

Environmental Sensitivity Index Maps

A Guide to Coastal Resources at Risk to Spilled Oil

North Carolina: Volume 1



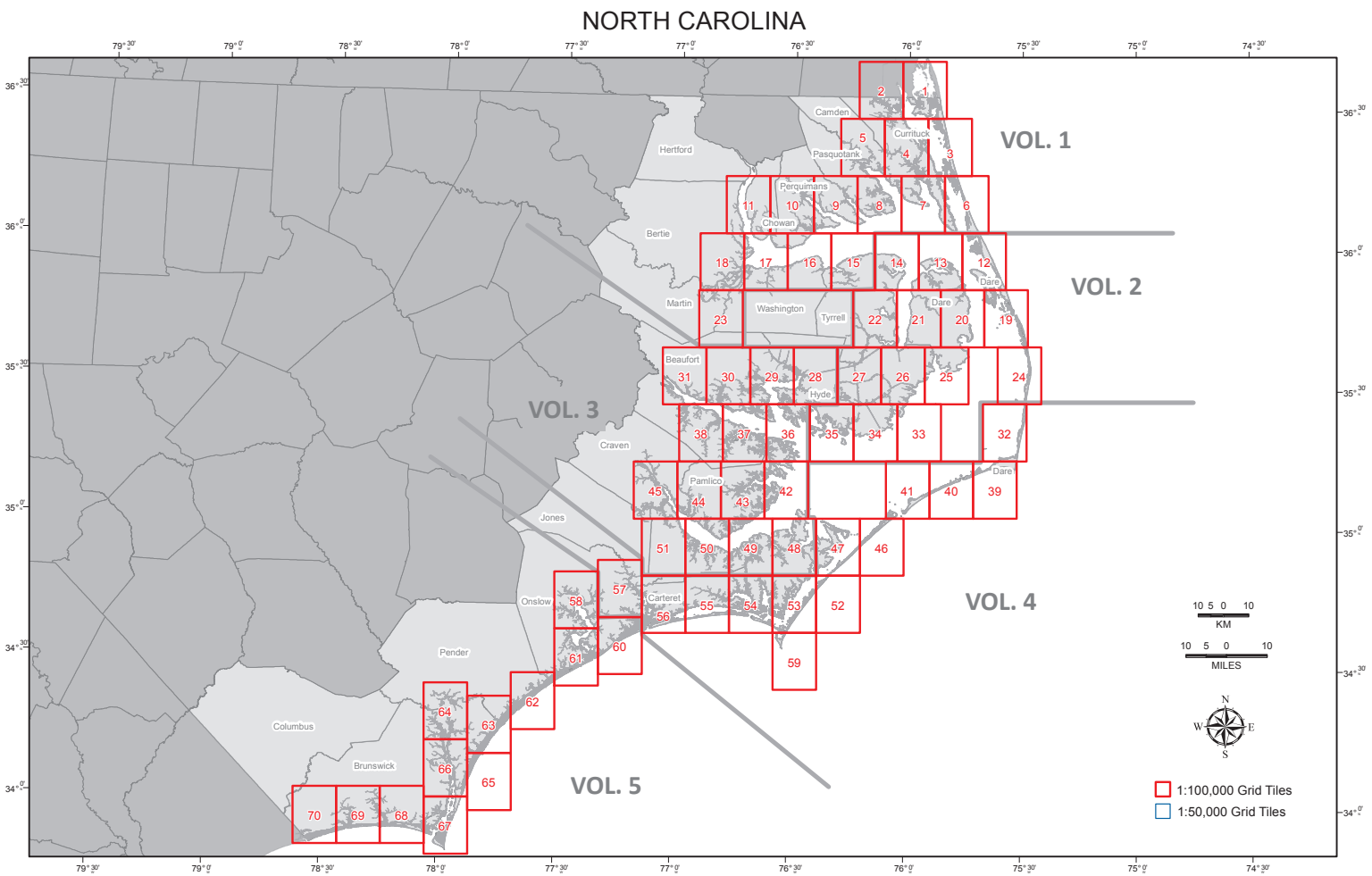
