI		Monthly Presence												Eggs	Larvae	Juveniles	Adults
				S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N	D			

Diadromous	American shad	Spawning Area	-															Apr-Jun	Apr-Jun	-	Apr-Jun
Diadromous	Blueback herring	Spawning Area	-															Apr-Jun	Apr-Jun	-	Apr-Jun

HABITATS & RARE PLANTS

Map ID	Subelement	Species	Mapping Qualifier	MA/RI		Monthly Presence												Eggs	Larvae	Juveniles	Adults
				S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N	D			

638	Plant	Rare plant	Vulnerable Occurrence	T/C		-															
646	Wetland	Vernal pool	Vulnerable Occurrence			-															

INVERTEBRATES

Map ID	Subelement	Species	Mapping Qualifier	MA/RI		Monthly Presence												Eggs	Larvae	Juveniles	Adults
				S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N	D			

665	Crab	Blue crab	Nursery			Common												Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
666	Crab	Blue crab	Nursery			Common												Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
672	Crab	Horseshoe crab	Nursery			Abundant												May-Jul	-	Jan-Dec	Jan-Dec
709	Gastropod	Horseshoe crab	Nursery			Abundant												May-Jul	-	Jan-Dec	Jan-Dec
712	Bivalve	Knobbed whelk	Concentration Area			High												Jun-Jul	Aug-Oct	May-Oct	May-Oct
712	Bivalve	Rare freshwater mussel	General Distribution	C/C		-												Aug-Sep	Jun-Jul	Jan-Dec	Jan-Dec

WIDESPREAD IN MAPPED AREA (> 10 SQUARE KILOMETERS)

BIRDS

Subelement	Species	Mapping Qualifier	MA/RI		Monthly Presence												Nest	Mig. (S)	Mig. (F)	Molt
			S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N	D			

Alcid	Razorbill	Wintering			Common												-	-	Oct-Nov	-
Diving	Loons	Migration	C/-		Common												-	Mar-Jun	Sep-Dec	Jan-Mar
Gull/Tern	Rare tern	General Distribution	C/-		Common												-	Apr-May	Jul-Sep	-
	Roseate tern	General Distribution	E/-	E	Common												-	Apr-May	Jul-Sep	-
Waterfowl	Sea ducks	Wintering			Abundant												-	Mar-May	Sep-Oct	-

REPTILES & AMPHIBIANS

Subelement	Species	Mapping Qualifier	MA/RI		Monthly Presence												Nest	Hatch	Internest	Juveniles	Adults
			S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N	D				

Amphibian	Eastern spadefoot	Vulnerable Occurrence	T/E		-												Apr-Jun	May-Jul	-	Jan-Dec	Jan-Dec
Turtle	Green sea turtle	General Distribution	T/E	T	Regular												-	-	-	May-Nov	May-Nov
	K. ridley sea turtle	General Distribution	E/E	E	Regular												-	-	-	May-Nov	May-Nov
	Leatherback sea turtle	General Distribution	E/E	E	Regular												-	-	-	May-Nov	May-Nov
	Loggerhead sea turtle	General Distribution	T/E	T	Regular												-	-	-	May-Nov	May-Nov


INVERTEBRATES

Subelement	Species	Mapping Qualifier	MA/RI		Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
			S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N	D				

Cephalopod	Longfin squid	Concentration Area			Common												May-Aug	May-Aug	May-Aug	Apr-Nov	Apr-Nov
Crab	Horseshoe crab	Concentration Area			Medium												May-Jul	May-Jul	-	Apr-Oct	Apr-Oct
	Horseshoe crab	Spawning			Abundant												May-Jul	May-Jul	-	May-Jul	May-Jul
Gastropod	Channeled whelk	Concentration Area			Med-Low												Jun-Jul	Aug-Oct	-	May-Oct	May-Oct
	Knobbed whelk	Concentration Area			Medium												Jun-Jul	Aug-Oct	-	May-Oct	May-Oct

Massachusetts and Rhode Island: Map 23C

MARINE MAMMALS






Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence												Mating	Calving	Pupping	Molt
							J	F	M	A	M	J	J	A	S	O	N	D				
	Fin whale	General Distribution	E/E	E	Rare														-	-	-	-
	Humpback whale	General Distribution	E/E	E	Common														-	-	-	-
	N.A. right whale	General Distribution	E/E	E	Common														-	-	-	-
	Sei whale	General Distribution	E/-	E	Rare														-	-	-	-

TERRESTRIAL MAMMALS



Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence												Mating	Calving	Pupping	Molt
							J	F	M	A	M	J	J	A	S	O	N	D				
	New England cottontail	General Distribution	-/C		Rare																	

ALSO PRESENT IN MAPPED AREA (GENERAL DISTRIBUTION)




BIRDS

Subelement	Species	Monthly Presence												Nest	Mig. (S)	Mig. (F)	Molt
		J	F	M	A	M	J	J	A	S	O	N	D				
	Atlantic puffin													-	Mar	Sep	-
	D. crested cormorant													-	Mar-Apr	Sep-Oct	-
	Gulls													-	Apr-May	Aug-Nov	-
	Northern gannet													-	Apr-May	Oct-Nov	-
	Shearwaters													-	May	Oct	-
	Red-necked phalarope													-	May	Oct	-
	Shorebirds													Apr-Aug	Mar-Dec	-	Aug
	American black duck													Mar-Jul	Sep-Mar	-	-
	Diving ducks													Mar-Apr	Sep-Apr	-	-
	Geese													May	Mar-May	Sep-Nov	-

FISH

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	Alewife													-	-	-	Jan-Dec	Jan-Dec
	American eel													-	-	-	Jan-Dec	Jan-Dec
	American shad													-	-	-	Jan-Dec	Jan-Dec
	Atlantic salmon													Sep-Dec	Sep-Mar	Feb-Jul	Jan-Dec	Jan-Dec
	Blueback herring													-	-	-	Jan-Dec	Jan-Dec
	Striped bass													-	-	-	Apr-Nov	Apr-Nov
	Atlantic herring													Aug-Nov	Aug-Nov	Oct-Dec	Jan-Dec	Jan-Dec
	Bay anchovy													Jun-Aug	Jun-Aug	Jun-Sep	Jan-Dec	Jan-Dec
	Black sea bass													Feb-Jul	Feb-Jul	Mar-Jul	Jan-Dec	Jan-Dec
	Bluefish													-	-	Jun-Aug	May-Nov	May-Nov
	Northern kingfish													Jun-Jul	Jun-Jul	Jun-Aug	May-Nov	May-Nov
	Scup													May-Aug	May-Aug	Jun-Aug	May-Oct	May-Oct
	Summer flounder													Aug-Nov	Aug-Nov	Sep-Nov	Apr-Nov	Apr-Nov
	Windowpane													May-Aug	May-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Winter flounder													Jan-May	Jan-May	Feb-May	Jan-Dec	Jan-Dec





FISH (continued)

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	Estuarine Resident													May-Aug	May-Aug	May-Sep	Jan-Dec	Jan-Dec
	Atlantic silverside													May-Jul	May-Jul	May-Aug	Jan-Dec	Jan-Dec
	Fourspine stickleback													May-Aug	Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Marine Benthic													-	-	-	Apr-Aug	Apr-Aug
	Mummichog													Dec-Feb	Dec-Mar	Dec-Apr	Dec-Jun	Dec-Jun
	Atlantic cod													Mar-Aug	Mar-Aug	Mar-Sep	Jan-Dec	Jan-Dec
	Atlantic tomcod													-	-	-	-	Jan-Dec
	Atlantic wolffish													Feb-Jun	Feb-Jun	Mar-Jun	Jan-Dec	Jan-Dec
	Goosefish													Jan-Dec	Jan-Dec	-	Jan-Dec	Jan-Dec
	Haddock													-	-	-	Apr-Oct	Apr-Oct
	Little skate													Jun-Sep	Jun-Sep	Jul-Nov	Dec-May	Dec-May
	Pollock													Nov-Mar	Nov-Apr	Jan-Jun	Jan-Dec	Jan-Dec
	Red hake													Jun-Sep	Jun-Sep	Jun-Oct	Jul-Dec	Jul-Dec
	Marine Pelagic													May-Aug	May-Aug	Jun-Aug	Jan-Jun	Jan-Jun
	Silver hake													Apr-Sep	May-Nov	May-Nov	Jan-Dec	Jan-Dec
	Tautog													-	-	-	Jan-Dec	Jan-Dec
	White hake													Mar-Jul	Mar-Jul	Apr-Jul	Jan-Dec	Jan-Dec
	Winter skate													May-Jul	May-Aug	May-Aug	Mar-Dec	Mar-Dec
	Yellowtail flounder													-	-	-	Jan-Dec	Jan-Dec
	Atlantic mackerel													May-Aug	May-Aug	May-Aug	Jan-Dec	Jan-Dec
	Spiny dogfish													-	-	-	Jan-Dec	Jan-Dec
	Tunas													-	-	-	Jun-Sep	-




REPTILES & AMPHIBIANS

Subelement	Species	Monthly Presence												Nest	Hatch	Internest	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	Turtle													Jun-Jul	Aug-Oct	-	Jan-Dec	Jan-Dec
	Eastern box turtle																	

INVERTEBRATES

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	Bivalve													Apr-May	Apr-May	Apr-May	Jan-Dec	Jan-Dec
														Jun-Sep	Jun-Sep	Jun-Sep	Jan-Dec	Jan-Dec
														May-Nov	May-Nov	May-Nov	Jan-Dec	Jan-Dec
														Jun-Aug	Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
														Jun-Aug	Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Crab													Jul-Nov	Jul-Nov	Jul-Dec	Jan-Dec	Jan-Dec
														Jul-Oct	Jul-Oct	Jul-Oct	Jan-Dec	Jan-Dec
														Jun-Aug	Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
														May-Oct	Jun-Oct	Jun-Oct	Jan-Dec	Jan-Dec
														-	Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Lobster													May-Oct	May-Oct	May-Oct	Jan-Dec	Jan-Dec
														Aug-Nov	Jan-Dec	Jun-Oct	Jan-Dec	Jan-Dec
	Shrimp													May-Jul	May-Jul	May-Jul	Jan-Dec	Jan-Dec
	Sevenspine bay shrimp													May-Jul	May-Jul	May-Jul	Jan-Dec	Jan-Dec

MARINE MAMMALS

Subelement	Species	Monthly Presence												Mating	Calving	Pupping	Molt
		J	F	M	A	M	J	J	A	S	O	N	D				
	Dolphin													-	-	-	-
														-	-	-	-
														-	-	-	-
														-	-	-	-
														-	-	-	-
	Pinniped													Dec-Feb	Dec-Feb	Dec-Feb	Mar-May
														-	-	-	-
														-	-	-	-
														-	-	-	-
														-	-	-	-
	Whale													-	-	-	-
														-	-	-	-
														-	-	-	-
														-	-	-	-
														-	-	-	-

For additional information about species locations and extent, reference the underlying GIS data available from response.restoration.noaa.gov

SHORELINE RESOURCES

ESI POLYGON HABITAT TYPES

ESI Rank	Habitat Classification	Area (Acres)	Area (Sq. Miles)
10A	Salt and Brackish Water Marshes	356.43	0.56
10B	Freshwater Marshes	20.43	0.03
10C	Swamps	187.77	0.29
10D	Scrub and Shrub Wetlands	179.70	0.28
9A	Sheltered Tidal Flats	19.97	0.03
7	Exposed Tidal Flats	4.63	0.01
5	Mixed Sand and Gravel Beaches	0.67	0.00

ESI SHORELINE HABITAT TYPES

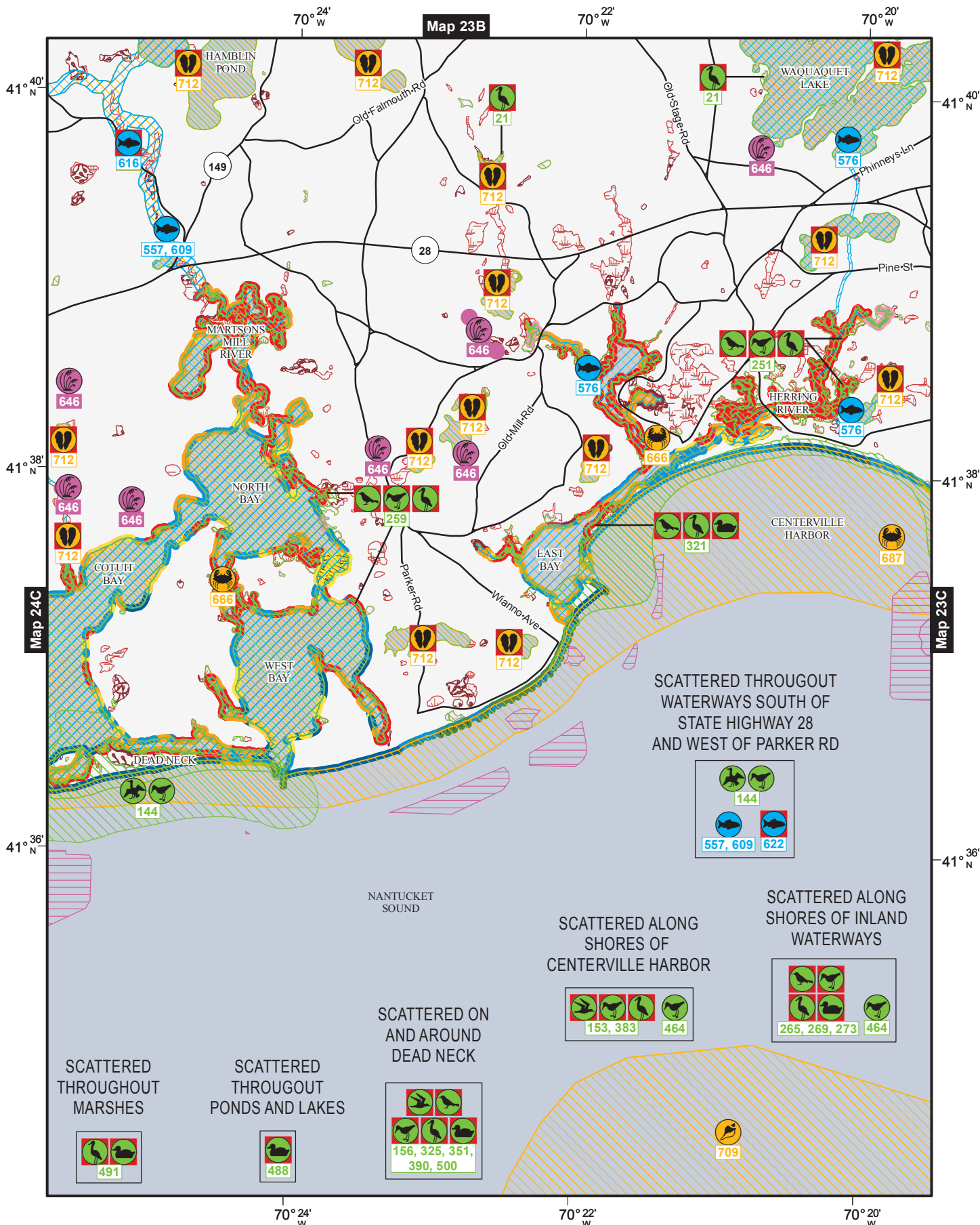
ESI Rank	Shoreline Habitat Classification	Length (Meters)	Length (Miles)	% of ESI Shoreline
10A	Salt and Brackish Water Marshes	41,234.53	25.62	41%
10C	Swamps	490.00	0.30	< 1%
10D	Scrub and Shrub Wetlands	734.78	0.46	1%
9A	Sheltered Tidal Flats	5,056.04	3.14	5%
9B	Vegetated Low Banks	6,137.94	3.81	6%
8A	Sheltered, Impermeable, Rocky Shores	44.56	0.03	< 1%
8B	Sheltered, Solid Man-Made Structures	3,895.87	2.42	4%
8C	Sheltered Riprap	3,347.99	2.08	3%
7	Exposed Tidal Flats	7,508.05	4.67	7%
6B	Gravel Beaches (Cobbles/Boulders)	1,769.16	1.10	2%
6B	Riprap	5,524.24	3.43	5%
5	Mixed Sand and Gravel Beaches	349.21	0.22	< 1%
4	Coarse Grained Sand Beaches	17,727.88	11.02	17%
3A	Fine to Medium Grained Sand Beaches	7,151.95	4.44	7%
1B	Exposed, Solid Man-Made Structures	609.13	0.38	1%

Total ESI Shoreline: 101,581.32 Total ESI Shoreline: 63.12
 Total Shoreline: 84,592.44 Total Shoreline: 52.56

Note: A shoreline segment may include multiple shoreline habitats. If any segments include multiple habitats, the combined length of all habitats may exceed the length of the mapped shoreline, and the percent of ESI shoreline values will sum to greater than 100%

All underlying GIS data can be obtained from response.restoration.noaa.gov

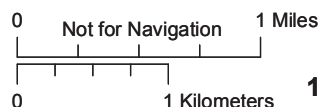




Map 23D
Mass. / Rhode Island



SEE BACK OF MAP
for details about mapped species and
other species that occur in mapped area.
Data Published: November 2016



1:50,000



Map 23D
Massachusetts and Rhode Island

BIOLOGICAL RESOURCES

Note: An asterisk (*) indicates that life stage occurs in this range but not in all months included

DISPLAYED ON MAP

BENTHIC

Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence											
						J	F	M	A	M	J	J	A	S	O	N	D
SAV	Eelgrass	High Ecological Value			Potential												
SAV	Eelgrass	High Ecological Value			Present												

BIRDS

Map ID	Subelement	Species	Mapping Qualifier	MA/RI		Concentration	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt
				S	F		J	F	M	A	M	J	J	A	S	O	N	D				
21	Wading	Marsh birds	General Distribution	C/C		Common												-	Mar-May	Aug-Nov	Jul-Aug	-
144	Diving	Great cormorant	Wintering			Common												-	Feb-Mar	Nov	-	-
	Shorebird	Purple sandpiper	Wintering			Common												-	Mar	Oct	-	-
153	Gull/Tern	Rare tern	Nesting	C/-		Rare												May-Aug	-	-	-	-
156	Gull/Tern	Rare tern	Nesting	C/-		Rare												May-Aug	-	-	-	-
251	Gull/Tern	Roseate tern	Nesting	E/-	E	Rare												May-Aug	-	-	-	-
	Passerine	Marsh passerines	General Distribution	-/C		Common												Apr-Aug	Apr-May	Aug-Nov	Sep-Oct	-
	Passerine	Saltmarsh sparrow	Nesting	-/C		Common												May-Jul	May	-	-	-
	Shorebird	Willet	Nesting	-/C		Common												Apr-May	Apr-May	Aug-Oct	-	-
																		Apr-Jul	Mar-May	Aug-Sep	-	-
259	Wading	Egrets	General Distribution	-/C		Common												-	Mar-May	Jul-Oct	-	-
	Wading	Wading birds	General Distribution	-/C		Common												Apr-Aug	Apr-May	Aug-Nov	Sep-Oct	-
																		Apr-May	Apr-May	Aug-Oct	-	-
	Passerine	Marsh passerines	General Distribution	-/C		Common												Apr-Aug	Mar-May	Aug-Sep	-	-
	Shorebird	Willet	Nesting	-/C		Common												May-Jul	May	-	-	-
265	Shorebird	Willet	Nesting	-/C		Common												Apr-May	Apr-May	Aug-Nov	Sep-Oct	-
	Wading	Egrets	General Distribution	-/C		Common												Apr-May	Mar-May	Aug-Sep	-	-
	Wading	Wading birds	General Distribution	-/C		Common												-	Mar-May	Jul-Oct	-	-
																		Apr-Aug	Apr-May	Aug-Nov	Sep-Oct	-
	Passerine	Marsh passerines	General Distribution	-/C		Common												May-Jul	May	-	-	-
269	Shorebird	Willet	Nesting	-/C		Common												-	Mar-May	Aug-Nov	Jul-Aug	-
	Wading	Egrets	General Distribution	-/C		Common												-	Mar-May	Jul-Oct	-	-
	Wading	Waterfowl	General Distribution	C/C		Common												May-Jul	Apr-May	Aug-Oct	Aug-Sep	-
	Passerine	Marsh passerines	General Distribution	-/C		Common												Apr-Aug	Apr-May	Aug-Nov	Sep-Oct	-
	Shorebird	Willet	Nesting	-/C		Common												Apr-May	Apr-May	Aug-Oct	-	-
	Wading	Egrets	Migration	-/C		Common												Apr-Jul	Mar-May	Aug-Sep	-	-
	Wading	Marsh birds	General Distribution	C/C		Common												-	Mar-May	Aug-Nov	Jul-Aug	-
	Wading	Wading birds	General Distribution	-/C		Common												-	Mar-May	Jul-Oct	-	-
	Waterfowl	Waterfowl	General Distribution	C/C		Common												May-Jul	Apr-May	Aug-Oct	Aug-Sep	-
	Passerine	Marsh passerines	General Distribution	-/C		Common												Apr-Aug	Apr-May	Aug-Nov	Sep-Oct	-
273	Shorebird	Willet	Nesting	-/C		Common												Apr-May	Apr-May	Aug-Oct	-	-
	Wading	Egrets	General Distribution	-/C		Common												Apr-Jul	Mar-May	Aug-Sep	-	-