Office of Response and Restoration

November 2016

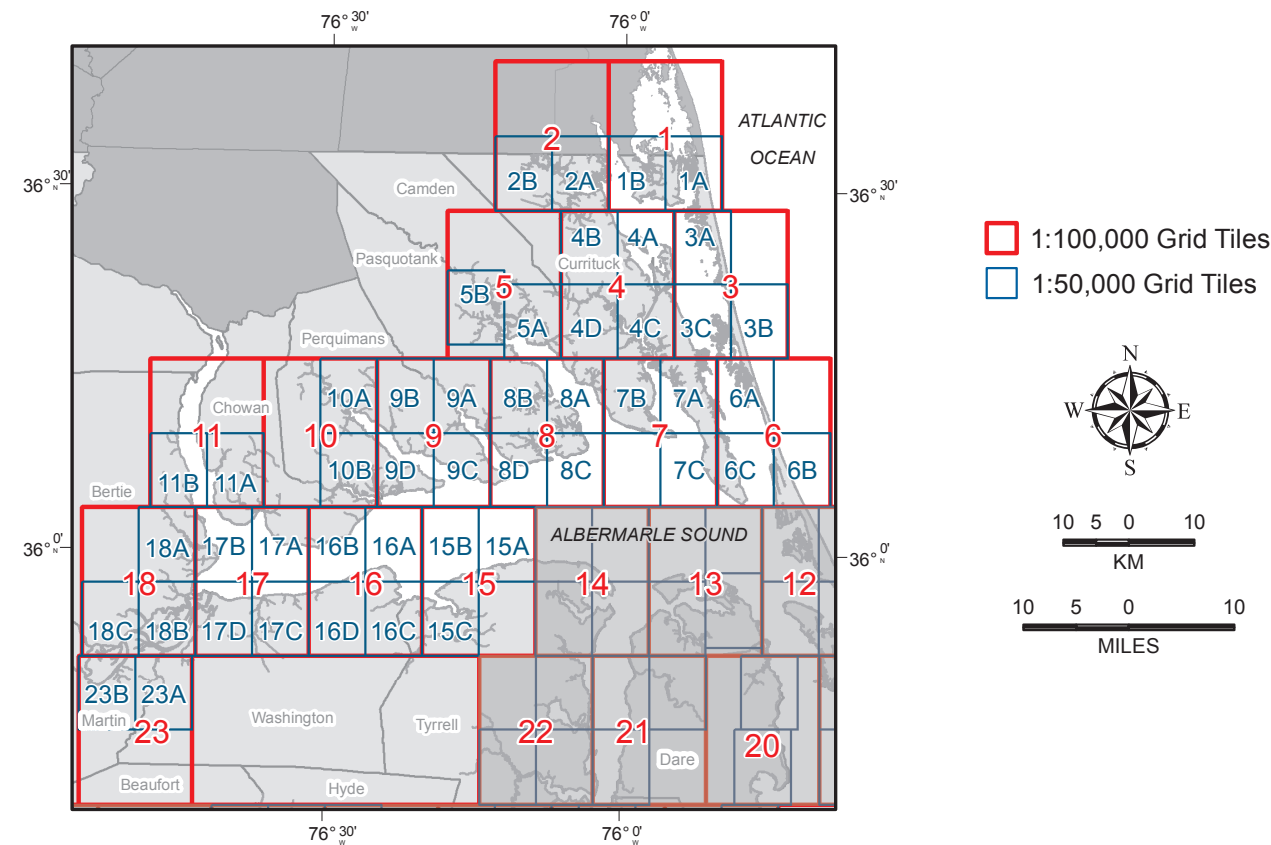
NOAA Environmental Sensitivity Index Maps