BIRDS (continued)

Map ID	Subelement	Species	Mapping Qualifier	MA/RI S F	Concentration	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt
						J	F	M	A	M	J	J	A	S	O	N	D				
	Wading	Marsh birds	General Distribution	C/C	Common													-	Mar-May	Aug-Nov	Jul-Aug
	Wading	Wading birds	General Distribution	-/C	Common													-	Mar-May	Jul-Oct	-
	Waterfowl	Waterfowl	General Distribution	C/C	Common													May-Jul	Apr-May	Aug-Oct	Aug-Sep
321	Passerine	Marsh passerines	General Distribution	-/C	Common													Apr-Aug	Apr-May	Aug-Nov	Sep-Oct
	Passerine	Saltmarsh sparrow	Nesting	-/C	Common													May-Jul	May	-	-
	Wading	Egrets	General Distribution	-/C	Common													Apr-Jul	Mar-May	Aug-Sep	-
	Wading	Marsh birds	General Distribution	C/C	Common													-	Mar-May	Aug-Nov	Jul-Aug
	Waterfowl	Waterfowl	General Distribution	C/C	Common													May-Jul	Apr-May	Aug-Oct	Aug-Sep
325	Passerine	Marsh passerines	General Distribution	-/C	Common													Apr-Aug	Apr-May	Aug-Nov	Sep-Oct
	Wading	Egrets	Migration	-/C	Common													Apr-Jul	Mar-May	Aug-Sep	-
	Wading	Marsh birds	General Distribution	C/C	Common													-	Mar-May	Aug-Nov	Jul-Aug
	Waterfowl	Waterfowl	General Distribution	C/C	Common													May-Jul	Apr-May	Aug-Oct	Aug-Sep
351	Shorebird	American oystercatcher	Nesting	-/C	Rare													May-Aug	May	-	-
	Shorebird	Piping plover	Nesting	T/E	Common													Mar-Aug	Mar-Apr	Jul-Oct	-
	Shorebird	Red knot	Migration	T	Common													-	May-Jun	Jul-Sep	-
	Shorebird	Shorebirds	Migration		Common													-	Mar-Jun	Jul-Nov	Aug
383	Shorebird	Piping plover	Nesting	T/E	Common													Mar-Aug	Mar-Apr	Jul-Oct	-
	Shorebird	Red knot	Migration	T	Common													-	May-Jun	Jul-Sep	-
	Shorebird	Willet	Nesting	-/C	Common													Apr-May	Apr-May	Aug-Oct	-
	Wading	Wading birds	General Distribution	-/C	Common													-	Mar-May	Jul-Oct	-
390	Shorebird	Willet	Nesting	-/C	Common													Apr-May	Apr-May	Aug-Oct	-
	Wading	Wading birds	General Distribution	-/C	Common													-	Mar-May	Jul-Oct	-
	Shorebird	Shorebirds	Migration		Common													-	Mar-Jun	Jul-Nov	Aug
	Waterfowl	Waterfowl	General Distribution	C/C	Common													May-Jul	Apr-May	Aug-Oct	Aug-Sep
491	Wading	Marsh birds	General Distribution	C/C	Common													-	Mar-May	Aug-Nov	Jul-Aug
	Waterfowl	Waterfowl	General Distribution	C/C	Common													May-Jul	Apr-May	Aug-Oct	Aug-Sep
																		May-Aug	May	-	-
	Gull/Tern	Rare tern	Migration	C/-	Common													Mar-Aug	Apr-May	Jul-Sep	-

FISH

Map ID	Subelement	Species	Mapping Qualifier	MA/RI S F	Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
						J	F	M	A	M	J	J	A	S	O	N	D					
557	Diadromous	Alewife	Spawning Area		-													Apr-Jun	Apr-Jun	Apr-Jun	-	Apr-Jun
	Diadromous	American eel	Migration		-													-	-	-	Jan-Dec	Jan-Dec
	Diadromous	Blueback herring	Spawning Area		-													Apr-Jun	Apr-Jun	Apr-Jun	-	Apr-Jun
	Diadromous	Alewife	Spawning Area		-													Apr-Jun	Apr-Jun	Apr-Jun	-	Apr-Jun
576	Diadromous	American eel	Migration		-													-	-	-	Jan-Dec	Jan-Dec
	Diadromous	American shad	Spawning Area		-													Apr-Jun	Apr-Jun	Apr-Jun	-	Apr-Jun
	Diadromous	Blueback herring	Spawning Area		-													Apr-Jun	Apr-Jun	Apr-Jun	-	Apr-Jun
	Diadromous	American shad	Spawning Area		-													Apr-Jun	Apr-Jun	Apr-Jun	-	Apr-Jun
609	Diadromous	Sea lamprey	Vulnerable Occurrence		-													Jun-Aug	Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Freshwater	Blacknose dace	Vulnerable Occurrence		-													Mar-Jun	Mar-Jun	Apr-Jun	Jan-Dec	Jan-Dec
	Freshwater	Brook trout	Vulnerable Occurrence		-													Sep-Nov	Sep-Nov	Nov-Dec	Jan-Dec	Jan-Dec
	Freshwater	Common shiner	Vulnerable Occurrence		-													May-Aug	May-Aug	May-Aug	Jan-Dec	Jan-Dec
616	Freshwater	Creek chub	Vulnerable Occurrence		-													May-Aug	May-Aug	May-Aug	Jan-Dec	Jan-Dec
																		May-Aug	May-Aug	May-Aug	Jan-Dec	Jan-Dec
																		May-Aug	May-Aug	May-Aug	Jan-Dec	Jan-Dec
																		May-Aug	May-Aug	May-Aug	Jan-Dec	Jan-Dec

FISH (continued)

Map ID	Subelement	Species	Mapping Qualifier	MA/RI S F	Concentration	Monthly Presence												Eggs	Larvae	Juveniles	Adults
						J	F	M	A	M	J	J	A	S	O	N	D				
	Freshwater	Fallfish	Vulnerable Occurrence		-													-	-	Jan-Dec	Jan-Dec
	Freshwater	Longnose dace	Vulnerable Occurrence		-													-	-	Jan-Dec	Jan-Dec
	Freshwater	Slimy sculpin	Vulnerable Occurrence		-													-	-	Jan-Dec	Jan-Dec
	Freshwater	Tessellated darter	Vulnerable Occurrence		-													May-Jul	May-Aug	Jan-Dec	Jan-Dec
	Freshwater	White sucker	Vulnerable Occurrence		-													Apr-May	May-Jul	Jan-Dec	Jan-Dec
622	Estuarine Resident	Threespine stickleback	General Distribution	T/-	Common													Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec

HABITATS & RARE PLANTS

Map ID	Subelement	Species	Mapping Qualifier	MA/RI S F	Concentration	Monthly Presence											
						J	F	M	A	M	J	J	A	S	O	N	D
646	Wetland	Vernal pool	Vulnerable Occurrence		-												

INVERTEBRATES

Map ID	Subelement	Species	Mapping Qualifier	MA/RI S F	Concentration	Monthly Presence												Eggs	Larvae	Juveniles	Adults
						J	F	M	A	M	J	J	A	S	O	N	D				
666	Crab	Blue crab	Nursery		Common													Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
687	Crab	Horseshoe crab	Nursery		Abundant													May-Jul	-	Jan-Dec	Jan-Dec
709	Gastropod	Horseshoe crab	Spawning		Abundant													May-Jul	-	May-Jul	May-Jul
712	Bivalve	Knobbed whelk	Concentration Area		High													Jun-Jul	-	May-Oct	May-Oct
		Rare freshwater mussel	General Distribution	C/C	-													Aug-Sep	Jun-Jul	Jan-Dec	Jan-Dec

WIDESPREAD IN MAPPED AREA (> 10 SQUARE KILOMETERS)




BIRDS

Map ID	Subelement	Species	Mapping Qualifier	MA/RI S F	Concentration	Monthly Presence												Nest	Mig. (S)	Mig. (F)	Molt
						J	F	M	A	M	J	J	A	S	O	N	D				
	Alcid	Razorbill	Wintering		Common													-	-	Oct-Nov	-
	Diving	Loons	Migration	C/-	Common													-	Mar-Jun	Sep-Dec	Jan-Mar
	Gull/Tern	Rare tern	General Distribution	C/-	Common													-	Apr-May	Jul-Sep	-
		Roseate tern	General Distribution	E/- E	Common													-	Apr-May	Jul-Sep	-
	Waterfowl	Sea ducks	Wintering		Abundant													-	Mar-May	Sep-Oct	-


REPTILES & AMPHIBIANS

Map ID	Subelement	Species	Mapping Qualifier	MA/RI S F	Concentration	Monthly Presence												Nest	Hatch	Internest	Juveniles	Adults
						J	F	M	A	M	J	J	A	S	O	N	D					
	Amphibian	Eastern spadefoot	Vulnerable Occurrence	T/E	-													Apr-Jun	May-Jul	-	Jan-Dec	Jan-Dec
	Turtle	Green sea turtle	General Distribution	T/E T	Regular													-	-	-	May-Nov	May-Nov
		K. ridley sea turtle	General Distribution	E/E E	Regular													-	-	-	May-Nov	May-Nov
		Leatherback sea turtle	General Distribution	E/E E	Regular													-	-	-	May-Nov	May-Nov
		Loggerhead sea turtle	General Distribution	T/E T	Regular													-	-	-	May-Nov	May-Nov

INVERTEBRATES

Subelement	Species	Mapping Qualifier	MA/RI		Concentration	Monthly Presence												Eggs	Larvae	Juveniles	Adults
			S	F		J	F	M	A	M	J	J	A	S	O	N	D				
 Cephalopod	Longfin squid	Concentration Area			Common													May-Aug	May-Aug	Apr-Nov	Apr-Nov
 Crab	Horseshoe crab	Concentration Area			Medium													May-Jul	-	Apr-Oct	Apr-Oct
 Gastropod	Channeled whelk	Concentration Area			Med-Low													Jun-Jul	Aug-Oct	May-Oct	May-Oct
	Knobbed whelk	Concentration Area			Medium													Jun-Jul	Aug-Oct	May-Oct	May-Oct

MARINE MAMMALS

Subelement	Species	Mapping Qualifier	MA/RI		Concentration	Monthly Presence												Calving	Pupping	Molt
			S	F		J	F	M	A	M	J	J	A	S	O	N	D			
 Whale	Fin whale	General Distribution	E/E	E	Rare													-	-	-
	Humpback whale	General Distribution	E/E	E	Common													-	-	-
	N.A. right whale	General Distribution	E/E	E	Common													-	-	-
	Sei whale	General Distribution	E/-	E	Rare													-	-	-

TERRESTRIAL MAMMALS



Subelement	Species	Mapping Qualifier	MA/RI		Concentration	Monthly Presence											
			S	F		J	F	M	A	M	J	J	A	S	O	N	D
 Small Mammal	New England cottontail	General Distribution		-/C	Rare												

ALSO PRESENT IN MAPPED AREA (GENERAL DISTRIBUTION)




BIRDS

Subelement	Species	Mapping Qualifier	MA/RI		Concentration	Monthly Presence												Nest	Mig. (S)	Mig. (F)	Molt
			S	F		J	F	M	A	M	J	J	A	S	O	N	D				
 Alcid	Atlantic puffin																	-	Mar	Sep	-
 Diving	D. crested cormorant																	-	Mar-Apr	Sep-Oct	-
 Gull/Tern	Gulls																	-	Apr-May	Aug-Nov	-
 Pelagic	Northern gannet																	-	Apr-May	Oct-Nov	-
	Shearwaters																	-	May	Oct	-
 Shorebird	Red-necked phalarope																	-	May	Oct	-
 Waterfowl	American black duck																	-	Sep-Mar	-	-
	Diving ducks																	-	Mar-Apr	Sep-Apr	-
	Geese																	-	May	Sep-Nov	-

FISH

Subelement	Species	Mapping Qualifier	MA/RI		Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
			S	F		J	F	M	A	M	J	J	A	S	O	N	D					
 Diadromous	Alewife																	-	-	-	Jan-Dec	Jan-Dec
	American eel																	-	-	-	Jan-Dec	Jan-Dec
	American shad																	-	-	-	Jan-Dec	Jan-Dec
	Atlantic salmon																	Sep-Dec	Sep-Mar	Feb-Jul	Jan-Dec	Jan-Dec
	Blueback herring																	-	-	-	Jan-Dec	Jan-Dec
 Estuarine Nursery	Sea lamprey																	Jun-Aug	Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Striped bass																	-	-	-	Apr-Nov	Apr-Nov
	Atlantic herring																	Aug-Nov	Aug-Nov	Oct-Dec	Jan-Dec	Jan-Dec
	Bay anchovy																	Jun-Aug	Jun-Aug	Jun-Sep	Jan-Dec	Jan-Dec




FISH (continued)

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	Black sea bass													Feb-Jul	Feb-Jul	Mar-Jul	Jan-Dec	Jan-Dec
	Bluefish													-	-	Jun-Aug	May-Nov	May-Nov
	Northern kingfish													Jun-Jul	Jun-Jul	Jun-Aug	May-Nov	May-Nov
	Scup													May-Aug	May-Aug	Jun-Aug	May-Oct	May-Oct
	Summer flounder													Aug-Nov	Aug-Nov	Sep-Nov	Apr-Nov	Apr-Nov
	Windowpane													May-Aug	May-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Winter flounder													Jan-May	Jan-May	Feb-May	Jan-Dec	Jan-Dec
	Atlantic silverside													May-Aug	May-Aug	May-Sep	Jan-Dec	Jan-Dec
	Fourspine stickleback													May-Jul	May-Jul	May-Aug	Jan-Dec	Jan-Dec
	Mummichog													May-Aug	Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Atlantic cod													-	-	-	Apr-Aug	Apr-Aug
	Atlantic tomcod													Dec-Feb	Dec-Mar	Dec-Apr	Dec-Jun	Dec-Jun
	Atlantic wolffish													Mar-Aug	Mar-Aug	Mar-Sep	Jan-Dec	Jan-Dec
	Goosefish													-	-	-	-	Jan-Dec
	Haddock													Feb-Jun	Feb-Jun	Mar-Jun	Jan-Dec	Jan-Dec
	Little skate													Jan-Dec	Jan-Dec	-	Jan-Dec	Jan-Dec
	Pollock													-	-	-	Apr-Oct	Apr-Oct
	Red hake													Jun-Sep	Jun-Sep	Jul-Nov	Jun-Nov	Jun-Nov
	Red hake													-	-	-	Dec-May	Dec-May
	Rock gunnel													Nov-Mar	Nov-Apr	Jan-Jun	Jan-Dec	Jan-Dec
	Searobins													Jun-Sep	Jun-Sep	Jun-Oct	Jan-Dec	Jan-Dec
	Silver hake													Jul-Oct	Jul-Oct	Aug-Oct	Jul-Dec	Jul-Dec
	Silver hake													-	-	-	Jan-Jun	Jan-Jun
	Tautog													May-Aug	May-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	White hake													Apr-Sep	May-Nov	May-Nov	Jan-Dec	Jan-Dec
	Winter skate													-	-	-	Jan-Dec	Jan-Dec
	Yellowtail flounder													Mar-Jul	Mar-Jul	Apr-Jul	Jan-Dec	Jan-Dec
	Atlantic mackerel													May-Jul	May-Aug	May-Aug	Mar-Dec	Mar-Dec
	Spiny dogfish													-	-	-	Jan-Dec	Jan-Dec
	Tunas													-	-	-	Jun-Sep	-




REPTILES & AMPHIBIANS

Subelement	Species	Monthly Presence												Nest	Hatch	Internest	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	Eastern box turtle													Jun-Jul	Aug-Oct	-	Jan-Dec	Jan-Dec

INVERTEBRATES

Subelement	Species	Monthly Presence												Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D				
	Atlantic surfclam													Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Bay scallop													Jun-Sep	Jun-Sep	Jan-Dec	Jan-Dec
	Blue mussel													May-Nov	May-Nov	Jan-Dec	Jan-Dec
	Eastern oyster													Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Northern quahog													Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Sea scallop													Jul-Oct	Jul-Oct	Jan-Dec	Jan-Dec
	Softshell clam													Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Atlantic rock crab													May-Oct	Jun-Oct	Jan-Dec	Jan-Dec
	Blue crab													-	Jun-Aug	Jan-Dec	Jan-Dec
	Jonah crab													May-Oct	May-Oct	Jan-Dec	Jan-Dec
	American lobster													Aug-Nov	Jun-Oct	Jan-Dec	Jan-Dec
	Db grass shrimp													May-Jul	May-Jul	Jan-Dec	Jan-Dec
	Sevenspine bay shrimp													May-Jul	May-Jul	Jan-Dec	Jan-Dec

MARINE MAMMALS

Subelement	Species	Monthly Presence												Mating	Calving	Pupping	Molt
		J	F	M	A	M	J	J	A	S	O	N	D				
	Atl. wht.-side dolphin													-	-	-	-
	Bottlenose dolphin													-	-	-	-
	Harbor porpoise													-	-	-	-
	Risso's dolphin													-	-	-	-
	Short-beaked common dolphin													-	-	-	-
	Gray seal													Dec-Feb	Dec-Feb	Dec-Feb	Mar-May
	Harbor seal													-	-	-	-
	Harp seal													-	-	-	-
	Hooded seal													-	-	-	-
	Minke whale													-	-	-	-
	Pilot whales													-	-	-	-

For additional information about species locations and extent, reference the underlying GIS data available from response.restoration.noaa.gov

ESI POLYGON HABITAT TYPES

ESI Rank	Habitat Classification	Area (Acres)	Area (Sq. Miles)
10A	Salt and Brackish Water Marshes	270.20	0.42
10B	Freshwater Marshes	37.35	0.06
10C	Swamps	280.11	0.44
10D	Scrub and Shrub Wetlands	143.63	0.22
9A	Sheltered Tidal Flats	25.95	0.04
7	Exposed Tidal Flats	3.90	0.01
5	Mixed Sand and Gravel Beaches	0.24	0.00

ESI SHORELINE HABITAT TYPES

ESI Rank	Shoreline Habitat Classification	Length (Meters)	Length (Miles)	% of ESI Shoreline
10A	Salt and Brackish Water Marshes	44,188.94	27.46	41%
10B	Freshwater Marshes	1,868.69	1.16	2%
10C	Swamps	578.86	0.36	1%
10D	Scrub and Shrub Wetlands	1,596.55	0.99	1%
9A	Sheltered Tidal Flats	9,340.24	5.80	9%
9B	Vegetated Low Banks	15,614.39	9.70	14%
8B	Sheltered, Solid Man-Made Structures	6,054.15	3.76	6%
8C	Sheltered Riprap	1,661.47	1.03	2%
7	Exposed Tidal Flats	1,002.82	0.62	1%
6B	Riprap	2,793.97	1.74	3%
5	Mixed Sand and Gravel Beaches	306.04	0.19	< 1%
4	Coarse Grained Sand Beaches	16,426.81	10.21	15%
3A	Fine to Medium Grained Sand Beaches	7,240.01	4.50	7%