A Guide to Coastal Resources at Risk to Spilled Oil

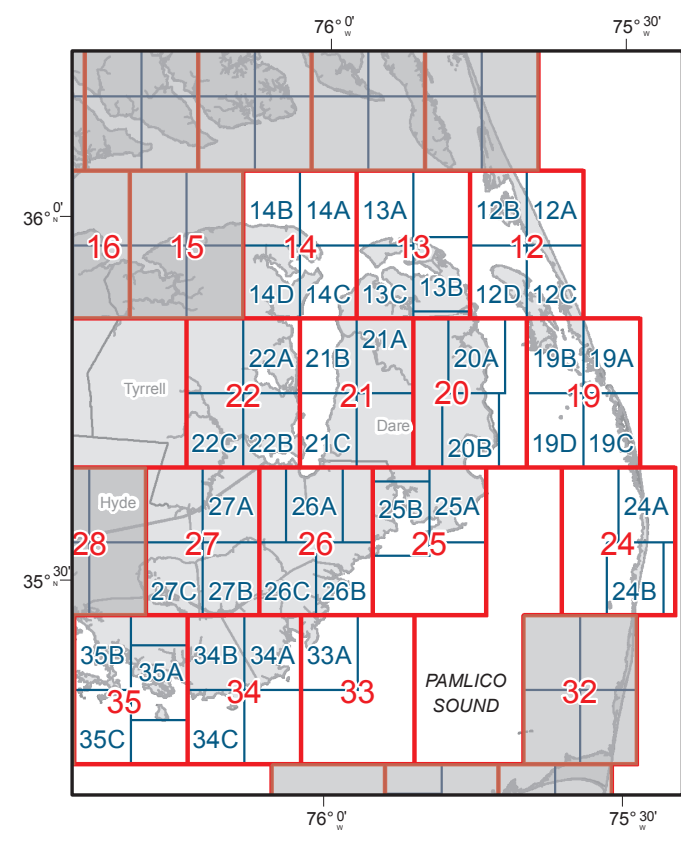
North Carolina



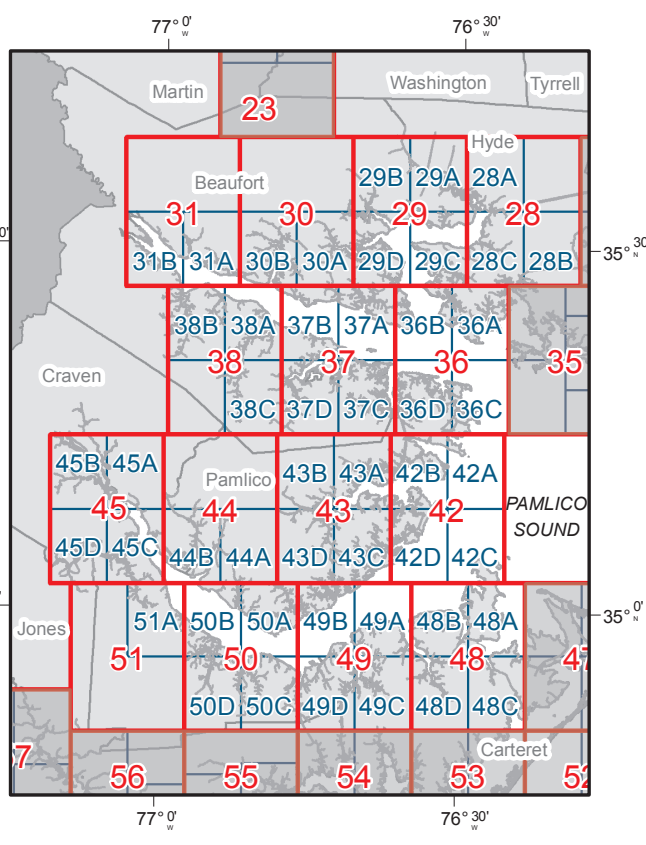
NORTH CAROLINA: VOLUME 1



NORTH CAROLINA: VOLUME 2



NORTH CAROLINA: VOLUME 3



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ENVIRONMENTAL SENSITIVITY INDEX: NORTH CAROLINA

INTRODUCTION

This Environmental Sensitivity Index (ESI) atlas was developed for the marine and coastal areas of North Carolina. The atlas covers the coastal regions, sounds and major tidal rivers of North Carolina from the Virginia state line to the South Carolina state line. The major waterbodies include the Atlantic Ocean as well as the Currituck, Albermarle, Pamlico, Croatan, Roanoke, and Core sounds. Major tidal tributaries include the Chowan, Perquimans, Pasquotank, North, Alligator, Pungo, Pamlico, Neuse, New, and Cape Fear rivers. The inland extent reaches three to five miles inland surrounding these major water bodies and includes large land locked lakes and reservoirs when applicable. 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 North Carolina shoreline was derived from the integration of the National Oceanic and Atmospheric Administration (NOAA) Continually Updated Shoreline Product (CUSP, 2014); NOAA Shoreline Mapping Program NC1401A / NC0801A / NC0801D / NC0902 / NC0503 / NC0501 datasets (2014); the North Carolina Division of Coastal Management (DCM) Estuarine Shoreline (2012) dataset; the U.S. Geological Survey (USGS) National Hydrography Dataset (NHD, 2014); the U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) dataset (2010); the NOAA, National Ocean Service (NOS), Office of Response and Restoration (OR&R), Emergency Response Division(ERD) and U.S. EPA, Department of Homeland Security (DHS), U.S. Coast Guard (USCG) Sensitivity of Coastal Environments and Wildlife to Spilled Oil - North Carolina, 2011 dataset; and manual digitization /photo-interpretation at approximately 1:1,000 scale using ortho-rectified aerial imagery resources from the North Carolina Center for Geographic Information and Analysis (2012), Environmental System Research Institute (ESRI) World Imagery (2014), and the NOAA Ortho-rectified Mosaic of Eastern Coastline - Hurricane Sandy Impact Area (2014). The most recent shoreline was used where available. Intertidal habitat classifications were assigned to shoreline features of 10 meters (m) or greater in length. Where necessary, multiple types were described for each shoreline segment. Additionally, wetland and tidal flat polygon datasets originally created by the USFWS NWI were modified and updated in conjunction with the ESI shoreline. 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)
- 2) Exposure to wave and tidal energy
- 3) Biological productivity and sensitivity
- 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 North Carolina presented in order of increasing sensitivity to spilled oil, are listed below.

- | | |
|--|---------------------------------------|
| 1B) Exposed, Solid Man-made Structures | 8C) Sheltered Riprap |
| 3A) Fine- to Medium-grained Sand Beaches | 9A) Sheltered Tidal Flats |
| 3B) Scarps and Steep Slopes in Sand | 9B) Vegetated Low Banks |
| 4) Coarse-grained Sand Beaches | 10A) Salt- and Brackish-water Marshes |
| 6B) Riprap | 10B) Freshwater Marshes |
| 7) Exposed Tidal Flats | 10C) Swamps |
| 8B) Sheltered, Solid Man-made Structures | 10D) Scrub-Shrub Wetlands |

For each of these shoreline types, a photo and description of the physical attributes, predicted oil behavior, and response considerations are 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/organizations:

- North Carolina Department of Environmental Quality (NCDEQ)
 - Division of Marine Fisheries (NCDMF)
 - Wildlife Resources Commission (NCWRC)
 - Department of Natural and Cultural Resources – Natural Heritage Program (NC NHP or NCDCR)
 - Division of Coastal Management
 - NC Coastal Reserve and National Estuarine Research Reserve
- North Carolina Audubon Society
- North Carolina Maritime Museum
- North Carolina State University
- University of North Carolina Wilmington
- National Oceanic and Atmospheric Administration
 - National Centers for Coastal Ocean Science
- National Marine Fisheries Service
- U.S. Fish and Wildlife Service (USFWS)
 - Ecological Services
 - North Carolina Wildlife Refuges
- National Park Service (NPS)
 - Cape Hatteras National Seashore
 - Cape Lookout National Seashore

The above agencies provided the majority of information included in the atlas. Other participating agencies will be cited throughout the atlas and in the metadata accompanying the digital product.

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 North Carolina Wildlife Resources Commission.
- 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



Manatee



Pinniped



Whale

TERRESTRIAL MAMMAL



Small Mammal



Ungulate

HERPETOFAUNA



Alligator



Amphibian/Frog/Snake



Turtle

BIRD



Alcid/Pelagic



Diving



Gull/Tern



Passerine



Raptor



Shorebird



Wading



Waterfowl

HABITAT



Upland/Wetland/Plant

INVERTEBRATE



Bivalve



Crab/Invertebrate/
Shellfish



Crayfish



Insect



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.

Element	Qualifier	Guidelines
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 North Carolina atlas include cetaceans (whales, porpoise, and dolphins), pinnipeds, and the West Indian manatee. Marine mammals displayed in inland waters (sounds, rivers, and bays) are restricted to the bottlenose dolphin and West Indian manatee, although whales, spotted dolphins, and seals may occur in inland waters on occasion. The location of the faunal transition zone near Cape Hatteras results in a high biodiversity of marine mammals that could potentially be found in the atlas area (Byrd et. al. 2014). However, many of these species typically occur farther offshore and were not mapped due to their rarity in the AOI.

The general distribution of marine mammals along the outer coast of North Carolina was mapped using large polygons delineated by 10-m and 20-m isobaths and further divided at the capes (Cape Fear, Cape Lookout, and Cape Hatteras). Concentration values of “High”, “Med”, and “Low” were determined using habitat-based cetacean density maps (Roberts et al. 2016) and reflect the concentration of each species relative to its East coast-wide abundance. For seasonally present species that had monthly abundance estimates, the month of peak abundance in North Carolina was used to determine concentration values, otherwise year-round mean density maps were used.

Cetaceans - Biologically Important Areas (BIAs; LaBrecque et al. 2015) for the bottlenose dolphin and North Atlantic right whale were used to map the distributions of these species. In North Carolina, two small, estuarine stocks of bottlenose dolphin occur: the Northern North Carolina Estuarine Stock (NNCES) and the Southern North Carolina Estuarine (SNCES) Stock. These populations occupy sounds, rivers, and bays, and nearshore waters in warmer months and move into nearshore waters in late fall through winter where they likely overlap with the Northern Migratory Stock of bottlenose dolphins. The North Atlantic right whale, a state and federally endangered species, has both calving and migration BIAs in the North Carolina atlas area. The North Atlantic right whale calving BIA expands on the federally designated Critical Habitat calving grounds for this species, and the migratory corridor BIA encompasses the entire offshore area.

Manatees - The distribution of the West Indian manatee (state and federally endangered) was mapped using published data and expert knowledge in addition to North Carolina Natural Heritage Program vector data. The West Indian manatee is found in sounds, rivers, and bays during the warmer months from March to November. It also uses nearshore areas up to a quarter mile from the outer coast (Cummings, pers. comm.).

Pinnipeds - Seals occur annually in low numbers in North Carolina in colder months through the spring. Harbor seals, and rarely, gray, harp, and hooded seals, use the inlets and adjacent sandbars and sandy beaches as feeding and haul-out sites. Oregon Inlet supports the highest number of seals, but they can also be found on Cape Point at Cape Hatteras (LeGrand and Howard 2013). Seals may be found throughout the outer coast of North Carolina, but are more common north of Cape Lookout. A seal haul-out area was mapped at Oregon Inlet using a 100 m onshore/offshore buffer.

Expert contacts for North Carolina marine mammals*:

Name	Agency	City	Phone	Species
Erin Cummings	UNCW	Wilmington, NC	910-233-3453	Manatees
Keith Rittmaster	NC Maritime Museum	Beaufort, NC	252-504-2452	Marine mammals, Bottlenose dolphins
Vicky Thayer	NC DMF	Morehead City, NC	252-222-6371	Marine mammals

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

Major Data Sources Used: Marine Mammals

Byrd, B.L., A.A. Hohn, G.N. Lovewell, K.M. Altman, S.G. Barco, A. Friedlaender, C.A. Harms, W.A.

McLellan, K.T. Moore, P.E. Rosel, V.G. Thayer. 2014. Strandings as indicators of marine mammal biodiversity and human interactions off the coast of North Carolina. *Fishery Bulletin* 112:1-23.

Cummings, E.W. D.A. Pabst, J.E. Blum, S.G. Barco, S.J. Davis, B.G. Thayer, N. Adimey, W.A. McLellan.

2014. Spatial and temporal patterns of habitat use and mortality of the Florida manatee (*Trichechus manatus latirostris*) in the mid-Atlantic states of North Carolina and Virginia from 1991 to 2012. *Aquatic Mammals* 40:126-138.

LaBrecque, E., C. Curtice, J. Harrison, S.M. Van Parijs, P.N. Halpin. 2015. Biologically Important Areas for cetaceans within U.S. waters – East Coast Region. *Aquatic Mammals* 41:17-29.

LaBrecque, E., C. Curtice, J. Harrison, S.M. Van Parijs, P.N. Halpin. 2014. Biologically Important Areas for cetaceans within the U.S. Exclusive Economic Zone – East Coast Region. Vector Digital Data.

LeGrand, Jr., H.E. and T.E. Howard, Jr. 2013 *The Mammals of North Carolina: First Approximation*.

Downloaded March 8, 2015 from http://nature123.net/pdf/nc_mammal_apx_1.pdf.

North Carolina Natural Heritage Program. 2016. Biotics Database. Division of Land and Water Stewardship. Department of Natural and Cultural Resources, Raleigh, North Carolina.

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, G.G. Lockhart. 2016. Habitat-based cetacean density models for the U.S. Atlantic and Gulf of Mexico. Scientific Reports 6:22615.

BIRDS

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 threatened or endangered. Migratory or wintering concentration areas, nesting sites and colonies, and protected species are especially emphasized. Bird concentration areas depicted in this atlas are described for various groups of birds below.

Colonial waterbirds, shorebirds, and wading birds – Nesting locations for terns, gulls, shorebirds, egrets, and herons were mapped using digital polygon data obtained from NC NHP and NC WRC. Concentration values were generalized when presented for a range of dates (10-25, or 100s, 1000s, etc.) or left blank when not available. Migratory and overwintering hotspot locations of terns and shorebirds (specifically piping plover – federally and state endangered, and red knots – federally threatened and Wilson’s plover – state conservation concern) were mapped using survey data provided by NC Audubon, NC NHP, NC WRC, USFWS, and expert opinion. Concentration values, when presented, represent ranges or generalized values.

Marsh obligate species – Salt and freshwater marshes are ranked as 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 and the difficulties associated with human cleanup activities. Marshes are extremely valuable for a suite of bird species in the region including rails, bitterns, and marsh obligate passerines, and should be prioritized for protection wherever they exist. Due to the difficulties of surveying in these areas, and in an effort to highlight specific known nesting occurrences, we only mapped nesting locations from NC NHP and NC WRC nesting survey data. General distributions based on habitat associations were not mapped as they have been in the past. Therefore, an absence of a polygon in a region does not mean a species will not be present in the event of a spill.

Waterfowl – The large bays, estuaries and fringing wetland habitat that characterize coastal North Carolina support large numbers of wintering and migrating waterfowl. Similar to most states along the Atlantic Flyway, North Carolina collects yearly aerial survey data in mid-winter to identify the habitats needed to support these large influxes of waterfowl. Mid-winter aerial survey data from 2011-2015 was provided by NC WRC and used in this atlas update. Based on consultation with resource experts, winter waterfowl distributions were mapped to the predefined unit boundaries themselves rather than interpolating species/unit counts to suitable habitat within each unit. In an effort to reduce complexity and place an emphasis on the overall number of individuals utilizing a particular region, we chose to

only map species that contained 100 or more individuals per survey area. Counts of species that did not meet this threshold within a surveyed area were aggregated together and displayed as wintering “waterfowl”. This method reduces clutter on the map while still placing an emphasis on the regions providing critical over-wintering waterfowl habitat. Concentration values, when populated, indicate a generalized maximum yearly count for that species and unit (100s, 1,000s, 10,000s, etc.). Additional areas providing critical foraging habitat and refuge areas for migrating and wintering waterfowl were mapped using data from the Atlantic Coast Joint Venture – Waterfowl Implementation Plan, North Carolina Game and Inland Designations, and expert knowledge.

Generalized nesting locations for resident waterfowl species were obtained from expert knowledge. Similar to other marsh obligate nesting birds, the difficult nature of surveying in marsh habitat resulted in nesting waterfowl distributions in the area to be underrepresented within the atlas. Resident populations of waterfowl depend heavily on salt and freshwater marshes (American black duck, blue-winged teal and gadwall) and freshwater swamps and surrounding upland forests (wood duck) for breeding and therefore could be present within this habitat during the spring and summer breeding months. For the purposes of this atlas, typical nesting habitat within survey units expected to hold the largest aggregations of nesting waterfowl were selected and mapped as “GENERAL DISTRIBUTION” polygons with the breeding months indicated in the seasonal presence attributes.