Total ESI Shoreline: 108,672.95 Total ESI Shoreline: 67.53
Total Shoreline: 91,478.60 Total Shoreline: 56.84

Note: A shoreline segment may include multiple shoreline habitats. If any segments include multiple habitats, the combined length of all habitats may exceed the length of the mapped shoreline, and the percent of ESI shoreline values will sum to greater than 100%

All underlying GIS data can be obtained from response.restoration.noaa.gov



Map 24
Massachusetts and Rhode Island

HUMAN USE RESOURCES

DISPLAYED ON MAP (POINTS)				
Map ID	Type	Name	Contact	Phone
1	AIRPORT	FALMOUTH AIRPARK		
2	BOAT RAMP	LOVELLS POND	MDFG, OFFICE OF FISHING AND BOATING ACCESS	508-389-7810
3	BOAT RAMP	MASHPREE/WAKEBY POND	MDFG, OFFICE OF FISHING AND BOATING ACCESS	508-389-7810
4	BOAT RAMP	ASHUMET POND	MDFG, OFFICE OF FISHING AND BOATING ACCESS	508-389-7810
5	BOAT RAMP	JOHNS POND	MDFG, OFFICE OF FISHING AND BOATING ACCESS	508-389-7810
6	BOAT RAMP	MEGANESETT HARBOR	MDFG, OFFICE OF FISHING AND BOATING ACCESS	508-389-7810
7	BOAT RAMP	SEAPIT RIVER (SEAPIT LANDING)	MDFG, OFFICE OF FISHING AND BOATING ACCESS	508-389-7810
8	BOAT RAMP	POPPONESSET BEACH SHORE FISH. A	MDFG, OFFICE OF FISHING AND BOATING ACCESS	508-389-7810
9	LOCK AND DAM	BOURNES POND DAM-RT. #28	MDFG, OFFICE OF FISHING AND BOATING ACCESS	508-389-7810
10	LOCK AND DAM	RED BROOK ROAD DAM		
11	MARINA	BOURNE MARINA		
12	MARINA	NEW SEABURY MARINA		
13	MARINA	MASHPREE NECK MARINA		
14	MARINA	EDWARDS BOAT YARD, INC.		
15	MARINA	BREWER FIDDLER'S COVE MARINA		
16	MARINA	FIDDLERS COVE MARINA		
17	MARINA	CONTINENTAL MARINE		
18	MARINA	CONUIT TOWN WHARF		
19	MARINA	MONUMENT BEACH MARINA		
20	MARINA	KINGMAN YACHT CENTER		
21	MARINA	PARKERS BOAT YARD		
22	MARINA	BEVANS MARINE		
23	MARINA	SANDWICH MARINA		
24	RENEWABLE ENERGY	FL-1577 WIND TURBINE		
25	REPEATED MEASUREMENT SITE	INVASIVES - COTUIT TOWN DOCK		
26	REPEATED MEASUREMENT SITE	INVASIVES - SANDWICH MARINA		
27	REPEATED MEASUREMENT SITE	TIDE GAUGE - CAPE COD CANAL, EAST ENTRANCE		
28	REPEATED MEASUREMENT SITE	TIDE GAUGE - CAPE COD CANAL, BOURNE DALE		
29	REPEATED MEASUREMENT SITE	TIDE GAUGE - CAPE COD CANAL, BOURNE BRIDGE		
30	REPEATED MEASUREMENT SITE	TIDE GAUGE - COTUIT HIGHLANDS		
31	REPEATED MEASUREMENT SITE	TIDE GAUGE - POPONESSET ISLAND, POPONESSET BAY		
32	REPEATED MEASUREMENT SITE	TIDE GAUGE - MONUMENT BEACH		
33	REPEATED MEASUREMENT SITE	TIDE GAUGE - GRAY GABLES		
34	REPEATED MEASUREMENT SITE	TIDE GAUGE - CAPE COD CANAL, RR. BRIDGE		
DISPLAYED ON MAP (POLYGONS)				
Map ID	Type	Name	Contact	Phone
35	AQUACULTURE	OYSTER	CHRISTOPHER SCHILLACI, MA DMF, N. BEDFORD, MA	508-990-2860
36	AQUACULTURE	PETIT OYSTER	CHRISTOPHER SCHILLACI, MA DMF, N. BEDFORD, MA	508-990-2860
37	AQUACULTURE	QUAHOG	CHRISTOPHER SCHILLACI, MA DMF, N. BEDFORD, MA	508-990-2860

DISPLAYED ON MAP (POLYGONS) (continued)				
38	AQUACULTURE	SOFT CLAM	CHRISTOPHER SCHILLACI, MA DMF, N. BEDFORD, MA	508-990-2860
39	CRITICAL HABITAT	CRITICAL HABITAT: NORTH ATLANTIC RIGHT WHALE		
40	LANDFILL	BOURNE LANDFILL	BOURNE ISWM DEPT., GEN MGR	508-759-0651
41	MANAGEMENT AREA	NARW SMA - NE U.S. CAPE COD BAY		
42	MANAGEMENT AREA	LOBSTER MANAGEMENT AREA 1		
43	MANAGEMENT AREA	LOBSTER MANAGEMENT AREA 2		
44	MANAGEMENT AREA	CAPE COD BAY RESTRICTED AREA		
45	MANAGEMENT AREA	CAPE COD SOUTH CLOSURE AREA		
46	MANAGEMENT AREA	NORTHERN INSHORE STATE TRAP/POT WATERS AREA		
47	MANAGEMENT AREA	NORTHERN NEARSHORE TRAP/POT WATERS AREA		
48	MANAGEMENT AREA	OTHER NORTHEAST GILLNET WATERS AREA		
49	MANAGEMENT AREA	PICKEREL COVE WMA	EOEEA, DEPARTMENT OF FISH AND GAME	617-626-1500
50	MANAGEMENT AREA	FISK FORESTDALE WMA	EOEEA, DEPARTMENT OF FISH AND GAME	617-626-1500
51	MANAGEMENT AREA	FRANCES A. CRANE WMA	EOEEA, DEPARTMENT OF FISH AND GAME	617-626-1500
52	MANAGEMENT AREA	SANDWICH HOLLOWES WMA	EOEEA, DEPARTMENT OF FISH AND GAME	617-626-1500
53	MANAGEMENT AREA	HOG PONDS WMA	EOEEA, DEPARTMENT OF FISH AND GAME	617-626-1500
54	MANAGEMENT AREA	CAMP EDWARDS WMA	EOEEA, DEPARTMENT OF FISH AND GAME	617-626-1500
55	MANAGEMENT AREA	OLD SANDWICH GAME FARM WMA	EOEEA, DEPARTMENT OF FISH AND GAME	617-626-1500
56	MANAGEMENT AREA	QUASHNET RIVER WMA	EOEEA, DEPARTMENT OF FISH AND GAME	617-626-1500
57	MANAGEMENT AREA	QUASHNET WOODS STATE RESERVATION & WMA	EOEEA, DEPT. OF CONSERVATION AND RECREATION	617-626-1250
58	MANAGEMENT AREA	TRIANGLE POND WMA	EOEEA, DEPARTMENT OF FISH AND GAME	617-626-1500
59	MANAGEMENT AREA	MASHPEE PINE BARRENS WMA	EOEEA, DEPARTMENT OF FISH AND GAME	617-626-1500
60	MANAGEMENT AREA	MASHPEE RIVER WMA	EOEEA, DEPARTMENT OF FISH AND GAME	617-626-1500
61	REGIONAL OR STATE PARK	SUTTON PRESERVE	EOEEA, DEPT. OF CONSERVATION AND RECREATION	617-626-1250
62	REGIONAL OR STATE PARK	OHMAN PRESERVE	EOEEA, DEPT. OF CONSERVATION AND RECREATION	617-626-1250
63	REGIONAL OR STATE PARK	SANTUIT POND PRESERVE	EOEEA, DEPT. OF CONSERVATION AND RECREATION	617-626-1250
64	REGIONAL OR STATE PARK	OLD FIELD POND PRESERVE	EOEEA, DEPT. OF CONSERVATION AND RECREATION	617-626-1250
65	WILDLIFE REFUGE	NERRS WAQUOIT BAY RESERVE	ADRIAN BANDONI, WAQUOIT BAY NERR	508-457-0495
66	WILDLIFE REFUGE	MASHPEE NATIONAL WILDLIFE REFUGE	TOM EAGLE, USFWS, E. MANWR COMPLEX	978-579-4027
ALSO PRESENT IN MAPPED AREA (POINTS)				
Type	Name	Contact	Phone	
COAST GUARD	AIRSTA CAPE COD	USCG	508-968-6300	
COAST GUARD	COMMSTA BOSTON-NMF	USCG	508-888-4556	
COAST GUARD	ESD CAPE COD			
COAST GUARD	MSD CAPE COD	USCG	508-968-6556	
COAST GUARD	ORDNANCE SUPPORT FACILITY			
COAST GUARD	PSU 301			
COAST GUARD	TRAINING TEAMS/CENTERS	USCG	508-968-6602	
ESSENTIAL HABITAT	FAIRY SHRIMP -VERNAL POOL	MA DFW NHESP, WESTBOROUGH, MA	508-389-6375	
ESSENTIAL HABITAT	OBLIGATE SPECIES -VERNAL POOL	MA DFW NHESP, WESTBOROUGH, MA	508-389-6375	
ESSENTIAL HABITAT	OBLIGATE SPECIES, FACULTATIVE SPECIES -VERNAL POOL	MA DFW NHESP, WESTBOROUGH, MA	508-389-6375	
ESSENTIAL HABITAT	OBLIGATE SPECIES, FAIRY SHRIMP -VERNAL POOL	MA DFW NHESP, WESTBOROUGH, MA	508-389-6375	

ALSO PRESENT IN MAPPED AREA (POLYGONS)

Type	Name	Contact	Phone
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: AMERICAN PLAICE	NORTHEAST FISHERIES MANAGEMENT COUNCIL	
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: ATLANTIC COD	NORTHEAST FISHERIES MANAGEMENT COUNCIL	
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: ATLANTIC HALIBUT	NORTHEAST FISHERIES MANAGEMENT COUNCIL	
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: ATLANTIC HERRING	NORTHEAST FISHERIES MANAGEMENT COUNCIL	
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: ATLANTIC WOLFFISH	NORTHEAST FISHERIES MANAGEMENT COUNCIL	
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: HADDOCK	NORTHEAST FISHERIES MANAGEMENT COUNCIL	
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: LITTLE SKATE	NORTHEAST FISHERIES MANAGEMENT COUNCIL	
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: MONKFISH	NORTHEAST FISHERIES MANAGEMENT COUNCIL	
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: OCEAN POUT	NORTHEAST FISHERIES MANAGEMENT COUNCIL	
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: POLLOCK	NORTHEAST FISHERIES MANAGEMENT COUNCIL	
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: RED HAKE	NORTHEAST FISHERIES MANAGEMENT COUNCIL	
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: SEA SCALLOP	NORTHEAST FISHERIES MANAGEMENT COUNCIL	
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: SILVER HAKE	NORTHEAST FISHERIES MANAGEMENT COUNCIL	
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: WHITE HAKE	NORTHEAST FISHERIES MANAGEMENT COUNCIL	
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: WINDOW PANE FLOUNDER	NORTHEAST FISHERIES MANAGEMENT COUNCIL	
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: WINTER FLOUNDER	NORTHEAST FISHERIES MANAGEMENT COUNCIL	
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: WINTER SKATE	NORTHEAST FISHERIES MANAGEMENT COUNCIL	
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT: YELLOWTAIL FLOUNDER	NORTHEAST FISHERIES MANAGEMENT COUNCIL	
MANAGEMENT AREA	PRIORITY HABITAT	MDFW NHESP	508-389-6380
STATE PROTECTED AREA	SHAWME-CROWELL STATE FOREST	EOEEA, DEPT. OF CONSERVATION AND RECREATION	617-626-1250

JURISDICTIONS

COUNTY: BARNSTABLE, PLYMOUTH
COAST GUARD: DISTRICT 1, SECTOR SE NEW ENGLAND
USACE: NORTH ATLANTIC DIVISION, NEW ENGLAND DISTRICT

FEMA: REGION I
EPA: REGION 1

ESI POLYGON HABITAT TYPES

ESI Rank	Habitat Classification	Area (Acres)	Area (Sq. Miles)
10A	Salt and Brackish Water Marshes	1,256.81	1.96
10B	Freshwater Marshes	140.20	0.22
10C	Swamps	842.23	1.32
10D	Scrub and Shrub Wetlands	510.34	0.80
9A	Sheltered Tidal Flats	108.76	0.17
7	Exposed Tidal Flats	85.22	0.13
5	Mixed Sand and Gravel Beaches	2.78	0.00
2A	Exposed, Wave-Cut Platforms (Bedrock/Mud/Clay)	0.03	0.00

ESI SHORELINE HABITAT TYPES

ESI Rank	Shoreline Habitat Classification	Length (Meters)	Length (Miles)	% of ESI Shoreline
10A	Salt and Brackish Water Marshes	178,641.65	111.00	43%
10B	Freshwater Marshes	2,741.18	1.70	1%
10C	Swamps	2,743.43	1.70	1%
10D	Scrub and Shrub Wetlands	2,153.32	1.34	1%
9A	Sheltered Tidal Flats	37,473.19	23.28	9%
9B	Vegetated Low Banks	48,723.52	30.28	12%
8A	Sheltered, Impermeable, Rocky Shores	20.75	0.01	< 1%
8B	Sheltered, Solid Man-Made Structures	12,618.61	7.84	3%
8C	Sheltered Riprap	20,687.16	12.85	5%
7	Exposed Tidal Flats	33,237.33	20.65	8%
6A	Gravel Beaches	60.70	0.04	< 1%
6B	Gravel Beaches (Cobbles/Boulders)	291.72	0.18	< 1%
6B	Riprap	7,083.48	4.40	2%
5	Mixed Sand and Gravel Beaches	1,413.54	0.88	< 1%
4	Coarse Grained Sand Beaches	35,369.23	21.98	9%
3A	Fine to Medium Grained Sand Beaches	25,461.41	15.82	6%
1A	Exposed, Rocky Shores	42.73	0.03	< 1%
1B	Exposed, Solid Man-Made Structures	4,833.69	3.00	1%

Total ESI Shoreline: 413,596.65 Total ESI Shoreline: 257.00
 Total Shoreline: 323,207.16 Total Shoreline: 200.83

Note: A shoreline segment may include multiple shoreline habitats. If any segments include multiple habitats, the combined length of all habitats may exceed the length of the mapped shoreline, and the percent of ESI shoreline values will sum to greater than 100%

All underlying GIS data can be obtained from response.restoration.noaa.gov



Map 24A
Massachusetts and Rhode Island

BIOLOGICAL RESOURCES

Note: An asterisk (*) indicates that life stage occurs in this range but not in all months included

DISPLAYED ON MAP

BENTHIC

Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence											
						J	F	M	A	M	J	J	A	S	O	N	D
SAV	Eelgrass	High Ecological Value			Patchy												
SAV	Eelgrass	High Ecological Value			Dense												
SAV	Rare aquatic/wetland plant	High Ecological Value			Present												

BIRDS

Map ID	Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence										Nest	Mig. (S)	Mig. (F)	Molt
								J	F	M	A	M	J	J	A	S	O				
130	Alcid	Razorbill	Wintering				Common											-	-	Oct-Nov	-
	Diving	Loons	Migration			C/-	Common											-	Mar-Jun	Sep-Dec	Jan-Mar
	Gull/Tern	Roseate tern	General Distribution			E/-	Common											-	Apr-May	Jul-Sep	-
	Waterfowl	American black duck	Wintering				Common											Mar-Apr	Sep-Apr	-	-
	Waterfowl	Diving ducks	Wintering				Common											Mar-Apr	Sep-Apr	-	-
	Waterfowl	Geese	Wintering				Common											May	Mar-May	Sep-Nov	-
136	Alcid	Razorbill	Wintering				Common											-	-	Oct-Nov	-
	Diving	Loons	Migration			C/-	Common											-	Mar-Jun	Sep-Dec	Jan-Mar
	Gull/Tern	Rare tern	General Distribution			C/-	Common											-	Apr-May	Jul-Sep	-
	Gull/Tern	Roseate tern	General Distribution			E/-	Common											-	Apr-May	Jul-Sep	-
	Waterfowl	Sea ducks	Wintering				Common											-	Mar-May	Sep-Oct	-
137	Alcid	Razorbill	Wintering				Common											-	-	Oct-Nov	-
	Diving	Loons	Migration			C/-	Common											-	Mar-Jun	Sep-Dec	Jan-Mar
	Gull/Tern	Roseate tern	General Distribution			E/-	Common											-	Apr-May	Jul-Sep	-
153	Gull/Tern	Rare tern	Nesting			C/-	Rare											May-Aug	-	-	-
251	Passerine	Marsh passerines	General Distribution			-C	Common											Apr-Aug	Apr-May	Aug-Nov	Sep-Oct
	Passerine	Saltmarsh sparrow	Nesting			-C	Common											May-Jul	May	-	-
	Shorebird	Willet	Nesting			-C	Common											Apr-May	Apr-May	Aug-Oct	-
	Wading	Egrets	General Distribution			-C	Common											Apr-Jul	Mar-May	Aug-Sep	-
	Wading	Wading birds	General Distribution			-C	Common											-	Mar-May	Jul-Oct	-
265	Passerine	Marsh passerines	General Distribution			-C	Common											Apr-Aug	Apr-May	Aug-Nov	Sep-Oct
	Passerine	Saltmarsh sparrow	Nesting			-C	Common											May-Jul	May	-	-
	Shorebird	Willet	Nesting			-C	Common											Apr-May	Apr-May	Aug-Oct	-
	Wading	Egrets	General Distribution			-C	Common											Apr-Jul	Mar-May	Aug-Sep	-
	Wading	Marsh birds	General Distribution			C/C	Common											-	Mar-May	Aug-Nov	Jul-Aug
	Wading	Wading birds	General Distribution			-C	Common											-	Mar-May	Jul-Oct	-
272	Waterfowl	Waterfowl	General Distribution			C/C	Common											May-Jul	Apr-May	Aug-Oct	Aug-Sep
	Passerine	Marsh passerines	General Distribution			-C	Common											Apr-Aug	Apr-May	Aug-Nov	Sep-Oct
	Passerine	Seaside sparrow	Nesting			-C	Rare											May-Aug	May	Aug	-
	Shorebird	Willet	Nesting			-C	Common											Apr-May	Apr-May	Aug-Oct	-

BIRDS (continued)