Raptors – Nesting locations for bald eagles (state threatened), osprey, and northern harriers were mapped using data from the NC NHP. Wintering locations and migratory stopover concentrations for the aforementioned species as well as peregrine falcons and short-eared owls were also mapped using data from NC NHP.

Seabirds – No pelagic seabirds nest within the AOI but certain species use the offshore region depicted within the atlas. The Gulf Stream waters travel close to the coast of North Carolina off the tip of Cape Hatteras. As stated in the North Carolina Important Bird Area report, this area “has the greatest diversity of seabirds and marine mammals in the southeastern United States”. In addition to the diversity supported in the offshore regions of North Carolina, the NC IBA report also stresses that this region may support a globally significant proportion of black-capped and Bermuda petrels. High use seabird areas depicted in this atlas were mapped primarily using data from these NC IBA designations. Although a few areas are depicted as having higher than average densities of seabirds, all offshore waters in North Carolina will support some level of seabirds and sea ducks in all months of the year and should be considered highly sensitive to oil spills.

Rare, threatened and endangered passerines – Nesting locations of rare, threatened or endangered passerines were included as polygons in this atlas even when hydrographically removed from large waterbodies in an effort to make this regional update more usable in an all hazards context. These data were obtained from the NC NHP database. These species are not generally thought of as at risk from an oil spill itself but their listing status should be taken into consideration when conducting cleanup operations in the vicinity of known nesting locations.

Expert contacts for North Carolina birds*:

Name	Agency	City	Phone	Species
Doug Howell	NCWRC	Edenton, NC	252-482-5943	Waterfowl
Joseph Fuller	NCWRC	Edenton, NC	252-482-5223	Waterfowl
John Finnegan	NCDCR NHP	Raleigh, NC	919-707-8630	Rare/T&E
Lindsay Addison	NC Audubon	Wilmington, NC	910-686-7527	Shorebirds, Terns/gulls, Wading birds
Sara Schweitzer	NCWRC	New Bern, NC	252-639-8435	Shorebirds, Terns/gulls, Wading birds
John Hammond	USFWS	Raleigh, NC	919-856-4520	Red-cockaded woodpecker

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

Major Data Sources Used: Birds

Atlantic Coast Joint Venture. 2015. Waterfowl Focus Areas and Focus Area Report (2005). Vector Digital Data.

Audubon North Carolina. 2011. Important Bird Areas, North Carolina. Vector Data.

Carolina Bird Club. 2016. Birds of North Carolina; Their Distribution and Abundance. Website.

North Carolina Natural Heritage Program. 2016. Biotics Database. Division of Land and Water Stewardship. Department of Natural and Cultural Resources, Raleigh, North Carolina. Vector Digital Data.

North Carolina Wildlife Resources Commission. 2014. North Carolina Game Lands. Vector Digital Data.

North Carolina Wildlife Resources Commission. 2016. North Carolina Mid-Winter Waterfowl Survey Data (2011-2015). Vector Digital Data, Spreadsheet.

North Carolina Wildlife Resources Commission; Portal Access To Wildlife Systems (PAWS). 2016. Colonial Waterbird Database Query. Spreadsheet.

North Carolina Wildlife Resources Commission; Portal Access To Wildlife Systems (PAWS). 2016. Shorebird Database Query. Spreadsheet.

Schulte S., Brown S., Reynolds D., and The American Oystercatcher Working Group. A Conservation Plan for the American Oystercatcher (*Haematopus palliatus*) for the Atlantic and Gulf Coasts of the United States; Version 2. Document.

United States Fish and Wildlife Service. 2001. Final Determination of Critical Habitat for Wintering Piping Plovers. Vector Data.

United States Fish and Wildlife Service – North Florida Ecological Services Office. 2016. Wood Stork Nesting Core Foraging Areas, 2006-2015. Vector Digital Data.

HERPETOFAUNA

Sea Turtles – Five species of sea turtles use North Carolina beaches for nesting during the spring and summer months. The loggerhead sea turtle (state and federally threatened) is the most numerous accounting for over 1,500 nests each year. Green sea turtles (state and federally threatened) and Kemp's ridley sea turtles are far less common only averaging 5-20 nests annually. Recently both leatherback and hawksbill sea turtles (both federally and state endangered) have been documented nesting in North Carolina, although numbers remain low. Nesting locations (2006-2015) were received from the North Carolina Wildlife Resource Commission as point locations but were converted to polygons stretching along the beaches on which the nest was laid. Concentration values were converted to nest per square kilometer of beach (loggerheads) or the total number of nests (all other sea turtles) per beach. The high count per survey year per beach was used when calculating concentration values.

High use migration, wintering, and interesting areas were mapped as polygons for loggerhead sea turtles using information from the USFWS Critical Habitat designation. Additional high use areas in the bays and estuaries were identified for juvenile sea turtles using information from the North Carolina Division of Marine Fisheries.

Threatened, endangered and other rare reptiles and amphibians – Other reptile and amphibian species were added to the atlas based on their conservation status, their dependence on the aquatic environment during sensitive life stages (breeding in particular), their rarity in the region, or based on expert input. The bulk of the data was obtained from NC NHP and from interviews with resource experts.

Expert contacts for North Carolina herpetofauna*:

Name	Agency	City	Phone	Species
Jeffrey Hall	NCWRC	Greenville, NC	252-917-1683	Rare, T&E species
Judith Ratcliffe	NCDCCR NHP	Raleigh, NC	919-707-8628	Rare, T&E species
Matt Godfrey	NCWRC	Beaufort, NC	252-728-1528	Sea turtles

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

Major Data Sources Used: Herpetofauna

North Carolina Natural Heritage Program. 2016. Biotics Database. Division of Land and Water Stewardship. Department of Natural and Cultural Resources, Raleigh, North Carolina. Vector Digital Data.

North Carolina Wildlife Resources Commission. 2016. Sea Turtle Nesting Data; 2006-2015. Spreadsheet.

National Marine Fisheries Service. 2013. Endangered and Threatened Species: Designation of Critical Habitat for the Northwest Atlantic Ocean Loggerhead Sea Turtle Distinct Population Segment (DPS) and Determination Regarding Critical Habitat for the North Pacific Ocean Loggerhead DPS. Vector Digital Data.

North Carolina Division of Marine Fisheries. 2012. Application for an Individual Incidental Take Permit Under the Endangered Species Act of 1973 (Sea Turtles). Document.

NOAA Fisheries Service. 2014. Constricted Migratory, Nearshore Reproductive and Winter Critical Habitat, for the Northwest Atlantic Ocean Distinct Population Segment of Loggerhead Sea Turtle (*Caretta caretta*). Vector Digital Data.

TERRESTRIAL MAMMALS

The terrestrial mammals depicted in this atlas are limited to rare coastal and special status species. These are: Buxton Woods white-footed deer mouse (state special concern, federal species of concern), Florida eastern woodrat (state threatened), Pungo white-footed deer mouse (state special concern), star-nosed mole (state special concern), and Dismal Swamp southern bog lemming (state significantly rare). The deer mice are localized subspecies that live in dunes along North Carolina's barrier islands. The woodrat uses moist hardwood forests in the southeastern Coastal Plain. The bog lemming can be found in open wetland habitat such as damp fields and marsh edges. The star-nosed mole is semi-aquatic and is found in wetland habitats such as swamps, bogs, and marshes. Digital polygon data from NC NHP were used to map rare and special status terrestrial mammals. Historical and very low accuracy locations were not mapped.

Non-native, feral horses known as Banker ponies or horses occur along the barrier islands of North Carolina. The largest of these herds is found on Shackleford Banks (SB), the southern-most barrier island in Cape Lookout National Seashore, and a smaller herd occurs nearby on the Rachel Carson Reserve (RCR). These herds are managed as part of the cultural landscape, having descended from colonial Spanish horses brought to the islands centuries ago (SB) as well as more recent releases (RCR). They are protected by federal (SB) and state and local (RCR) laws. The general distributions of these herds were reviewed by NPS and NC Coastal Reserve personnel.

There are several rare and listed bat species that are present within the atlas area. These species are; northern long-eared bat (state significantly rare, federally threatened), Rafinesque's big-eared bat (state special concern and federal species of concern), southeastern bat (state special concern and federal species of concern), northern yellow bat (state special concern), little brown bat (state significantly rare), tricolored bat (state significantly rare). Bats in North Carolina have been devastated by white-nose syndrome, the primary threat to bats in this area. While these species may not be directly impacted by an oil spill, human disturbance to roosts and hibernation areas is considered a secondary threat. There was not enough data to adequately map the distribution of rare bats in the North Carolina coastal plain.

Known roosts and hibernacula occur predominantly in the mountains and none are shown in this AOI. The contact information for the regional bat expert has been included in the table below.

Semi-aquatic furbearing mammals live in coastal wetland habitats vulnerable to oil spills. Mink and northern river otter are broadly distributed in the Coastal Plain of North Carolina. Beaver and muskrat are also widespread throughout the river systems, although muskrats are rare in southeastern North Carolina coastal areas. Due to their broad distribution and lack of specific concentration areas, these species were not mapped in this atlas.

Expert contacts for North Carolina terrestrial mammals*:

Name	Agency	City	Phone	Species
Colleen Olfenbuttel	NCWRC	Raleigh, NC	919-920-6302	Mink, River otter, Beaver
Katherine Caldwell	NCWRC	Asheville, NC	828-545-8328	Bats

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

Major Data Sources Used: Terrestrial Mammals

North Carolina Natural Heritage Program. 2016. Biotics Database. Division of Land and Water Stewardship. Department of Natural and Cultural Resources, Raleigh, North Carolina.

FISH

Finfish depicted in this atlas include selected marine, estuarine, and freshwater species. Species of conservation interest, commercial or recreational importance, or ecological importance are emphasized. Fish polygons were created based on survey information, digital data, and expert opinion provided primarily by resource experts at NCDMF, NCWRC, and NOAA.