Map ID	Subelement	Species	Mapping Qualifier	MA/RI		Monthly Presence												Concentration	Nest	Mig.(S)	Mig.(F)	Molt
				S	F	J	F	M	A	M	J	J	A	S	O	N	D					
321	Wading	Egrets	General Distribution	-/C													Apr-Jul	Mar-May	Aug-Sep	-		
	Wading	Marsh birds	General Distribution	C/C													-	Mar-May	Aug-Nov	Jul-Aug		
	Wading	Wading birds	General Distribution	-/C													-	Mar-May	Jul-Oct	-		
	Waterfowl	Waterfowl	General Distribution	C/C													May-Jul	Apr-May	Aug-Oct	Aug-Sep		
	Passerine	Marsh passerines	General Distribution	-/C													Apr-Aug	Apr-May	Aug-Nov	Sep-Oct		
	Passerine	Saltmarsh sparrow	Nesting	-/C													May-Jul	May	-	-		
	Wading	Egrets	General Distribution	-/C													Apr-Jul	Mar-May	Aug-Sep	-		
	Wading	Marsh birds	General Distribution	C/C													-	Mar-May	Aug-Nov	Jul-Aug		
	Waterfowl	Waterfowl	General Distribution	C/C													May-Jul	Apr-May	Aug-Oct	Aug-Sep		
	328	Passerine	Marsh passerines	General Distribution	-/C												Apr-Aug	Apr-May	Aug-Nov	Sep-Oct		
	Passerine	Seaside sparrow	Nesting														May-Aug	May	Aug	-		
	Wading	Egrets	General Distribution	-/C													Apr-Jul	Mar-May	Aug-Sep	-		
	Wading	Marsh birds	General Distribution	C/C													-	Mar-May	Aug-Nov	Jul-Aug		
	Waterfowl	Waterfowl	General Distribution	C/C													May-Jul	Apr-May	Aug-Oct	Aug-Sep		
	390	Shorebird	Willet	Nesting	-/C												Apr-May	Apr-May	Aug-Oct	-		
393	Wading	Wading birds	General Distribution	-/C													-	Mar-May	Jul-Oct	-		
	Waterfowl	American black duck	Wintering														Mar-Apr	Sep-Apr	-	-		
	Waterfowl	Diving ducks	Wintering														Mar-Apr	Sep-Apr	-	-		
	Waterfowl	Geese	Wintering														May	Mar-May	Sep-Nov	-		
	396	Waterfowl	American black duck	Wintering													Mar-Apr	Sep-Apr	-	-		
	Waterfowl	Diving ducks	Wintering														Mar-Apr	Sep-Apr	-	-		
	Waterfowl	Geese	Wintering														May	Mar-May	Sep-Nov	-		
	Waterfowl	Waterfowl	General Distribution	C/C													May-Jul	Apr-May	Aug-Oct	Aug-Sep		
	Shorebird	Piping plover	Nesting	T/E													Mar-Aug	Mar-Apr	Jul-Oct	-		
	440	Shorebird	Red knot	Migration	T												-	May-Jun	Jul-Sep	-	-	
464	Shorebird	Shorebirds	Migration														-	Mar-Jun	Jul-Nov	Aug	-	
488	Waterfowl	Waterfowl	General Distribution	C/C													May-Jul	Apr-May	Aug-Oct	Aug-Sep		
491	Wading	Marsh birds	General Distribution	C/C													-	Mar-May	Aug-Nov	Jul-Aug	-	
497	Waterfowl	Waterfowl	General Distribution	C/C													May-Jul	Apr-May	Aug-Oct	Aug-Sep	-	
	Gull/Tern	Rare tern	General Distribution	C/-													-	Apr-May	Jul-Sep	-	-	

FISH

Map ID	Subelement	Species	Mapping Qualifier	MA/RI		Concentration	Monthly Presence												Larvae	Juveniles	Adults			
				S	F		J	F	M	A	M	J	J	A	S	O	N	D						
576	Diadromous	Alewife	Spawning Area			-											Apr-Jun	Apr-Jun	Apr-Jun	Apr-Jun	-	Jan-Dec	Apr-Jun	Jan-Dec
	Diadromous	American eel	Migration			-											-	-	-	-	-	-	-	Jan-Dec
	Diadromous	American shad	Spawning Area			-											Apr-Jun	Apr-Jun	Apr-Jun	Apr-Jun	-	-	Apr-Jun	Apr-Jun
	Diadromous	Blueback herring	Spawning Area			-											Apr-Jun	Apr-Jun	Apr-Jun	Apr-Jun	-	-	Apr-Jun	Apr-Jun
577	Diadromous	Alewife	Spawning Area			-											Apr-Jun	Apr-Jun	Apr-Jun	Apr-Jun	-	-	Apr-Jun	Apr-Jun
	Diadromous	American eel	Migration			-											-	-	-	-	-	-	Jan-Dec	Jan-Dec
	Diadromous	American shad	Spawning Area			-											Apr-Jun	Apr-Jun	Apr-Jun	Apr-Jun	-	-	Apr-Jun	Apr-Jun
	Diadromous	Blueback herring	Spawning Area			-											Apr-Jun	Apr-Jun	Apr-Jun	Apr-Jun	-	-	Apr-Jun	Apr-Jun
	Diadromous	Sea lamprey	Vulnerable Occurrence			-											Jun-Aug	Jun-Aug	Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec	Jan-Dec	Jan-Dec
	Freshwater	American brook lamprey	Spawning Area			-											Apr-Jul	Apr-Jul	Apr-Jul	May-Aug	Jan-Dec	Jan-Dec	Jan-Dec	Jan-Dec

537

FISH (continued)

Map ID	Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
								J	F	M	A	M	J	J	A	S	O	N	D					
	Freshwater	Blacknose dace	Vulnerable Occurrence				-													Mar-Jun	Mar-Jun	Apr-Jun	Jan-Dec	Jan-Dec
	Freshwater	Brook trout	Vulnerable Occurrence				-													Sep-Nov	Sep-Nov	Nov-Dec	Jan-Dec	Jan-Dec
	Freshwater	Common shiner	Vulnerable Occurrence				-													May-Aug	May-Aug	May-Aug	Jan-Dec	Jan-Dec
	Freshwater	Creek chub	Vulnerable Occurrence				-													May-Aug	May-Aug	May-Aug	Jan-Dec	Jan-Dec
	Freshwater	Fallfish	Vulnerable Occurrence				-													-	-	-	Jan-Dec	Jan-Dec
	Freshwater	Longnose dace	Vulnerable Occurrence				-													-	-	-	Jan-Dec	Jan-Dec
	Freshwater	Slimy sculpin	Vulnerable Occurrence				-													-	-	-	Jan-Dec	Jan-Dec
	Freshwater	Tessellated darter	Vulnerable Occurrence				-													May-Jul	May-Jul	May-Aug	Jan-Dec	Jan-Dec
	Freshwater	White sucker	Vulnerable Occurrence				-													Apr-May	May-Jul	May-Jul	Jan-Dec	Jan-Dec
592	Diadromous	American eel	Migration				-													-	-	-	Jan-Dec	Jan-Dec

HABITATS & RARE PLANTS

Map ID	Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
								J	F	M	A	M	J	J	A	S	O	N	D					
638	Plant	Rare plant	Vulnerable Occurrence				-																	
646	Wetland	Vernal pool	Vulnerable Occurrence				-																	

REPTILES & AMPHIBIANS

Map ID	Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence												Nest	Hatch	Internest	Juveniles	Adults
								J	F	M	A	M	J	J	A	S	O	N	D					
662	Turtle	Green sea turtle	General Distribution				Regular													-	-	-	May-Nov	May-Nov
	Turtle	K. ridley sea turtle	General Distribution				Regular													-	-	-	May-Nov	May-Nov
	Turtle	Leatherback sea turtle	General Distribution				Regular													-	-	-	May-Nov	May-Nov
	Turtle	Loggerhead sea turtle	General Distribution				Regular													-	-	-	May-Nov	May-Nov



INVERTEBRATES

Map ID	Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
								J	F	M	A	M	J	J	A	S	O	N	D					
666	Crab	Blue crab	Nursery				Common													Jun-Aug	-	Jun-Aug	Jan-Dec	Jan-Dec
	Crab	Horseshoe crab	Nursery				Abundant													May-Jul	May-Jul	-	Jan-Dec	Jan-Dec
671	Crab	Blue crab	Nursery				Common													Jun-Aug	-	Jun-Aug	Jan-Dec	Jan-Dec
	Crab	Horseshoe crab	Nursery				Abundant													May-Jul	May-Jul	-	Jan-Dec	Jan-Dec
	Crab	Jonah crab	Concentration Area				Low													May-Oct	May-Oct	May-Oct	Apr-Oct	Apr-Oct
678	Cephalopod	Longfin squid	Concentration Area				Common													May-Aug	May-Aug	May-Aug	Apr-Nov	Apr-Nov
687	Crab	Horseshoe crab	Spawning				Abundant													May-Jul	May-Jul	-	May-Jul	May-Jul
690	Crab	Horseshoe crab	Concentration Area				Medium													May-Jul	May-Jul	-	Apr-Oct	Apr-Oct
692	Lobster	American lobster	Concentration Area				Medium													Aug-Sep	Jun-Sep	Jun-Sep	Jun-Sep	Jun-Sep
699	Crab	Jonah crab	Concentration Area				Low													May-Oct	May-Oct	May-Oct	Apr-Oct	Apr-Oct
700	Lobster	American lobster	Concentration Area				High													Aug-Sep	Jun-Sep	Jun-Sep	Jun-Sep	Jun-Sep
702	Bivalve	Sea scallop	Concentration Area				Medium													Jul-Oct	Jul-Oct	Jul-Oct	May-Oct	May-Oct
712	Bivalve	Rare freshwater mussel	General Distribution				-													Aug-Sep	Aug-May	Jun-Jul	Jan-Dec	Jan-Dec

MARINE MAMMALS

Map ID	Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence												Mating	Calving	Pupping	Molt
								J	F	M	A	M	J	J	A	S	O	N	D				
715	Whale	Fin whale	General Distribution	E/E	E		Rare													-	-	-	-
	Whale	Humpback whale	General Distribution	E/E	E		Common													-	-	-	-
	Whale	N.A. right whale	Concentration Area	E/E	E		Common													-	-	-	-
	Whale	Sei whale	General Distribution	E/-	E		Rare													-	-	-	-
WIDESPREAD IN MAPPED AREA (> 10 SQUARE KILOMETERS)																							

BIRDS

Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Juveniles	Molt
							J	F	M	A	M	J	J	A	S	O	N	D					
	Passerine	Grasshopper sparrow		T/T	E														Jun-Aug	-	-	-	-
	Shorebird	Upland sandpiper		E/-															May-Jul	May	Jul	-	-

REPTILES & AMPHIBIANS







Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence												Nest	Hatch	Internest	Juveniles	Adults
							J	F	M	A	M	J	J	A	S	O	N	D					
	Amphibian	Eastern spadefoot		T/E		-													Apr-Jun	May-Jul	-	Jan-Dec	Jan-Dec

TERRESTRIAL MAMMALS





Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence												Nest	Hatch	Internest	Juveniles	Molt
							J	F	M	A	M	J	J	A	S	O	N	D					
	Small Mammal	New England cottontail		-/C		Rare																	

ALSO PRESENT IN MAPPED AREA (GENERAL DISTRIBUTION)

BIRDS

Subelement	Species	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt		
		J	F	M	A	M	J	J	A	S	O	N	D						
	Alcid	Atlantic puffin														Mar	Sep	-	
	Diving	D. crested cormorant														Mar-Apr	Sep-Oct	-	
	Gull/Tern	Gulls														Apr-May	Aug-Nov	-	
	Pelagic	Northern gannet														Apr-May	Oct-Nov	-	
		Shearwaters														May	Oct	-	
	Shorebird	Red-necked phalarope														May	Oct	-	
	Waterfowl	American black duck														Mar-Jul	Sep-Mar	-	
		Diving ducks														Mar-Apr	Sep-Apr	-	
		Geese														May	Mar-May	Sep-Nov	
		Sea ducks														-	Mar-May	Sep-Oct	-





FISH

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	Alewife													-	-	-	Jan-Dec	Jan-Dec
	American eel													-	-	-	Jan-Dec	Jan-Dec
	American shad													-	-	-	Jan-Dec	Jan-Dec
	Atlantic salmon													Sep-Dec	Sep-Mar	Feb-Jul	Jan-Dec	Jan-Dec
	Blueback herring													-	-	-	Jan-Dec	Jan-Dec
	Striped bass													-	-	-	Apr-Nov	Apr-Nov
	Atlantic herring													Aug-Nov	Aug-Nov	Oct-Dec	Jan-Dec	Jan-Dec
	Bay anchovy													Jun-Aug	Jun-Aug	Jun-Sep	Jan-Dec	Jan-Dec
	Black sea bass													Feb-Jul	Feb-Jul	Mar-Jul	Jan-Dec	Jan-Dec
	Bluefish													-	-	Jun-Aug	May-Nov	May-Nov
	Northern kingfish													Jun-Jul	Jun-Jul	Jun-Aug	May-Nov	May-Nov
	Scup													May-Aug	May-Aug	Jun-Aug	May-Oct	May-Oct
	Summer flounder													Aug-Nov	Aug-Nov	Sep-Nov	Apr-Nov	Apr-Nov
	Windowpane													May-Aug	May-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Winter flounder													Jan-May	Jan-May	Feb-May	Jan-Dec	Jan-Dec
	Rainbow smelt													-	-	-	Jan-Dec	Jan-Dec
	American plaice													Feb-Jun	Feb-Jun	Mar-Jun	Jan-Dec	Jan-Dec
	Atlantic cod													Nov-Mar	Nov-Mar	Dec-Mar	Jan-Dec	Jan-Dec
	Atlantic halibut													Apr-Sep	Apr-Sep	Apr-Sep	Jan-Dec	Jan-Dec
	Atlantic tomcod													Dec-Feb	Dec-Mar	Dec-Apr	Dec-Jun	Dec-Jun
	Atlantic wolffish													Mar-Aug	Mar-Aug	Mar-Sep	Jan-Dec	Jan-Dec
	Goosefish													-	-	-	-	Jan-Dec
	Haddock													Feb-Jun	Feb-Jun	Mar-Jun	Jan-Dec	Jan-Dec
	Little skate													Jan-Dec	Jan-Dec	-	Jan-Dec	Jan-Dec
	Longhorn sculpin													Dec-Feb	Dec-Feb	Jan-Jun	Jan-Dec	Jan-Dec
	Ocean pout													Aug-Oct	Aug-Dec	Sep-Feb	Jan-Dec	Jan-Dec
	Pollock													-	-	-	Apr-Oct	Apr-Oct
	Red hake													Jun-Sep	Jun-Sep	Jul-Nov	Jan-Dec	Jan-Dec
	Rock gunnel													Nov-Mar	Nov-Apr	Jan-Jun	Jan-Dec	Jan-Dec
	Searobins													Jun-Sep	Jun-Sep	Jun-Oct	Jan-Dec	Jan-Dec
	Silver hake													Jul-Oct	Jul-Oct	Aug-Oct	Jan-Dec	Jan-Dec
	Tautog													May-Aug	May-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	White hake													Apr-Sep	May-Nov	May-Nov	Jan-Dec	Jan-Dec
	Winter skate													-	-	-	Jan-Dec	Jan-Dec
	Witch flounder													May-Aug	May-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Yellowtail flounder													Mar-Jul	Mar-Jul	Apr-Jul	Jan-Dec	Jan-Dec
	Atlantic mackerel													May-Jul	May-Aug	May-Aug	Mar-Dec	Mar-Dec
	Spiny dogfish													-	-	-	Jan-Dec	Jan-Dec
	Tunas													-	-	-	Jun-Sep	-




REPTILES & AMPHIBIANS

Subelement	Species	Monthly Presence												Nest	Hatch	Interest	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	Eastern box turtle													Jun-Jul	Aug-Oct	-	Jan-Dec	Jan-Dec

INVERTEBRATES

Subelement	Species	Monthly Presence												Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D				
	Bivalve													Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
														May-Nov	May-Nov	Jan-Dec	Jan-Dec
														Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
														Jul-Nov	Jul-Dec	Jan-Dec	Jan-Dec
														Jul-Oct	Jul-Oct	Jan-Dec	Jan-Dec
	Cephalopod													Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
														May-Aug	May-Aug	Apr-Nov	Apr-Nov
														-	-	Apr-Nov	Apr-Nov
														May-Oct	Jun-Oct	Jan-Dec	Jan-Dec
														-	Jun-Aug	Jan-Dec	Jan-Dec
	Crab													May-Jul	May-Jul	Jan-Dec	Jan-Dec
														May-Oct	May-Oct	Jan-Dec	Jan-Dec
														Aug-Nov	Jun-Oct	Jan-Dec	Jan-Dec
														May-Jul	May-Jul	Jan-Dec	Jan-Dec
														May-Jul	May-Jul	Jan-Dec	Jan-Dec
	Lobster													May-Jul	May-Jul	Jan-Dec	Jan-Dec
														May-Jul	May-Jul	Jan-Dec	Jan-Dec
														May-Jul	May-Jul	Jan-Dec	Jan-Dec
														May-Jul	May-Jul	Jan-Dec	Jan-Dec
														May-Jul	May-Jul	Jan-Dec	Jan-Dec

MARINE MAMMALS

Subelement	Species	Monthly Presence												Mating	Calving	Pupping	Molt
		J	F	M	A	M	J	J	A	S	O	N	D				
	Dolphin													-	-	-	-
														-	-	-	-
														-	-	-	-
														-	-	-	-
														-	-	-	-
	Pinniped													-	-	-	-
														-	-	-	-
														-	-	-	-
														-	-	-	-
														-	-	-	-
	Whale													-	-	-	-
														-	-	-	-
														-	-	-	-
														-	-	-	-
														-	-	-	-

For additional information about species locations and extent, reference the underlying GIS data available from response.restoration.noaa.gov

SHORELINE RESOURCES

ESI POLYGON HABITAT TYPES

ESI Rank	Habitat Classification	Area (Acres)	Area (Sq. Miles)
10A	Salt and Brackish Water Marshes	584.66	0.91
10B	Freshwater Marshes	46.75	0.07
10C	Swamps	242.83	0.38
10D	Scrub and Shrub Wetlands	138.42	0.22
9A	Sheltered Tidal Flats	6.38	0.01



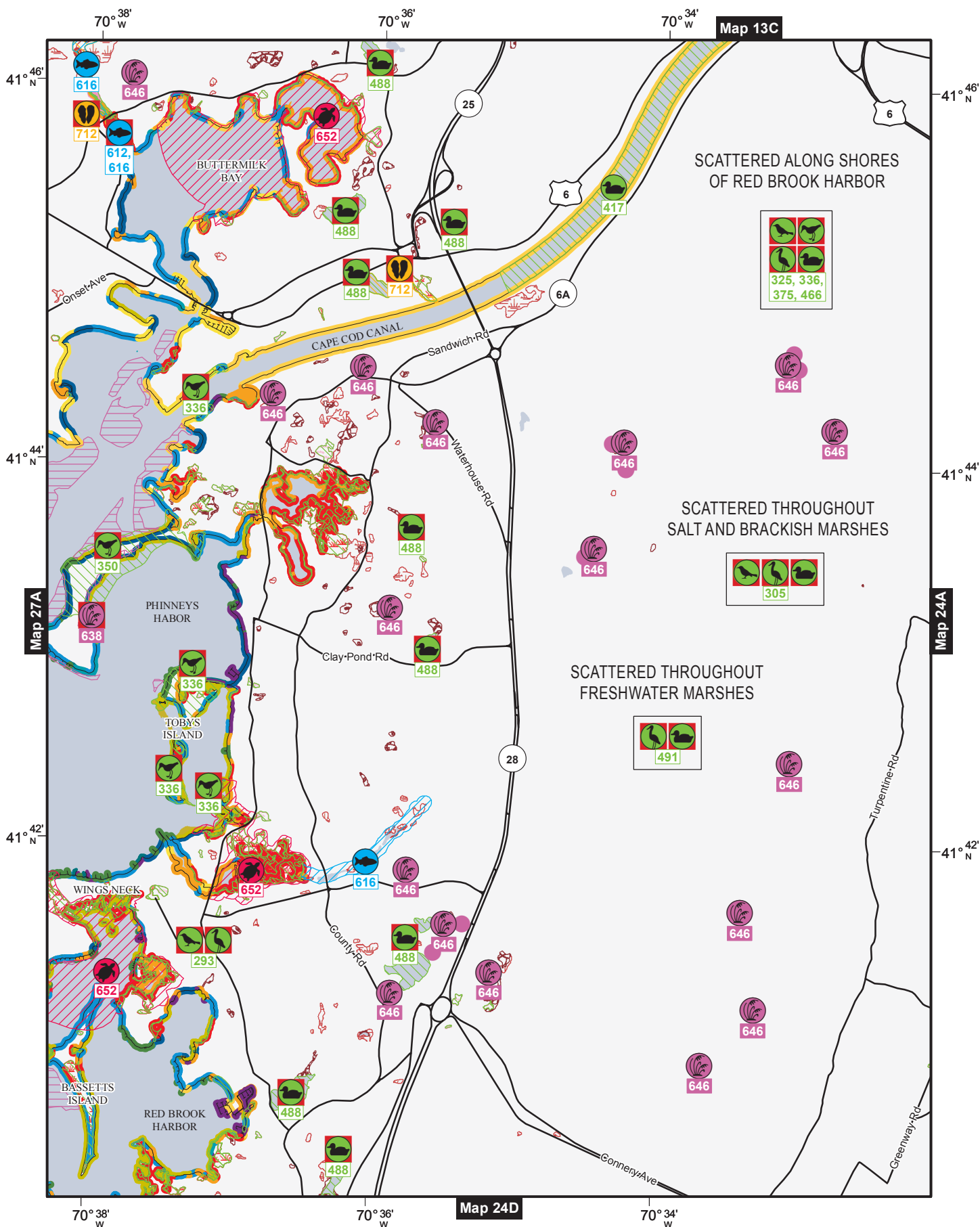
ESI SHORELINE HABITAT TYPES

ESI Rank	Shoreline Habitat Classification	Length (Meters)	Length (Miles)	% of ESI Shoreline
10A	Salt and Brackish Water Marshes	73,155.10	45.46	75%
10B	Freshwater Marshes	1,220.48	0.76	1%
10D	Scrub and Shrub Wetlands	1,813.41	1.13	2%
9A	Sheltered Tidal Flats	3,334.66	2.07	3%
9B	Vegetated Low Banks	2,168.10	1.35	2%
8B	Sheltered, Solid Man-Made Structures	845.99	0.53	1%
8C	Sheltered Riprap	1,046.50	0.65	1%
7	Exposed Tidal Flats	5,871.12	3.65	6%
6B	Riprap	858.84	0.53	1%
5	Mixed Sand and Gravel Beaches	37.94	0.02	< 1%
4	Coarse Grained Sand Beaches	260.98	0.16	< 1%
3A	Fine to Medium Grained Sand Beaches	6,490.06	4.03	7%
Total ESI Shoreline:		97,103.18	Total ESI Shoreline: 60.34	
		86,461.73	Total Shoreline: 53.72	

Note: A shoreline segment may include multiple shoreline habitats. If any segments include multiple habitats, the combined length of all habitats may exceed the length of the mapped shoreline, and the percent of ESI shoreline values will sum to greater than 100%

All underlying GIS data can be obtained from response.restoration.noaa.gov

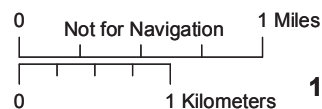




Map 24B
Mass. / Rhode Island



SEE BACK OF MAP
for details about mapped species and
other species that occur in mapped area.
Data Published: November 2016



1:50,000



Map 24B
Massachusetts and Rhode Island

BIOLOGICAL RESOURCES

Note: An asterisk (*) indicates that life stage occurs in this range but not in all months included

DISPLAYED ON MAP

BENTHIC

Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence
SAV	Eelgrass	High Ecological Value				Present	J F M A M J J A S O N D

BIRDS

Map ID	Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence	Nest	Mig.(S)	Mig.(F)	Molt
293	Passerine	Marsh passerines	General Distribution	-/C	-/C	-/C	Common	J F M A M J J A S O N D	Apr-Aug	Apr-May	Aug-Nov	Sep-Oct
	Wading	Egrets	Migration	-/C	-/C	-/C	Common	J F M A M J J A S O N D	Apr-Jul	Mar-May	Aug-Sep	-
	Wading	Wading birds	General Distribution	-/C	-/C	-/C	Common	J F M A M J J A S O N D	-	Mar-May	Jul-Oct	-
305	Passerine	Marsh passerines	General Distribution	-/C	-/C	-/C	Common	J F M A M J J A S O N D	Apr-Aug	Apr-May	Aug-Nov	Sep-Oct
	Wading	Egrets	Migration	-/C	-/C	-/C	Common	J F M A M J J A S O N D	Apr-Jul	Mar-May	Aug-Sep	-
	Wading	Marsh birds	General Distribution	C/C	C/C	C/C	Common	J F M A M J J A S O N D	-	Mar-May	Aug-Nov	Jul-Aug
	Wading	Wading birds	General Distribution	-/C	-/C	-/C	Common	J F M A M J J A S O N D	-	Mar-May	Jul-Oct	-
	Waterfowl	Waterfowl	General Distribution	C/C	C/C	C/C	Common	J F M A M J J A S O N D	May-Jul	Apr-May	Aug-Oct	Aug-Sep
325	Passerine	Marsh passerines	General Distribution	-/C	-/C	-/C	Common	J F M A M J J A S O N D	Apr-Aug	Apr-May	Aug-Nov	Sep-Oct
	Wading	Egrets	Migration	-/C	-/C	-/C	Common	J F M A M J J A S O N D	Apr-Jul	Mar-May	Aug-Sep	-
	Wading	Marsh birds	General Distribution	C/C	C/C	C/C	Common	J F M A M J J A S O N D	-	Mar-May	Aug-Nov	Jul-Aug
	Waterfowl	Waterfowl	General Distribution	C/C	C/C	C/C	Common	J F M A M J J A S O N D	May-Jul	Apr-May	Aug-Oct	Aug-Sep
336	Shorebird	American oystercatcher	Nesting	-/C	-/C	-/C	Rare	J F M A M J J A S O N D	May-Aug	May	-	-
350	Shorebird	American oystercatcher	Nesting	-/C	-/C	-/C	Rare	J F M A M J J A S O N D	May-Aug	May	-	-
	Shorebird	Piping plover	Nesting	T/E	T	T	Common	J F M A M J J A S O N D	Mar-Aug	Mar-Apr	Jul-Oct	-
375	Shorebird	American oystercatcher	Nesting	-/C	-/C	-/C	Rare	J F M A M J J A S O N D	May-Aug	May	-	-
	Wading	Wading birds	General Distribution	-/C	-/C	-/C	Common	J F M A M J J A S O N D	-	Mar-May	Jul-Oct	-
417	Waterfowl	Sea ducks	Wintering	-/C	-/C	-/C	Common	J F M A M J J A S O N D	-	Mar-May	Sep-Oct	-
466	Wading	Wading birds	General Distribution	-/C	-/C	-/C	Common	J F M A M J J A S O N D	-	Mar-May	Jul-Oct	-
488	Waterfowl	Waterfowl	General Distribution	C/C	C/C	C/C	Common	J F M A M J J A S O N D	May-Jul	Apr-May	Aug-Oct	Aug-Sep
491	Wading	Marsh birds	General Distribution	C/C	C/C	C/C	Common	J F M A M J J A S O N D	-	Mar-May	Aug-Nov	Jul-Aug
	Waterfowl	Waterfowl	General Distribution	C/C	C/C	C/C	Common	J F M A M J J A S O N D	May-Jul	Apr-May	Aug-Oct	Aug-Sep

FISH

Map ID	Subelement	Species	Mapping Qualifier	MA/RI		Concentration	Monthly Presence												Eggs	Larvae	Juveniles	Adults	
				S	F		J	F	M	A	M	J	J	A	S	O	N	D					
612	Freshwater	Bridle shiner	General Distribution	C/-		Rare														May-Aug	May-Aug	Jan-Dec	Jan-Dec
	Diadromous	Sea lamprey	Vulnerable Occurrence			-														Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
616	Freshwater	Blacknose dace	Vulnerable Occurrence			-														Mar-Jun	Apr-Jun	Jan-Dec	Jan-Dec
	Freshwater	Brook trout	Vulnerable Occurrence			-														Sep-Nov	Nov-Dec	Jan-Dec	Jan-Dec
	Freshwater	Common shiner	Vulnerable Occurrence			-														May-Aug	May-Aug	Jan-Dec	Jan-Dec
	Freshwater	Creek chub	Vulnerable Occurrence			-														May-Aug	May-Aug	Jan-Dec	Jan-Dec
	Freshwater	Fallfish	Vulnerable Occurrence			-														-	-	Jan-Dec	Jan-Dec
	Freshwater	Longnose dace	Vulnerable Occurrence			-														-	-	Jan-Dec	Jan-Dec
	Freshwater	Slimy sculpin	Vulnerable Occurrence			-														-	-	Jan-Dec	Jan-Dec
	Freshwater	Tessellated darter	Vulnerable Occurrence			-														May-Jul	May-Aug	Jan-Dec	Jan-Dec
	Freshwater	White sucker	Vulnerable Occurrence			-														Apr-May	May-Jul	Jan-Dec	Jan-Dec

HABITATS & RARE PLANTS

Map ID	Subelement	Species	Mapping Qualifier	MA/RI	Monthly Presence												Concentration	J	F	M	A	M	J	J	A	S	O	N	D
					S	F	T/C	J	F	M	A	M	J	J	A	S	O	N	D										
638	Plant	Rare plant	Vulnerable Occurrence																										
646	Wetland	Vernal pool	Vulnerable Occurrence																										

REPTILES & AMPHIBIANS


Map ID	Subelement	Species	Mapping Qualifier	MA/RI	Monthly Presence												Concentration	J	F	M	A	M	J	J	A	S	O	N	D	Nest	Hatch	Internest	Juveniles	Adults
					S	F		J	F	M	A	M	J	J	A	S	O	N	D															
652	Turtle	Rare reptile	Vulnerable Occurrence																											-	Apr-Jul	Jun-Nov	Jan-Dec	Jan-Dec

INVERTEBRATES

Map ID	Subelement	Species	Mapping Qualifier	MA/RI	Monthly Presence												Concentration	J	F	M	A	M	J	J	A	S	O	N	D	Spawn	Eggs	Larvae	Juveniles	Adults
					S	F	C/C	J	F	M	A	M	J	J	A	S	O	N	D															
712	Bivalve	Rare freshwater mussel	General Distribution																											Aug-Sep	Aug-May	Jun-Jul	Jan-Dec	Jan-Dec



WIDESPREAD IN MAPPED AREA (> 10 SQUARE KILOMETERS)

BIRDS

Subelement	Species	Mapping Qualifier	MA/RI		Concentration	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
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	Razorbill	Wintering			Common																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															

Massachusetts and Rhode Island: Map 24B

FISH

Subelement	Species	Mapping Qualifier	MA/RI S F	Concentration	Monthly Presence												Eggs	Larvae	Juveniles	Adults
					J	F	M	A	M	J	J	A	S	O	N	D				
	Diadromous	Alewife															Apr-Jun	Apr-Jun	-	Apr-Jun
		American eel															-	-	Jan-Dec	Jan-Dec
		American shad															Apr-Jun	Apr-Jun	-	Apr-Jun
		Blueback herring															Apr-Jun	Apr-Jun	-	Apr-Jun
	Estuarine Resident	Threespine stickleback	T/-														Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec

REPTILES & AMPHIBIANS

Subelement	Species	Mapping Qualifier	MA/RI S F	Concentration	Monthly Presence												Hatch	Internest	Juveniles	Adults
					J	F	M	A	M	J	J	A	S	O	N	D				
	Amphibian	Eastern spadefoot	T/E														May-Jul	-	Jan-Dec	Jan-Dec

INVERTEBRATES



Subelement	Species	Mapping Qualifier	MA/RI S F	Concentration	Monthly Presence												Eggs	Larvae	Juveniles	Adults
					J	F	M	A	M	J	J	A	S	O	N	D				
	Crab	Blue crab															Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
		Horseshoe crab															May-Jul	-	Jan-Dec	Jan-Dec

TERRESTRIAL MAMMALS


Subelement	Species	Mapping Qualifier	MA/RI S F	Concentration	Monthly Presence															
					J	F	M	A	M	J	J	A	S	O	N	D				
	Small Mammal	New England cottontail	-/C																	

ALSO PRESENT IN MAPPED AREA (GENERAL DISTRIBUTION)





BIRDS

Subelement	Species	Mapping Qualifier	MA/RI S F	Concentration	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt
					J	F	M	A	M	J	J	A	S	O	N	D				
	Diving	D. crested cormorant															-	Mar-Apr	Sep-Oct	-
	Gull/Tern	Gulls															-	Apr-May	Aug-Nov	-
	Shorebird	Shorebirds															Apr-Aug	Mar-Dec	-	Aug
	Waterfowl	American black duck															Mar-Jul	Sep-Mar	-	-
		Diving ducks															Mar-Apr	Sep-Apr	-	-
	Geese	Geese															May	Mar-May	Sep-Nov	-

FISH

Subelement	Species	Mapping Qualifier	MA/RI S F	Concentration	Monthly Presence												Eggs	Larvae	Juveniles	Adults
					J	F	M	A	M	J	J	A	S	O	N	D				
	Diadromous	Sea lamprey															Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Estuarine Nursery	Atlantic herring															Aug-Nov	Oct-Dec	Jan-Dec	Jan-Dec
		Bay anchovy															Jun-Aug	Jun-Sep	Jan-Dec	Jan-Dec
		Black sea bass															Feb-Jul	Mar-Jul	Jan-Dec	Jan-Dec
		Bluefish															-	Jun-Aug	May-Nov	May-Nov
		Hogchoker															May-Aug	Jun-Sep	May-Oct	May-Oct
		Northern kingfish															Jun-Jul	Jun-Aug	May-Nov	May-Nov





FISH (continued)

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	Scup													May-Aug	May-Aug	Jun-Aug	May-Oct	May-Oct
	Summer flounder													Aug-Nov	Aug-Nov	Sep-Nov	Apr-Nov	Apr-Nov
	Weakfish													Apr-Aug	Apr-Aug	May-Sep	Apr-Nov	Apr-Nov
	Windowpane													May-Aug	May-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Winter flounder													Jan-May	Jan-May	Feb-May	Jan-Dec	Jan-Dec
	Atlantic silverside													May-Aug	May-Aug	May-Sep	Jan-Dec	Jan-Dec
	Fourspine stickleback													May-Jul	May-Jul	May-Aug	Jan-Dec	Jan-Dec
	Mummichog													May-Aug	Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Oyster toadfish													May-Aug	May-Aug	May-Sep	Jan-Dec	Jan-Dec
	Blacknose dace													Mar-Jun	Mar-Jun	Apr-Jun	Jan-Dec	Jan-Dec
	Brook trout													Sep-Nov	Sep-Nov	Nov-Dec	Jan-Dec	Jan-Dec
	Common shiner													May-Aug	May-Aug	May-Aug	Jan-Dec	Jan-Dec
	Creek chub													May-Aug	May-Aug	May-Aug	Jan-Dec	Jan-Dec
	Fallfish													-	-	-	Jan-Dec	Jan-Dec
	Longnose dace													-	-	-	Jan-Dec	Jan-Dec
	Slimy sculpin													-	-	-	Jan-Dec	Jan-Dec
	Tessellated darter													May-Jul	May-Jul	May-Aug	Jan-Dec	Jan-Dec
	White sucker													Apr-May	May-Jul	May-Jul	Jan-Dec	Jan-Dec
	Atlantic cod													-	-	-	Apr-Aug	Apr-Aug
	Atlantic tomcod													Dec-Feb	Dec-Mar	Dec-Apr	Dec-Jun	Dec-Jun
	Goosefish													-	-	-	-	Jan-Dec
	Haddock													Feb-Jun	Feb-Jun	Mar-Jun	Jan-Dec	Jan-Dec
	Little skate													Jan-Dec	Jan-Dec	-	Jan-Dec	Jan-Dec
	Pollock													-	-	-	Apr-Oct	Apr-Oct
	Red hake													-	-	-	Dec-May	Dec-May
	Red hake													Jun-Sep	Jun-Sep	Jul-Nov	Jun-Nov	Jun-Nov
	Rock gunnel													Nov-Mar	Nov-Apr	Jan-Jun	Jan-Dec	Jan-Dec
	Searobins													Jun-Sep	Jun-Sep	Jun-Oct	Jan-Dec	Jan-Dec
	Silver hake													-	-	-	Jan-Jun	Jan-Jun
	Silver hake													Jul-Oct	Jul-Oct	Aug-Oct	Jul-Dec	Jul-Dec
	Tautog													May-Aug	May-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	White hake													Apr-Sep	May-Nov	May-Nov	Jan-Dec	Jan-Dec
	Winter skate													-	-	-	Aug-Jan	Aug-Jan
	Winter skate													-	-	-	Feb-Jul	Feb-Jul
	Yellowtail flounder													Mar-Jul	Mar-Jul	Apr-Jul	Jan-Dec	Jan-Dec
	Atlantic mackerel													May-Jul	May-Aug	May-Aug	Mar-Dec	Mar-Dec
	Spiny dogfish													-	-	-	Feb-Jul	Feb-Jul
	Spiny dogfish													-	-	-	Aug-Jan	Aug-Jan


REPTILES & AMPHIBIANS

Subelement	Species	Monthly Presence												Nest	Hatch	Interest	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	Eastern box turtle													Jun-Jul	Aug-Oct	-	Jan-Dec	Jan-Dec
														-	-	-	-	-

INVERTEBRATES

Subelement	Species	Monthly Presence												Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D				
	Atl. jackknife clam													Apr-May	Apr-May	Jan-Dec	Jan-Dec
	Atlantic surfclam													Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Bay scallop													Jun-Sep	Jun-Sep	Jan-Dec	Jan-Dec
	Blue mussel													May-Nov	May-Nov	Jan-Dec	Jan-Dec
	Eastern oyster													Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Northern quahog													Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Sea scallop													Jul-Oct	Jul-Oct	Jan-Dec	Jan-Dec
	Softshell clam													Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Longfin squid													May-Aug	May-Aug	Apr-Nov	Apr-Nov
	Atlantic rock crab													May-Oct	Jun-Oct	Jan-Dec	Jan-Dec
	Blue crab													-	Jun-Aug	Jan-Dec	Jan-Dec
	Horseshoe crab													May-Jul	May-Jul	Jan-Dec	Jan-Dec
	Jonah crab													May-Oct	May-Oct	Jan-Dec	Jan-Dec
	American lobster													Aug-Nov	Jun-Oct	Jan-Dec	Jan-Dec
	Shrimp													May-Jul	May-Jul	Jan-Dec	Jan-Dec
	Sevenspine bay shrimp													May-Jul	May-Jul	Jan-Dec	Jan-Dec

MARINE MAMMALS

Subelement	Species	Monthly Presence												Mating	Calving	Pupping	Molt
		J	F	M	A	M	J	J	A	S	O	N	D				
	Gray seal													Dec-Feb	Dec-Feb	Dec-Feb	Mar-May
	Harbor seal													-	-	-	-

For additional information about species locations and extent, reference the underlying GIS data available from response.restoration.noaa.gov

SHORELINE RESOURCES

ESI POLYGON HABITAT TYPES

ESI Rank	Habitat Classification	Area (Acres)	Area (Sq. Miles)
10A	Salt and Brackish Water Marshes	257.17	0.40
10B	Freshwater Marshes	29.95	0.05
10C	Swamps	115.02	0.18
10D	Scrub and Shrub Wetlands	96.85	0.15
9A	Sheltered Tidal Flats	64.31	0.10
7	Exposed Tidal Flats	78.98	0.12
5	Mixed Sand and Gravel Beaches	2.78	0.00
2A	Exposed, Wave-Cut Platforms (Bedrock/Mud/Clay)	0.03	0.00

ESI SHORELINE HABITAT TYPES

ESI Rank	Shoreline Habitat Classification	Length (Meters)	Length (Miles)	% of ESI Shoreline
10A	Salt and Brackish Water Marshes	37,615.77	23.37	23%
10B	Freshwater Marshes	858.47	0.53	1%
10C	Swamps	744.55	0.46	< 1%
9A	Sheltered Tidal Flats	20,434.55	12.70	13%
9B	Vegetated Low Banks	13,046.69	8.11	8%
8A	Sheltered, Impermeable, Rocky Shores	20.75	0.01	< 1%
8B	Sheltered, Solid Man-Made Structures	6,139.04	3.81	4%
8C	Sheltered Riprap	16,710.24	10.38	10%
7	Exposed Tidal Flats	25,493.63	15.84	16%
6A	Gravel Beaches	60.70	0.04	< 1%
6B	Gravel Beaches (Cobbles/Boulders)	129.22	0.08	< 1%
6B	Riprap	4,111.71	2.55	3%
5	Mixed Sand and Gravel Beaches	1,346.17	0.84	1%
4	Coarse Grained Sand Beaches	21,574.98	13.41	13%
3A	Fine to Medium Grained Sand Beaches	8,424.68	5.23	5%
1A	Exposed, Rocky Shores	42.73	0.03	< 1%
1B	Exposed, Solid Man-Made Structures	4,523.56	2.81	3%
Total ESI Shoreline:		161,277.45	100.21	
Total Shoreline:		106,899.52	66.42	

Note: A shoreline segment may include multiple shoreline habitats. If any segments include multiple habitats, the combined length of all habitats may exceed the length of the mapped shoreline, and the percent of ESI shoreline values will sum to greater than 100%

All underlying GIS data can be obtained from response.restoration.noaa.gov



Map 24C
Massachusetts and Rhode Island

BIOLOGICAL RESOURCES

Note: An asterisk (*) indicates that life stage occurs in this range but not in all months included

DISPLAYED ON MAP

BENTHIC

Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence											
							J	F	M	A	M	J	J	A	S	O	N	D
SAV	Widgeon grass	High Ecological Value				Present												
SAV	Eelgrass	High Ecological Value				Potential												
SAV	Eelgrass	High Ecological Value				Present												
SAV	Rare aquatic/wetland plant	High Ecological Value				Present												

BIRDS

Map ID	Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence												Nest	Mig. (S)	Mig. (F)	Molt
								J	F	M	A	M	J	J	A	S	O	N	D				
21	Wading	Marsh birds	General Distribution		C/C		Common													-	Mar-May	Aug-Nov	Jul-Aug
48	Gull/Tern	Rare tern	Migration		C/-		Common													-	Apr-May	Jul-Sep	-
86	Passerine	Northern parula	Nesting		-/T		Rare													May-Jun	-	-	-
144	Diving	Great cormorant	Wintering				Common													-	Feb-Mar	Nov	-
	Shorebird	Purple sandpiper	Wintering				Common													-	Mar	Oct	-
153	Gull/Tern	Rare tern	Nesting		C/-		Rare													May-Aug	-	-	-
197	Passerine	Marsh passerines	General Distribution		-/C		Common													Apr-Aug	Apr-May	Aug-Nov	Sep-Oct
	Passerine	Saltmarsh sparrow	Nesting		-/C		Common													May-Jul	May	-	-
	Wading	Egrets	General Distribution		-/C		Common													Apr-Jul	Mar-May	Aug-Sep	-
	Wading	Marsh birds	General Distribution		C/C		Common													-	Mar-May	Aug-Nov	Jul-Aug
249	Passerine	Marsh passerines	General Distribution		-/C		Common													Apr-Aug	Apr-May	Aug-Nov	Sep-Oct
	Passerine	Saltmarsh sparrow	Nesting		-/C		Common													May-Jul	May	-	-
	Shorebird	Willet	Nesting		-/C		Common													Apr-May	Apr-May	Aug-Oct	-
	Wading	Egrets	Migration		-/C		Common													Apr-Jul	Mar-May	Aug-Sep	-
	Wading	Marsh birds	General Distribution		C/C		Common													-	Mar-May	Aug-Nov	Jul-Aug
	Wading	Wading birds	General Distribution		-/C		Common													-	Mar-May	Jul-Oct	-
250	Passerine	Marsh passerines	General Distribution		-/C		Common													Apr-Aug	Apr-May	Aug-Nov	Sep-Oct
	Passerine	Saltmarsh sparrow	Nesting		-/C		Common													May-Jul	May	-	-
	Shorebird	Willet	Nesting		-/C		Common													Apr-May	Apr-May	Aug-Oct	-
	Wading	Egrets	General Distribution		-/C		Common													Apr-Jul	Mar-May	Aug-Sep	-
	Wading	Marsh birds	General Distribution		C/C		Common													-	Mar-May	Aug-Nov	Jul-Aug
	Wading	Wading birds	General Distribution		-/C		Common													-	Mar-May	Jul-Oct	-
251	Passerine	Marsh passerines	General Distribution		-/C		Common													Apr-Aug	Apr-May	Aug-Nov	Sep-Oct
	Passerine	Saltmarsh sparrow	Nesting		-/C		Common													May-Jul	May	-	-
	Shorebird	Willet	Nesting		-/C		Common													Apr-May	Apr-May	Aug-Oct	-
	Wading	Egrets	General Distribution		-/C		Common													Apr-Jul	Mar-May	Aug-Sep	-
	Wading	Marsh birds	General Distribution		C/C		Common													-	Mar-May	Aug-Nov	Jul-Aug
	Wading	Wading birds	General Distribution		-/C		Common													-	Mar-May	Jul-Oct	-
251	Passerine	Marsh passerines	General Distribution		-/C		Common													Apr-Aug	Apr-May	Aug-Nov	Sep-Oct
	Passerine	Saltmarsh sparrow	Nesting		-/C		Common													May-Jul	May	-	-
	Shorebird	Willet	Nesting		-/C		Common													Apr-May	Apr-May	Aug-Oct	-
	Wading	Egrets	General Distribution		-/C		Common													Apr-Jul	Mar-May	Aug-Sep	-
	Wading	Marsh birds	General Distribution		-/C		Common													-	Mar-May	Jul-Oct	-
263	Passerine	Marsh passerines	General Distribution		-/C		Common													Apr-Aug	Apr-May	Aug-Nov	Sep-Oct
	Passerine	Saltmarsh sparrow	Nesting		-/C		Common													May-Jul	May	-	-

BIRDS (continued)

Map ID	Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N	D	Nest	Mig.(S)	Mig.(F)	Molt
265	Shorebird	Willet	Nesting	-C	-C		Common													Apr-May	Apr-May	Aug-Oct	-
	Wading	Egrets	Migration	-C	-C		Common													Apr-Jul	Mar-May	Aug-Sep	-
	Wading	Marsh birds	General Distribution	C/C			Common													-	Mar-May	Aug-Nov	Jul-Aug
	Wading	Wading birds	General Distribution	-C	-C		Common													-	Mar-May	Jul-Oct	-
	Waterfowl	Waterfowl	General Distribution	C/C			Common													May-Jul	Apr-May	Aug-Oct	Aug-Sep
	Passerine	Marsh passerines	General Distribution	-C	-C		Common													Apr-Aug	Apr-May	Aug-Nov	Sep-Oct
	Passerine	Saltmarsh sparrow	Nesting	-C	-C		Common													May-Jul	May	-	-
	Shorebird	Willet	Nesting	-C	-C		Common													Apr-May	Apr-May	Aug-Oct	-
	Wading	Egrets	General Distribution	-C	-C		Common													Apr-Jul	Mar-May	Aug-Sep	-
	Wading	Marsh birds	General Distribution	C/C			Common													Apr-Jul	Mar-May	Aug-Sep	-
269	Wading	Marsh birds	General Distribution	C/C			Common													-	Mar-May	Aug-Nov	Jul-Aug
	Wading	Wading birds	General Distribution	-C	-C		Common													-	Mar-May	Jul-Oct	-
	Waterfowl	Waterfowl	General Distribution	C/C			Common													May-Jul	Apr-May	Aug-Oct	Aug-Sep
	Passerine	Marsh passerines	General Distribution	-C	-C		Common													Apr-Aug	Apr-May	Aug-Nov	Sep-Oct
	Shorebird	Willet	Nesting	-C	-C		Common													Apr-May	Apr-May	Aug-Oct	-
	Wading	Egrets	Migration	-C	-C		Common													Apr-Jul	Mar-May	Aug-Sep	-
	Wading	Marsh birds	General Distribution	C/C			Common													-	Mar-May	Aug-Nov	Jul-Aug
	Wading	Wading birds	General Distribution	-C	-C		Common													-	Mar-May	Jul-Oct	-
	Waterfowl	Waterfowl	General Distribution	C/C			Common													May-Jul	Apr-May	Aug-Oct	Aug-Sep
	Passerine	Marsh passerines	General Distribution	-C	-C		Common													Apr-Aug	Apr-May	Aug-Nov	Sep-Oct
273	Shorebird	Willet	Nesting	-C	-C		Common													Apr-May	Apr-May	Aug-Oct	-
	Wading	Egrets	General Distribution	-C	-C		Common													Apr-Jul	Mar-May	Aug-Sep	-
	Wading	Marsh birds	General Distribution	C/C			Common													-	Mar-May	Aug-Nov	Jul-Aug
	Wading	Wading birds	General Distribution	-C	-C		Common													-	Mar-May	Jul-Oct	-
	Waterfowl	Waterfowl	General Distribution	C/C			Common													May-Jul	Apr-May	Aug-Oct	Aug-Sep
	Passerine	Marsh passerines	General Distribution	-C	-C		Common													Apr-Aug	Apr-May	Aug-Nov	Sep-Oct
	Shorebird	Willet	Nesting	-C	-C		Common													Apr-May	Apr-May	Aug-Oct	-
	Wading	Egrets	General Distribution	-C	-C		Common													Apr-Jul	Mar-May	Aug-Sep	-
	Wading	Marsh birds	General Distribution	C/C			Common													-	Mar-May	Aug-Nov	Jul-Aug
	Wading	Wading birds	General Distribution	-C	-C		Common													-	Mar-May	Jul-Oct	-
315	Waterfowl	Waterfowl	General Distribution	C/C			Common													May-Jul	Apr-May	Aug-Oct	Aug-Sep
	Passerine	Marsh passerines	General Distribution	-C	-C		Common													Apr-Aug	Apr-May	Aug-Nov	Sep-Oct
	Passerine	Saltmarsh sparrow	Nesting	-C	-C		Common													Apr-May	Apr-May	Aug-Oct	-
	Wading	Egrets	Migration	-C	-C		Common													Apr-Jul	Mar-May	Aug-Sep	-
	Wading	Marsh birds	General Distribution	C/C			Common													-	Mar-May	Aug-Nov	Jul-Aug
	Wading	Wading birds	General Distribution	-C	-C		Common													-	Mar-May	Jul-Oct	-
	Waterfowl	Waterfowl	General Distribution	C/C			Common													May-Jul	Apr-May	Aug-Oct	Aug-Sep
	Passerine	Marsh passerines	General Distribution	-C	-C		Common													Apr-Aug	Apr-May	Aug-Nov	Sep-Oct
	Passerine	Saltmarsh sparrow	Nesting	-C	-C		Common													May-Jul	May	-	-
	Wading	Egrets	Migration	-C	-C		Common													Apr-Jul	Mar-May	Aug-Sep	-
335	Wading	Marsh birds	General Distribution	C/C			Common													-	Mar-May	Aug-Nov	Jul-Aug
	Waterfowl	Waterfowl	General Distribution	C/C			Common													May-Jul	Apr-May	Aug-Oct	Aug-Sep
	Gull/Tern	Roseate tern	Nesting	E/-	E		Rare													May-Aug	-	-	-
	Shorebird	American oystercatcher	Nesting	-C	-C		Rare													May-Aug	May	-	-
	Shorebird	Piping plover	Nesting	T/E	T		Common													Mar-Aug	Mar-Apr	Jul-Oct	-
	Shorebird	Red knot	Migration	T	T		Common													-	May-Jun	Jul-Sep	-
	Shorebird	Shorebirds	Migration				Common													-	Mar-Jun	Jul-Nov	Aug
	Shorebird	Willet	Nesting	-C	-C		Common													Apr-May	Apr-May	Aug-Oct	-
	Wading	Wading birds	General Distribution	-C	-C		Common													-	Mar-May	Jul-Oct	-
	Shorebird	American oystercatcher	Nesting	-C	-C		Rare													May-Aug	May	-	-
344	Shorebird	Red knot	Migration	T	T		Common													-	May-Jun	Jul-Sep	-
	Shorebird	Shorebirds	Migration				Common													-	Mar-Jun	Jul-Nov	Aug
	Shorebird	Willet	Nesting	-C	-C		Common													Apr-May	Apr-May	Aug-Oct	-
	Wading	Wading birds	General Distribution	-C	-C		Common													-	Mar-May	Jul-Oct	-
	Shorebird	American oystercatcher	Nesting	-C	-C		Rare													May-Aug	May	-	-
	Shorebird	Red knot	Migration	T	T		Common													-	May-Jun	Jul-Sep	-
	Shorebird	Shorebirds	Migration				Common													-	Mar-Jun	Jul-Nov	Aug
	Shorebird	Willet	Nesting	-C	-C		Common													Apr-May	Apr-May	Aug-Oct	-
	Wading	Wading birds	General Distribution	-C	-C		Common													-	Mar-May	Jul-Oct	-
	Shorebird	American oystercatcher	Nesting	-C	-C		Rare													May-Aug	May	-	-
364	Shorebird	Red knot	Migration	T	T		Common													-	May-Jun	Jul-Sep	-
	Shorebird	Shorebirds	Migration				Common													-	Mar-Jun	Jul-Nov	Aug

BIRDS (continued)

Map ID	Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt
								J	F	M	A	M	J	J	A	S	O	N	D				
390	Shorebird	Willet	Nesting	-/C	-	-	Common													Apr-May	Apr-May	Aug-Oct	-
	Wading	Wading birds	General Distribution	-/C	-	-	Common													-	Mar-May	Jul-Oct	-
442	Shorebird	Piping plover	Nesting	T/E	T	-	Common													Mar-Aug	Mar-Apr	Jul-Oct	-
	Shorebird	Red knot	Migration	T	-	-	Common													-	May-Jun	Jul-Sep	-
	Shorebird	Shorebirds	Migration		-	-	Common													-	Mar-Jun	Jul-Nov	Aug
464	Shorebird	Shorebirds	Migration		-	-	Common													-	Mar-Jun	Jul-Nov	Aug
488	Waterfowl	Waterfowl	General Distribution	C/C	-	-	Common													May-Jul	Apr-May	Aug-Oct	-
491	Wading	Marsh birds	General Distribution	C/C	-	-	Common													-	Mar-May	Aug-Nov	Jul-Aug
	Waterfowl	Waterfowl	General Distribution	C/C	-	-	Common													May-Jul	Apr-May	Aug-Oct	-
500	Gull/Tern	Rare tern	Migration	C/-	-	-	Common													May-Aug	Apr-May	Jul-Sep	-
550	Gull/Tern	Rare tern	Nesting	C/-	-	-	Rare													May-Aug	Apr-May	Jul-Sep	-

FISH

Map ID	Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
								J	F	M	A	M	J	J	A	S	O	N	D					
614	Diadromous	Sea lamprey	Vulnerable Occurrence				-													Jun-Aug	Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Freshwater	American brook lamprey	Spawning Area	T/T	-	-	-													Apr-Jul	Apr-Jul	May-Aug	Jan-Dec	Jan-Dec
	Freshwater	Blacknose dace	Vulnerable Occurrence		-	-	-													Mar-Jun	Mar-Jun	Apr-Jun	Jan-Dec	Jan-Dec
	Freshwater	Brook trout	Vulnerable Occurrence		-	-	-													Sep-Nov	Sep-Nov	Nov-Dec	Jan-Dec	Jan-Dec
	Freshwater	Common shiner	Vulnerable Occurrence		-	-	-													May-Aug	May-Aug	May-Aug	Jan-Dec	Jan-Dec
	Freshwater	Creek chub	Vulnerable Occurrence		-	-	-													May-Aug	May-Aug	May-Aug	Jan-Dec	Jan-Dec
	Freshwater	Fallfish	Vulnerable Occurrence		-	-	-													-	-	-	Jan-Dec	Jan-Dec
	Freshwater	Longnose dace	Vulnerable Occurrence		-	-	-													-	-	-	Jan-Dec	Jan-Dec
	Freshwater	Slimy sculpin	Vulnerable Occurrence		-	-	-													-	-	-	Jan-Dec	Jan-Dec
	Freshwater	Tessellated darter	Vulnerable Occurrence		-	-	-													May-Jul	May-Jul	May-Aug	Jan-Dec	Jan-Dec
	Freshwater	White sucker	Vulnerable Occurrence		-	-	-													Apr-May	May-Jul	May-Jul	Jan-Dec	Jan-Dec
616	Diadromous	Sea lamprey	Vulnerable Occurrence		-	-	-													Jun-Aug	Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Freshwater	Blacknose dace	Vulnerable Occurrence		-	-	-													Mar-Jun	Mar-Jun	Apr-Jun	Jan-Dec	Jan-Dec
	Freshwater	Brook trout	Vulnerable Occurrence		-	-	-													Sep-Nov	Sep-Nov	Nov-Dec	Jan-Dec	Jan-Dec
	Freshwater	Common shiner	Vulnerable Occurrence		-	-	-													May-Aug	May-Aug	May-Aug	Jan-Dec	Jan-Dec
	Freshwater	Creek chub	Vulnerable Occurrence		-	-	-													May-Aug	May-Aug	May-Aug	Jan-Dec	Jan-Dec
	Freshwater	Fallfish	Vulnerable Occurrence		-	-	-													-	-	-	Jan-Dec	Jan-Dec
	Freshwater	Longnose dace	Vulnerable Occurrence		-	-	-													-	-	-	Jan-Dec	Jan-Dec
	Freshwater	Slimy sculpin	Vulnerable Occurrence		-	-	-													-	-	-	Jan-Dec	Jan-Dec
	Freshwater	Tessellated darter	Vulnerable Occurrence		-	-	-													May-Jul	May-Jul	May-Aug	Jan-Dec	Jan-Dec
	Freshwater	White sucker	Vulnerable Occurrence		-	-	-													Apr-May	May-Jul	May-Jul	Jan-Dec	Jan-Dec
622	Estuarine Resident	Threespine stickleback	General Distribution	T/-	-	-	Common													Jun-Aug	Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec

HABITATS & RARE PLANTS

Map ID	Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt
								J	F	M	A	M	J	J	A	S	O	N	D				
638	Plant	Rare plant	Vulnerable Occurrence				-																
646	Wetland	Vernal pool	Vulnerable Occurrence				-																

REPTILES & AMPHIBIANS

Map ID	Subelement	Species	Mapping Qualifier	MA/RI	Monthly Presence												Nest	Hatch	Internest	Juveniles	Adults
					S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N	D		
662	Turtle	Green sea turtle	General Distribution	T/E	T		Regular													-	-
	Turtle	K. ridley sea turtle	General Distribution	E/E	E		Regular													-	-
	Turtle	Leatherback sea turtle	General Distribution	E/E	E		Regular													-	-
	Turtle	Loggerhead sea turtle	General Distribution	T/E	T		Regular													-	-

INVERTEBRATES







Map ID	Subelement	Species	Mapping Qualifier	MA/RI	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
					S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N	D		
666	Crab	Blue crab	Nursery				Common													Jun-Aug	Jan-Dec
	Crab	Horseshoe crab	Nursery				Abundant													May-Jul	Jan-Dec
687	Crab	Horseshoe crab	Spawning				Abundant													May-Jul	May-Jul
690	Crab	Horseshoe crab	Concentration Area				Medium													May-Jul	Apr-Oct
712	Bivalve	Rare freshwater mussel	General Distribution	C/C			-													Aug-Sep	Jan-Dec

MARINE MAMMALS


Map ID	Subelement	Species	Mapping Qualifier	MA/RI		Concentration	Monthly Presence												Mating	Calving	Pupping	Molt
				S	F		J	F	M	A	M	J	J	A	S	O	N	D				
717	Whale	Fin whale	General Distribution	E/E	E	Rare											-	-				
	Whale	Humpback whale	General Distribution	E/E	E	Common											-	-				
	Whale	N.A. right whale	General Distribution	E/E	E	Common											-	-				
	Whale	Sei whale	General Distribution	E/-	E	Rare											-	-				

WIDESPREAD IN MAPPED AREA (> 10 SQUARE KILOMETERS)

BIRDS

Subelement	Species	Mapping Qualifier	MA/RI		Concentration	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt	
			S	F		J	F	M	A	M	J	J	A	S	O	N	D					
	Alcid	Razorbill	Wintering		Common														Oct-Nov	-		
	Diving	Loons	Migration	C/-	Common														Mar-Jun	Sep-Dec	Jan-Mar	
	Gull/Tern	Rare tern	General Distribution	C/-	Common														Apr-May	Jul-Sep	-	
	Roseate tern	General Distribution		E/-	E	Common													Apr-May	Jul-Sep	-	
	Passerine	Grasshopper sparrow	Nesting	T/T	E	Rare													Jun-Aug	-	-	
	Shorebird	Upland sandpiper	Nesting	E/-		Rare													May-Jul	May	Jul	-
	Waterfowl	Sea ducks	Wintering		Abundant														-	Mar-May	Sep-Oct	-

FISH

Subelement	Species	Mapping Qualifier	MA/RI	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
				S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N	D		
	Diadromous	Alewife	Spawning Area			-													Apr-Jun	Apr-Jun
		American eel	Migration			-													-	Jan-Dec
		American shad	Spawning Area			-													Apr-Jun	Apr-Jun
		Blueback herring	Spawning Area			-													Apr-Jun	Apr-Jun

REPTILES & AMPHIBIANS

Subelement	Species	Mapping Qualifier	MA/R/I	Monthly Presence												Nest	Hatch	Internest	Juveniles	Adults
				J	F	M	A	M	J	J	A	S	O	N	D					
Amphibian	Eastern spadefoot	Vulnerable Occurrence	S T/E													Apr-Jun	May-Jul	-	Jan-Dec	Jan-Dec

INVERTEBRATES

Subelement	Species	Mapping Qualifier	MA/R/I	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
				J	F	M	A	M	J	J	A	S	O	N	D					
Cephalopod	Longfin squid	Concentration Area	S													May-Aug	May-Aug	May-Aug	Apr-Nov	Apr-Nov
Gastropod	Channeled whelk	Concentration Area	S													Jun-Jul	Aug-Oct	-	May-Oct	May-Oct
	Knobbed whelk	Concentration Area	S													Jun-Jul	Aug-Oct	-	May-Oct	May-Oct

TERRESTRIAL MAMMALS

Subelement	Species	Mapping Qualifier	MA/R/I	Monthly Presence												Concentration	S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N	D
				J	F	M	A	M	J	J	A	S	O	N	D																
Small Mammal	New England cottontail	General Distribution	S -/C													Rare															

ALSO PRESENT IN MAPPED AREA (GENERAL DISTRIBUTION)

BIRDS

Subelement	Species	Mapping Qualifier	MA/R/I	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt
				J	F	M	A	M	J	J	A	S	O	N	D				
Alcid	Atlantic puffin															-	Mar	Sep	-
Diving	D. crested cormorant															-	Mar-Apr	Sep-Oct	-
Gull/Tern	Gulls															-	Apr-May	Aug-Nov	-
Pelagic	Northern gannet															-	Apr-May	Oct-Nov	-
	Shearwaters															-	May	Oct	-
Shorebird	Red-necked phalarope															-	May	Oct	-
Waterfowl	American black duck															Mar-Jul	Sep-Mar	-	-
	Diving ducks															Mar-Apr	Sep-Apr	-	-
	Geese															May	Mar-May	Sep-Nov	-

FISH

Subelement	Species	Mapping Qualifier	MA/R/I	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
				J	F	M	A	M	J	J	A	S	O	N	D					
Diadromous	Alewife															-	-	-	Jan-Dec	Jan-Dec
	American eel															-	-	-	Jan-Dec	Jan-Dec
	American shad															-	-	-	Jan-Dec	Jan-Dec
	Atlantic salmon															Sep-Dec	Sep-Mar	Feb-Jul	Jan-Dec	Jan-Dec
	Blueback herring															-	-	-	Jan-Dec	Jan-Dec
	Sea lamprey															Jun-Aug	Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Striped bass															-	-	-	Apr-Nov	Apr-Nov
Estuarine Nursery	Atlantic herring															Aug-Nov	Aug-Nov	Oct-Dec	Jan-Dec	Jan-Dec
	Bay anchovy															Jun-Aug	Jun-Aug	Jun-Sep	Jan-Dec	Jan-Dec
	Black sea bass															Feb-Jul	Feb-Jul	Mar-Jul	Jan-Dec	Jan-Dec
	Bluefish															-	-	Jun-Aug	May-Nov	May-Nov
	Northern kingfish															Jun-Jul	Jun-Jul	Jun-Aug	May-Nov	May-Nov




FISH (continued)

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
Estuarine Resident	Scup													May-Aug	May-Aug	Jun-Aug	May-Oct	May-Oct
	Summer flounder													May-Aug	Aug-Nov	Sep-Nov	Apr-Nov	Apr-Nov
	Windowpane													May-Aug	May-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Winter flounder													Jan-May	Jan-May	Feb-May	Jan-Dec	Jan-Dec
	Atlantic silverside													May-Aug	May-Aug	May-Sep	Jan-Dec	Jan-Dec
	Forsythe stickleback													May-Jul	May-Jul	May-Aug	Jan-Dec	Jan-Dec
	Mummichog													May-Aug	Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Atlantic cod													-	-	-	Apr-Aug	Apr-Aug
	Atlantic tomcod													Dec-Feb	Dec-Mar	Dec-Apr	Dec-Jun	Dec-Jun
	Atlantic wolffish													Mar-Aug	Mar-Aug	Mar-Sep	Jan-Dec	Jan-Dec
Marine Benthic	Goosefish													-	-	-	-	Jan-Dec
	Haddock													Feb-Jun	Feb-Jun	Mar-Jun	Jan-Dec	Jan-Dec
	Little skate													Jan-Dec	Jan-Dec	-	Jan-Dec	Jan-Dec
	Pollock													-	-	-	Apr-Oct	Apr-Oct
	Red hake													Jun-Sep	Jun-Sep	Jul-Nov	Jun-Nov	Jun-Nov
	Red hake													-	-	-	Dec-May	Dec-May
	Rock gunnel													Nov-Mar	Nov-Apr	Jan-Jun	Jan-Dec	Jan-Dec
	Searobins													Jun-Sep	Jun-Sep	Jun-Oct	Jan-Dec	Jan-Dec
	Silver hake													Jul-Oct	Jul-Oct	Aug-Oct	Jul-Dec	Jul-Dec
	Silver hake													-	-	-	Jan-Jun	Jan-Jun
Marine Pelagic	Tautog													May-Aug	May-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	White hake													Apr-Sep	May-Nov	May-Nov	Jan-Dec	Jan-Dec
	Winter skate													-	-	-	Jan-Dec	Jan-Dec
	Yellowtail flounder													Mar-Jul	Mar-Jul	Apr-Jul	Jan-Dec	Jan-Dec
	Atlantic mackerel													May-Jul	May-Aug	May-Aug	Mar-Dec	Mar-Dec
	Spiny dogfish													-	-	-	Jan-Dec	Jan-Dec
	Tunas													-	-	-	Jun-Sep	-




REPTILES & AMPHIBIANS

Subelement	Species	Monthly Presence												Nest	Hatch	Interest	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
Turtle	Eastern box turtle													Jun-Jul	Aug-Oct	-	Jan-Dec	Jan-Dec

INVERTEBRATES

Subelement	Species	Monthly Presence												Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D				
	Atl. jackknife clam													Apr-May	Apr-May	Jan-Dec	Jan-Dec
	Bay scallop													Jun-Sep	Jun-Sep	Jan-Dec	Jan-Dec
	Eastern oyster													Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Northern quahog													Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Sea scallop													Jul-Oct	Jul-Oct	Jan-Dec	Jan-Dec
	Softshell clam													Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Atlantic rock crab													May-Oct	Jun-Oct	Jan-Dec	Jan-Dec
	Blue crab													-	Jun-Aug	Jan-Dec	Jan-Dec
	Jonah crab													May-Oct	May-Oct	Jan-Dec	Jan-Dec
	American lobster													Aug-Nov	Jun-Oct	Jan-Dec	Jan-Dec
	Db grass shrimp													May-Jul	May-Jul	Jan-Dec	Jan-Dec
	Sevenspine bay shrimp													May-Jul	May-Jul	Jan-Dec	Jan-Dec

MARINE MAMMALS

Subelement	Species	Monthly Presence												Mating	Calving	Pupping	Molt
		J	F	M	A	M	J	J	A	S	O	N	D				
	Atl. wht.-side dolphin													-	-	-	-
	Bottlenose dolphin													-	-	-	-
	Harbor porpoise													-	-	-	-
	Risso's dolphin													-	-	-	-
	Short-beaked common dolphin													-	-	-	-
	Gray seal													Dec-Feb	Dec-Feb	Dec-Feb	Mar-May
	Harbor seal													-	-	-	-
	Harp seal													-	-	-	-
	Hooded seal													-	-	-	-
	Minke whale													-	-	-	-
	Pilot whales													-	-	-	-
														-	-	-	-

For additional information about species locations and extent, reference the underlying GIS data available from response.restoration.noaa.gov

ESI POLYGON HABITAT TYPES

<i>ESI Rank</i>	<i>Habitat Classification</i>	<i>Area (Acres)</i>	<i>Area (Sq. Miles)</i>
10A	Salt and Brackish Water Marshes	326.33	0.51
10B	Freshwater Marshes	49.25	0.08
10C	Swamps	302.96	0.47
10D	Scrub and Shrub Wetlands	210.86	0.33
9A	Sheltered Tidal Flats	10.54	0.02



ESI SHORELINE HABITAT TYPES

<i>ESI Rank</i>	<i>Shoreline Habitat Classification</i>	<i>Length (Meters)</i>	<i>Length (Miles)</i>	<i>% of ESI Shoreline</i>
10A	Salt and Brackish Water Marshes	49,910.78	31.01	51%
10B	Freshwater Marshes	384.00	0.24	< 1%
10C	Swamps	671.04	0.42	1%
10D	Scrub and Shrub Wetlands	339.92	0.21	< 1%
9A	Sheltered Tidal Flats	3,754.66	2.33	4%
9B	Vegetated Low Banks	21,105.41	13.11	21%
8B	Sheltered, Solid Man-Made Structures	3,131.89	1.95	3%
8C	Sheltered Riprap	1,522.43	0.95	2%
6B	Riprap	497.19	0.31	1%
4	Coarse Grained Sand Beaches	8,361.32	5.20	8%
3A	Fine to Medium Grained Sand Beaches	9,102.79	5.66	9%

Total ESI Shoreline: 98,781.41 Total ESI Shoreline: 61.38
 Total Shoreline: 87,883.58 Total Shoreline: 54.61

Note: A shoreline segment may include multiple shoreline habitats. If any segments include multiple habitats, the combined length of all habitats may exceed the length of the mapped shoreline, and the percent of ESI shoreline values will sum to greater than 100%

All underlying GIS data can be obtained from response.restoration.noaa.gov



Map 24D
Massachusetts and Rhode Island

BIOLOGICAL RESOURCES

Note: An asterisk (*) indicates that life stage occurs in this range but not in all months included

DISPLAYED ON MAP

BENTHIC

Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence											
						J	F	M	A	M	J	J	A	S	O	N	D
SAV	Eelgrass	High Ecological Value			Present												
SAV	Rare aquatic/wetland plant	High Ecological Value			Present												

BIRDS

Map ID	Subelement	Species	Mapping Qualifier	MA/RI		Concentration	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt
				S	F		J	F	M	A	M	J	J	A	S	O	N	D				
21	Wading	Marsh birds	General Distribution	C/C		Common												-	Mar-May	Aug-Nov	Jul-Aug	-
122	Alcid	Razorbill	Wintering			Common												-	-	Oct-Nov	-	-
	Diving	Great cormorant	Wintering			Common												-	Feb-Mar	Nov	-	-
	Diving	Loons	Migration	C/-		Common												-	Mar-Jun	Sep-Dec	Jan-Mar	-
	Gull/Tern	Rare tern	General Distribution	C/-		Common												-	Apr-May	Jul-Sep	-	-
	Gull/Tern	Roseate tern	General Distribution	E/-	E	Common												-	Apr-May	Jul-Sep	-	-
123	Shorebird	Purple sandpiper	Wintering			Common												-	Mar	Oct	-	-
	Waterfowl	American black duck	Wintering			Common												Mar-Apr	Sep-Apr	-	-	-
	Waterfowl	Diving ducks	Wintering			Common												Mar-Apr	Sep-Apr	-	-	-
	Waterfowl	Geese	Wintering			Common												May	Mar-May	Sep-Nov	-	-
	Waterfowl	Sea ducks	Wintering			Abundant												-	Mar-May	Sep-Oct	-	-
	Alcid	Razorbill	Wintering			Common												-	-	Oct-Nov	-	-
	Diving	Great cormorant	Wintering			Common												-	Feb-Mar	Nov	-	-
	Diving	Loons	Migration	C/-		Common												-	Mar-Jun	Sep-Dec	Jan-Mar	-
	Gull/Tern	Roseate tern	General Distribution	E/-	E	Common												-	Apr-May	Jul-Sep	-	-
	Shorebird	Purple sandpiper	Wintering			Common												-	Mar	Oct	-	-
124	Waterfowl	American black duck	Wintering			Common												Mar-Apr	Sep-Apr	-	-	-
	Waterfowl	Diving ducks	Wintering			Common												Mar-Apr	Sep-Apr	-	-	-
	Waterfowl	Geese	Wintering			Common												May	Mar-May	Sep-Nov	-	-
	Waterfowl	Sea ducks	Wintering			Abundant												-	Mar-May	Sep-Oct	-	-
	Alcid	Razorbill	Wintering			Common												-	-	Oct-Nov	-	-
	Diving	Great cormorant	Wintering			Common												-	Feb-Mar	Nov	-	-
	Diving	Loons	Migration	C/-		Common												-	Mar-Jun	Sep-Dec	Jan-Mar	-
	Shorebird	Purple sandpiper	Wintering			Common												-	Mar	Oct	-	-
	Waterfowl	American black duck	Wintering			Common												Mar-Apr	Sep-Apr	-	-	-
	Waterfowl	Diving ducks	Wintering			Common												Mar-Apr	Sep-Apr	-	-	-
	Waterfowl	Geese	Wintering			Common												May	Mar-May	Sep-Nov	-	-
	Waterfowl	Sea ducks	Wintering			Abundant												-	Mar-May	Sep-Oct	-	-
	Alcid	Razorbill	Wintering			Common												-	-	Oct-Nov	-	-
	Diving	Loons	Migration	C/-		Common												-	Mar-Jun	Sep-Dec	Jan-Mar	-
	Gull/Tern	Rare tern	General Distribution	C/-		Common												-	Apr-May	Jul-Sep	-	-

BIRDS (continued)

Map ID	Subelement	Species	Mapping Qualifier	MA/RI		Concentration	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt
				S	F		J	F	M	A	M	J	J	A	S	O	N	D				
140	Gull/Tern	Roseate tern	General Distribution	E/-	E	Common												-	Apr-May	Jul-Sep	-	
	Waterfowl	Sea ducks	Wintering			Abundant												-	Mar-May	Sep-Oct	-	
	Waterfowl	Waterfowl	General Distribution	C/C		Common												May-Jul	Apr-May	Aug-Oct	Aug-Sep	
	Alcid	Razorbill	Wintering			Common												-	-	Oct-Nov	-	
	Diving	Loons	Migration	C/-		Common												-	Mar-Jun	Sep-Dec	Jan-Mar	
250	Waterfowl	Sea ducks	Wintering			Abundant												-	Mar-May	Sep-Oct	-	
	Passerine	Marsh passerines	General Distribution	-/C		Common												Apr-Aug	Apr-May	Aug-Nov	Sep-Oct	
	Passerine	Saltmarsh sparrow	Nesting	-/C		Common												May-Jul	May	-	-	
	Shorebird	Willet	Nesting	-/C		Common												Apr-May	Apr-May	Aug-Oct	-	
	Wading	Egrets	General Distribution	-/C		Common												Apr-Jul	Mar-May	Aug-Sep	-	
251	Wading	Marsh birds	General Distribution	C/C		Common												-	Mar-May	Aug-Nov	Jul-Aug	
	Wading	Wading birds	General Distribution	-/C		Common												-	Mar-May	Jul-Oct	-	
	Passerine	Marsh passerines	General Distribution	-/C		Common												Apr-Aug	Apr-May	Aug-Nov	Sep-Oct	
	Passerine	Saltmarsh sparrow	Nesting	-/C		Common												May-Jul	May	-	-	
	Shorebird	Willet	Nesting	-/C		Common												Apr-May	Apr-May	Aug-Oct	-	
279	Wading	Egrets	General Distribution	-/C		Common												-	Mar-May	Aug-Sep	-	
	Wading	Wading birds	General Distribution	-/C		Common												-	Mar-May	Jul-Oct	-	
	Gull/Tern	Rare tern	General Distribution	C/-		Common												-	Apr-May	Jul-Sep	-	
	Gull/Tern	Roseate tern	General Distribution	E/-	E	Common												-	Apr-May	Jul-Sep	-	
	Passerine	Marsh passerines	General Distribution	-/C		Common												Apr-Aug	Apr-May	Aug-Nov	Sep-Oct	
301	Wading	Egrets	Migration	-/C		Common												-	Mar-May	Aug-Sep	-	
	Wading	Marsh birds	General Distribution	C/C		Common												-	Mar-May	Aug-Sep	-	
	Wading	Wading birds	General Distribution	-/C		Common												-	Mar-May	Aug-Nov	Jul-Aug	
	Wading	Wading birds	General Distribution	-/C		Common												-	Mar-May	Jul-Oct	-	
	Waterfowl	Waterfowl	General Distribution	C/C		Common												May-Jul	Apr-May	Aug-Oct	Aug-Sep	
305	Passerine	Marsh passerines	General Distribution	-/C		Common												-	Apr-May	Aug-Nov	Sep-Oct	
	Wading	Egrets	Migration	-/C		Common												-	Apr-May	Aug-Sep	-	
	Wading	Marsh birds	General Distribution	C/C		Common												-	Mar-May	Aug-Sep	-	
	Wading	Marsh birds	General Distribution	C/C		Common												-	Mar-May	Aug-Nov	Jul-Aug	
	Wading	Wading birds	General Distribution	-/C		Common												-	Mar-May	Jul-Oct	-	
325	Waterfowl	Waterfowl	General Distribution	C/C		Common												-	Apr-May	Aug-Oct	Aug-Sep	
	Passerine	Marsh passerines	General Distribution	-/C		Common												-	Apr-May	Aug-Nov	Sep-Oct	
	Wading	Egrets	Migration	-/C		Common												-	Apr-May	Aug-Sep	-	
	Wading	Marsh birds	General Distribution	C/C		Common												-	Mar-May	Aug-Nov	Jul-Aug	
	Waterfowl	Waterfowl	General Distribution	C/C		Common												-	Apr-May	Aug-Oct	Aug-Sep	
375	Shorebird	American oystercatcher	Nesting	-/C		Rare												-	May-Aug	May	-	
	Wading	Wading birds	General Distribution	-/C		Common												-	Mar-May	Jul-Oct	-	
396	Waterfowl	American black duck	Wintering			Common												-	Mar-Apr	Sep-Apr	-	
	Waterfowl	Diving ducks	Wintering			Common												-	Mar-Apr	Sep-Apr	-	
	Waterfowl	Geese	Wintering			Common												-	Mar-May	Sep-Nov	-	
	Waterfowl	Geese	Wintering			Common												-	Mar-May	Sep-Nov	-	

BIRDS (continued)

Map ID	Subelement	Species	Mapping Qualifier	MA/RI S F	Concentration	Monthly Presence												Nest	Eggs	Larvae	Juveniles	Adults
						J	F	M	A	M	J	J	A	S	O	N	D					
438	Waterfowl	Waterfowl	General Distribution	C/C	Common													May-Jul	Apr-May	Aug-Oct	Aug-Sep	-
	Gull/Tern	Rare tern	General Distribution	C/-	Common													-	Apr-May	Jul-Sep	-	-
464	Shorebird	Roseate tern	General Distribution	E/-	Common													-	Apr-May	Jul-Sep	-	-
	Shorebird	Shorebirds	Migration		Common													-	Mar-Jun	Jul-Nov	Aug	-
488	Waterfowl	Waterfowl	General Distribution	C/C	Common													May-Jul	Apr-May	Aug-Oct	Aug-Sep	-
	Wading	Marsh birds	General Distribution	C/C	Common													-	Mar-May	Aug-Nov	Jul-Aug	-
491	Waterfowl	Waterfowl	General Distribution	C/C	Common													May-Jul	Apr-May	Aug-Oct	Aug-Sep	-
	Waterfowl	Waterfowl	General Distribution	C/C	Common													May-Jul	Apr-May	Aug-Oct	Aug-Sep	-

FISH

Map ID	Subelement	Species	Mapping Qualifier	MA/RI S F	Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
						J	F	M	A	M	J	J	A	S	O	N	D					
556	Diadromous	Alewife	Spawning Area		-													Apr-Jun	Apr-Jun	Apr-Jun	-	Apr-Jun
	Diadromous	Blueback herring	Spawning Area		-													Apr-Jun	Apr-Jun	Apr-Jun	-	Apr-Jun
557	Diadromous	Alewife	Spawning Area		-													Apr-Jun	Apr-Jun	Apr-Jun	-	Apr-Jun
	Diadromous	American eel	Migration		-													-	-	-	Jan-Dec	Jan-Dec
576	Diadromous	Blueback herring	Spawning Area		-													Apr-Jun	Apr-Jun	Apr-Jun	-	Apr-Jun
	Diadromous	Alewife	Spawning Area		-													Apr-Jun	Apr-Jun	Apr-Jun	-	Apr-Jun
	Diadromous	American eel	Migration		-													-	-	-	Jan-Dec	Jan-Dec
	Diadromous	American shad	Spawning Area		-													Apr-Jun	Apr-Jun	Apr-Jun	-	Apr-Jun
579	Diadromous	Blueback herring	Spawning Area		-													Apr-Jun	Apr-Jun	Apr-Jun	-	Apr-Jun
	Diadromous	Alewife	Spawning Area		-													Apr-Jun	Apr-Jun	Apr-Jun	-	Apr-Jun
	Diadromous	American eel	Migration		-													-	-	-	Jan-Dec	Jan-Dec
	Diadromous	American shad	Spawning Area		-													Apr-Jun	Apr-Jun	Apr-Jun	-	Apr-Jun
	Diadromous	Blueback herring	Spawning Area		-													Apr-Jun	Apr-Jun	Apr-Jun	-	Apr-Jun
	Diadromous	Blueback herring	Spawning Area		-													Apr-Jun	Apr-Jun	Apr-Jun	-	Apr-Jun
592	Estuarine Resident	Threespine stickleback	General Distribution	T/-	Common													Jun-Aug	Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Diadromous	American eel	Migration		-													-	-	-	Jan-Dec	Jan-Dec
616	Diadromous	Sea lamprey	Vulnerable Occurrence		-													Jun-Aug	Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Freshwater	Blacknose dace	Vulnerable Occurrence		-													Mar-Jun	Mar-Jun	Apr-Jun	Jan-Dec	Jan-Dec
	Freshwater	Brook trout	Vulnerable Occurrence		-													Sep-Nov	Sep-Nov	Nov-Dec	Jan-Dec	Jan-Dec
	Freshwater	Common shiner	Vulnerable Occurrence		-													May-Aug	May-Aug	May-Aug	Jan-Dec	Jan-Dec
	Freshwater	Creek chub	Vulnerable Occurrence		-													May-Aug	May-Aug	May-Aug	Jan-Dec	Jan-Dec
	Freshwater	Fallfish	Vulnerable Occurrence		-													-	-	-	Jan-Dec	Jan-Dec
	Freshwater	Longnose dace	Vulnerable Occurrence		-													-	-	-	Jan-Dec	Jan-Dec
	Freshwater	Slimy sculpin	Vulnerable Occurrence		-													-	-	-	Jan-Dec	Jan-Dec
	Freshwater	Tessellated darter	Vulnerable Occurrence		-													May-Jul	May-Jul	May-Aug	Jan-Dec	Jan-Dec
	Freshwater	White sucker	Vulnerable Occurrence		-													Apr-May	May-Jul	May-Jul	Jan-Dec	Jan-Dec
617	Diadromous	Sea lamprey	Vulnerable Occurrence		-													Jun-Aug	Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Estuarine Resident	Fourspine stickleback	Vulnerable Occurrence		-													May-Jul	May-Jul	May-Aug	Jan-Dec	Jan-Dec
	Estuarine Resident	Mummichog	Vulnerable Occurrence		-													May-Aug	Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Estuarine Resident	Threespine stickleback	Vulnerable Occurrence	T/-	-													Jun-Aug	Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
622	Estuarine Resident	Threespine stickleback	General Distribution	T/-	Common													Jun-Aug	Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Estuarine Resident	Threespine stickleback	General Distribution	T/-	Common													Jun-Aug	Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec

HABITATS & RARE PLANTS



Map ID	Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence
								J F M A M J J A S O N D
638	Plant	Rare plant	Vulnerable Occurrence	T/C			-	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div>
646	Wetland	Vernal pool	Vulnerable Occurrence				-	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div>

INVERTEBRATES

Map ID	Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence	Spawn	Eggs	Larvae	Juveniles	Adults
								J F M A M J J A S O N D					
666	Crab	Blue crab	Nursery				Common	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div>	Jun-Aug	-	Jun-Aug	Jan-Dec	Jan-Dec
669	Cephalopod	Horseshoe crab	Nursery				Abundant	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div>	May-Jul	May-Jul	-	Jan-Dec	Jan-Dec
	Crab	Longfin squid	Concentration Area				Common	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div>	May-Aug	May-Aug	May-Aug	Apr-Nov	Apr-Nov
	Crab	Blue crab	Nursery				Common	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div>	Jun-Aug	-	Jun-Aug	Jan-Dec	Jan-Dec
	Crab	Horseshoe crab	Nursery				Abundant	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div>	May-Jul	May-Jul	-	Jan-Dec	Jan-Dec
	Gastropod	Channeled whelk	Concentration Area				Med-Low	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div>	Jun-Jul	Aug-Oct	-	May-Oct	May-Oct
	Gastropod	Knobbed whelk	Concentration Area				Medium	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div>	Jun-Jul	Aug-Oct	-	May-Oct	May-Oct
712	Bivalve	Rare freshwater mussel	General Distribution	C/C			-	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div>	Aug-Sep	Aug-May	Jun-Jul	Jan-Dec	Jan-Dec

WIDESPREAD IN MAPPED AREA (> 10 SQUARE KILOMETERS)

BIRDS

Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence	Nest	Mig.(S)	Mig.(F)	Molt
							J F M A M J J A S O N D				
	Passerine	Grasshopper sparrow		T/T	E	Rare	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div>	Jun-Aug	-	-	-
	Shorebird	Upland sandpiper		E/-		Rare	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div>	May-Jul	May	Jul	-

REPTILES & AMPHIBIANS





Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence	Nest	Hatch	Internest	Juveniles	Adults
							J F M A M J J A S O N D					
	Amphibian	Eastern spadefoot		T/E		-	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div>	Apr-Jun	May-Jul	-	Jan-Dec	Jan-Dec

TERRESTRIAL MAMMALS

Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence
							J F M A M J J A S O N D
	Small Mammal	New England cottontail		-/C		Rare	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div>






ALSO PRESENT IN MAPPED AREA (GENERAL DISTRIBUTION)

BIRDS

Subelement	Species	Mapping Qualifier	MA/RI	S	F	Concentration	Monthly Presence	Nest	Mig.(S)	Mig.(F)	Molt
							J F M A M J J A S O N D				
	Diving	D. crested cormorant					<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div>	-	Mar-Apr	Aug-Nov	-
	Gull/Tern	Gulls					<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div>	-	Apr-May	Aug-Nov	-
	Shorebird	Shorebirds					<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div>	Apr-Aug	Mar-Dec	-	Aug
	Waterfowl	American black duck					<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div>	Mar-Jul	Sep-Mar	-	-
		Diving ducks					<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div>	Mar-Apr	Sep-Apr	-	-
		Geese					<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div>	May	Mar-May	Sep-Nov	-

FISH

Monthly Presence

Subelement	Species	J	F	M	A	M	J	J	A	S	O	N	D	Spawn	Eggs	Larvae	Juveniles	Adults
	Alewife													-	-	-	Jan-Dec	Jan-Dec
	American eel													-	-	-	Jan-Dec	Jan-Dec
	American shad													-	-	-	Jan-Dec	Jan-Dec
	Blueback herring													-	-	-	Jan-Dec	Jan-Dec
	Sea lamprey													Jun-Aug	Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Atlantic herring													Aug-Nov	Aug-Nov	Oct-Dec	Jan-Dec	Jan-Dec
	Bay anchovy													Jun-Aug	Jun-Aug	Jun-Sep	Jan-Dec	Jan-Dec
	Black sea bass													Feb-Jul	Feb-Jul	Mar-Jul	Jan-Dec	Jan-Dec
	Bluefish													-	-	Jun-Aug	May-Nov	May-Nov
	Hogchoker													May-Aug	May-Aug	Jun-Sep	May-Oct	May-Oct
	Northern kingfish													Jun-Jul	Jun-Jul	Jun-Aug	May-Nov	May-Nov
	Scup													May-Aug	May-Aug	Jun-Aug	May-Oct	May-Oct
	Summer flounder													Aug-Nov	Aug-Nov	Sep-Nov	Apr-Nov	Apr-Nov
	Weakfish													Apr-Aug	Apr-Aug	May-Sep	Apr-Nov	Apr-Nov
	Windowpane													May-Aug	May-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Winter flounder													Jan-May	Jan-May	Feb-May	Jan-Dec	Jan-Dec
	Atlantic silverside													May-Aug	May-Aug	May-Sep	Jan-Dec	Jan-Dec
	Forspine stickleback													May-Jul	May-Jul	May-Aug	Jan-Dec	Jan-Dec
	Mummichog													May-Aug	Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Oyster toadfish													May-Aug	May-Aug	May-Sep	Jan-Dec	Jan-Dec
	Atlantic cod													-	-	-	Apr-Aug	Apr-Aug
	Atlantic tomcod													Dec-Feb	Dec-Mar	Dec-Apr	Dec-Jun	Dec-Jun
	Goosefish													-	-	-	-	Jan-Dec
	Haddock													Feb-Jun	Feb-Jun	Mar-Jun	Jan-Dec	Jan-Dec
	Little skate													Jan-Dec	Jan-Dec	-	Jan-Dec	Jan-Dec
	Pollock													-	-	-	Apr-Oct	Apr-Oct
	Red hake													-	-	-	Dec-May	Dec-May
	Red hake													Jun-Sep	Jun-Sep	Jul-Nov	Jun-Nov	Jun-Nov
	Rock gunnel													Nov-Mar	Nov-Apr	Jan-Jun	Jan-Dec	Jan-Dec
	Searobins													Jun-Sep	Jun-Sep	Jun-Oct	Jan-Dec	Jan-Dec
	Silver hake													Jul-Oct	Jul-Oct	Aug-Oct	Jul-Dec	Jul-Dec
	Silver hake													-	-	-	Jan-Jun	Jan-Jun
	Tautog													May-Aug	May-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	White hake													Apr-Sep	May-Nov	May-Nov	Jan-Dec	Jan-Dec
	Winter skate													-	-	-	Jan-Dec	Jan-Dec
	Winter skate													-	-	-	Feb-Jul	Feb-Jul
	Winter skate													-	-	-	Aug-Jan	Aug-Jan
	Yellowtail flounder													Mar-Jul	Mar-Jul	Apr-Jul	Jan-Dec	Jan-Dec
	Atlantic mackerel													May-Jul	May-Aug	May-Aug	Mar-Dec	Mar-Dec
	Spiny dogfish													-	-	-	Jan-Dec	Jan-Dec
	Spiny dogfish													-	-	-	Feb-Jul	Feb-Jul
	Spiny dogfish													-	-	-	Aug-Jan	Aug-Jan
	Spiny dogfish													-	-	-	-	-
	Spiny dogfish													-	-	-	-	-

REPTILES & AMPHIBIANS

Subelement	Species	Monthly Presence												Nest	Hatch	Internest	Juveniles	Adults
Turtle	Eastern box turtle	J	F	M	A	M	J	J	A	S	O	N	D	Jun-Jul	Aug-Oct	-	Jan-Dec	Jan-Dec

INVERTEBRATES

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
Bivalve	Bay scallop	J	F	M	A	M	J	J	A	S	O	N	D	Jun-Sep	Jun-Sep	Jun-Sep	Jan-Dec	Jan-Dec
	Blue mussel													May-Nov	May-Nov	May-Nov	Jan-Dec	Jan-Dec
	Eastern oyster													Jun-Aug	Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Northern quahog													Jun-Aug	Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Sea scallop													Jul-Oct	Jul-Oct	Jul-Oct	Jan-Dec	Jan-Dec
	Softshell clam													Jun-Aug	Jun-Aug	Jun-Aug	Jan-Dec	Jan-Dec
Cephalopod	Longfin squid													May-Aug	May-Aug	May-Aug	Apr-Nov	Apr-Nov
	Atlantic rock crab													May-Oct	Jun-Oct	Jun-Oct	Jan-Dec	Jan-Dec
Crab	Jonah crab													May-Oct	May-Oct	May-Oct	Jan-Dec	Jan-Dec
	American lobster													Aug-Nov	Jan-Dec	Jan-Dec	Jan-Dec	Jan-Dec
Lobster	Db grass shrimp													May-Jul	May-Jul	May-Jul	Jan-Dec	Jan-Dec
	Sevenspine bay shrimp													May-Jul	May-Jul	May-Jul	Jan-Dec	Jan-Dec

MARINE MAMMALS

Subelement	Species	Monthly Presence												Mating	Calving	Pupping	Molt
Pinniped	Gray seal	J	F	M	A	M	J	J	A	S	O	N	D	Dec-Feb	Dec-Feb	Dec-Feb	Mar-May
	Harbor seal													-	-	-	-

For additional information about species locations and extent, reference the underlying GIS data available from response.restoration.noaa.gov

SHORELINE RESOURCES

ESI POLYGON HABITAT TYPES

ESI Rank	Habitat Classification	Area (Acres)	Area (Sq. Miles)
10A	Salt and Brackish Water Marshes	88.50	0.14
10B	Freshwater Marshes	14.25	0.02
10C	Swamps	181.36	0.28
10D	Scrub and Shrub Wetlands	64.31	0.10
9A	Sheltered Tidal Flats	27.51	0.04
7	Exposed Tidal Flats	6.24	0.01

ESI SHORELINE HABITAT TYPES

ESI Rank	Shoreline Habitat Classification	Length (Meters)	Length (Miles)	% of ESI Shoreline
10A	Salt and Brackish Water Marshes	17,903.63	11.12	32%
10B	Freshwater Marshes	278.22	0.17	< 1%
10C	Swamps	1,327.84	0.83	2%
9A	Sheltered Tidal Flats	9,943.68	6.18	18%
9B	Vegetated Low Banks	12,356.37	7.68	22%
8B	Sheltered, Solid Man-Made Structures	2,510.33	1.56	4%
8C	Sheltered Riprap	1,421.35	0.88	3%
7	Exposed Tidal Flats	1,871.06	1.16	3%
6B	Gravel Beaches (Cobbles/Boulders)	162.50	0.10	< 1%
6B	Riprap	1,615.13	1.00	3%
5	Mixed Sand and Gravel Beaches	29.14	0.02	< 1%
4	Coarse Grained Sand Beaches	5,163.29	3.21	9%
3A	Fine to Medium Grained Sand Beaches	1,445.18	0.90	3%
1B	Exposed, Solid Man-Made Structures	310.13	0.19	1%

Total ESI Shoreline: 56,337.87 Total ESI Shoreline: 35.01
Total Shoreline: 41,875.67 Total Shoreline: 26.02

Note: A shoreline segment may include multiple shoreline habitats. If any segments include multiple habitats, the combined length of all habitats may exceed the length of the mapped shoreline, and the percent of ESI shoreline values will sum to greater than 100%

All underlying GIS data can be obtained from response.restoration.noaa.gov



Human-Use Features

	Access		Park
	Airport		Port
	Anchorage		Recreational Fishing
	Aquaculture		Repeated Measurement Site
	Artificial Reef		State Protected Area
	Archaeological Site		Tribal Land
	Beach		Wildlife Refuge
	Boat Ramp		US Highway
	Campground		State Highway or Route
	Commercial Fishing		Interstate
	Critical Habitat		Road
	Diving Site		Shipping Lane
	EPA Facility		Rail Route
	Ferry		Pipeline
	Historic Wreck		Ferry Route
	Historical Site		Management Area
	Lock and Dam		Map ID
	Management Area		
	Marina		
	Marine Sanctuary		
	Military		
	National Park		
	Nature Conservancy		

ESI Shoreline and Habitat Ranking

	1A) Exposed, Rocky Shores
	1B) Exposed, Solid Man-Made Structures
	2A) Exposed, Wave-Cut Platform (Bedrock/Mud/Clay)
	2B) Exposed Scarps and Steep Slopes (Clay)
	3A) Fine to Medium Grained Sand Beaches
	3B) Scarps and Steep Slopes (Sand)
	4) Coarse-Grained Sand Beaches
	5) Mixed Sand and Gravel Beaches
	6A) Gravel Beaches
	6B) Gravel Beaches (Cobbles/Boulders)
	6B) Riprap
	7) Exposed Tidal Flats
	8A) Sheltered, Impermeable, Rocky Shores
	8A) Sheltered Scarps (Bedrock/Mud/Clay)
	8B) Sheltered, Solid Man-Made Structures
	8B) Sheltered, Permeable, Rocky Structures
	8C) Sheltered Riprap
	8D) Sheltered, Rocky, Rubble Shores
	9A) Sheltered Tidal Flats
	9B) Vegetated Low Banks
	10A) Salt and Brackish Water Marshes
	10B) Freshwater Marshes
	10C) Swamps
	10D) Scrub and Shrub Wetlands







































Examples of Double and Triple Shoreline Rankings:

10D & 2A

10C & 10A & 4

Shorelines often contain varied geomorphology, and therefore may require two or three ESI types to describe. These symbols will look similar to the examples above. The first shoreline type listed is the most landward shore type.

Sensitive Biological Resources

	Birds		Invertebrates		Terrestrial Mammals
	Birds		Invertebrates		Bat
	Alcid/Pelagic		Bivalve/Barnacle/Chordate		Small Mammal
	Diving		Cephalopod		Habitats
	Gull/Tern/Bird		Crab/Invertebrate/Shellfish		Habitats
	Passerine		Gastropod		Upland/Wetland/Plant
	Raptor		Insect		Reptiles
	Shorebird		Lobster		Amphibian/Snake
	Wading		Shrimp		Turtle
	Waterfowl		Marine Mammals		Threatened or Endangered Species
	Fish		Marine Mammals		Map ID
	Fish		Dolphin		
	Nursery		Pinniped		
			Whale		

Guidelines for Interpreting Environmental Sensitivity Index (ESI) Maps

The following guidelines may help map users interpret the ESI maps. Additional information about resources mapped for this atlas can be found in the ESI Intro pages and associated metadata.

Sensitive Biological Resources (1:50,000 scale maps): Species are arranged into eight major categories or "elements" and further subdivided into "subelement" groupings representing species that share similar lifestyle characteristics and risks to oiling.

Biological resources may be mapped as points, lines, and/or polygons. Each element is represented by a unique color and/or hatch pattern, and icons illustrate the subelement(s) found within each feature. If a species is state or federally listed as threatened or endangered, a solid red square is placed behind the icon. When multiple elements occur in the same location, overlapping hatch patterns will be shown.

The associated Map ID "links" to the map report where the species and attributes are listed. To maximize readability, biological polygons covering more than 10 square km are not displayed on the map. Instead, these species are listed in the "Widespread in Mapped Area" section of the report. Occurrences of non-listed species assigned a "General Distribution" mapping qualifier are listed under "Also Present in Mapped Area" regardless of polygon size.

Shoreline Habitat Resources (all maps): The shoreline was mapped at mean-high water, then classified based on vulnerability to spilled oil and ease of clean-up. Shorelines are ranked on a scale from 1 (least vulnerable) to 10 (most vulnerable). Cooler colors represent less vulnerable shoreline types; warm and hot colors indicate increased vulnerability. A shoreline may have more than one habitat type present. When this happens, the most landward shoreline type is mapped on the shoreline, and the more seaward type(s) are mapped adjacent to the water. The areal extent of intertidal and marsh habitats may also be mapped as polygons. Most often these polygons represent tidal flats and marshes, though in particularly rocky shored areas, these may include exposed, wave-cut platforms and sand and gravel beaches.

Human-Use Features (1:100,000 scale maps): Locations of human-use features and jurisdictional boundaries are mapped as points, lines, or polygons. As with biological features, the human-use features appearing on the map include Map ID which "links" to a description of the feature in the map report. Additional features, particularly jurisdictional and management boundaries that cover the majority or entirety of the mapped area, are listed in the report, but not shown on the map.