FISH – ANADROMOUS AND CATADROMOUS SPECIES

Atlantic and shortnose sturgeon – Atlantic (federally and state endangered) and shortnose sturgeon (federally and state endangered) were mapped to areas where they are known to occur. Data and expert knowledge were provided by Lisa Wickliffe of NOAA, Mike Loeffler of the NCDMF, Liza Hoos of North Carolina State University, Debra J. Gauthier of the Virginia Institute of Marine Science, Jeanne Boylan of the SCDNR, and Wilson Laney of the USFWS.

River herring and shad - Alewife and blueback herring, collectively known as river herring, and American shad are anadromous fish that once supported the largest commercial and recreational fisheries on the Atlantic Coast but have become severely depleted due to human impediments to inland spawning runs, habitat loss, and overfishing. Spawning runs were mapped using data and expert knowledge provided by NCDMR and NOAA. Additional shad species included in this atlas are gizzard shad, hickory shad, and threadfin shad. The aforementioned reduction in available spawning habitat for river herring and shad occurred outside of the area of interest. If a spawning run went beyond the water features in the ESI hydrographic layer, then it was mapped using stream line features. These areas are designated with

"Spawning Area" and "Nursery Area" mapping qualifiers to emphasize these important life history stages. River herring pre-spawning concentrations at the mouths of certain rivers were mapped as migration areas. Timing of migration and spawning was provided primarily by Able and Fahay 2010 and resource experts.

Other anadromous and catadromous species – Striped bass, an anadromous species, and American eel, a catadromous species, are included in this atlas. Adult striped bass participate in migrations in waters offshore of North Carolina. Juvenile striped bass may overwinter in estuarine waters for several years before joining the migratory population offshore. American eels go through a "yellow eel" stage lasting approximately 9 – 19 years in estuaries and inshore waters before migrating offshore to spawn in the Sargasso Sea (Able and Fahay 2010).

FISH – ESTUARINE AND BRACKISH WATER SPECIES

Fish that occur primarily in estuarine and brackish waters were mapped using a variety of sources. Fisheries independent data from NCDMF program 120 and 195 data were used to map southern and summer flounder. Program 120 is a statewide estuarine trawl survey and that primarily aims to sample juvenile fish. This sampling program is conducted yearly from May to June beginning in 1971. A subset of the Program 120 data (1990 – 2014) was used to map fish in this atlas. Program 195, also known as the Pamlico Sound Survey, was initiated in 1987 and includes trawl surveys which have been used to calculate juvenile abundance indices and estimate population parameters. Sampling for Program 195 is typically in summer and fall (June and September). Data from 1987 – 2014 were used to map fish species for this atlas.

Recreational and commercial landings data provided by the NCDMF were used to determine presence/absence of adults and/or juveniles in some estuarine and brackish water systems. These data sets included month, year, waterbody, and abundance of for landings from 2006 – 2015 (abundance for recreational landings included count, while abundance for commercial landings included number of dealers as well as pounds of catch. These indices were used to supplement concentration values when other more robust data was unavailable.

Thirty (30) meter gridded bathymetry data for major estuarine systems created by the Special Projects office at NOAA were retrieved from the NOS Data Explorer Service (<http://nosdataexplorer.noaa.gov>) and used as a guide for mapping some species.

FISH – ATLANTIC OCEAN

The ocean distribution of fish was mapped primarily using two fisheries independent trawl survey datasets; VIMS Northeast Area Monitoring and Assessment Program (NEAMAP) and SEAMAP. Sampling for the NEAMAP program occurs in the spring and fall (typically May and October) and data used for this effort were collected from 2007 to 2013. Sampling for the SEAMAP program occurs in spring (April – May), summer (July – August), and fall (October – November) and includes data from 1986 to 2014. Offshore bathymetric contour data generated by NOAA's Office for Coastal Management were used in conjunction with NEAMAP/SEAMAP data to map offshore fish distributions for some species.

Additional ocean distributions of fish were mapped using fisheries dependent data in the form of recreational and commercial landings spreadsheets from the NCDMF. Offshore fish landings from these data were divided into 4 zones: 0-3 mi North of Cape Hatteras, > 3 mi North of Cape Hatteras, 0-3 mi South of Cape Hatteras, and > 3 mi South of Cape Hatteras. Zones with 10 or fewer species occurrences in either of the fisheries dependent datasets that did not have further evidence of species presence in other sources were not mapped. Seasonality was determined primarily using Able and Fahay 2010 and expert knowledge.

FISH – FRESHWATER FISH

Recreationally important freshwater fish were mapped using species life history information from the NCWRC website (<http://www.ncwildlife.org/Learning/Species#5528105-fish>), recreational and commercial fisheries data from the NCDMF, and sportfish survey data from the NCWRC. Species included in Lake Mattamuskeet were compiled based on Potoka et al. 2014 and a species list for Lake Mattamuskeet provided by the NCWRC (Dockendorf 2009). The species list for Lake Mattamuskeet from the NCWRC includes species collected during various surveys in the lake and surrounding canals between 1949 and 2007. For the purposes of mapping fish in this atlas only data from 1990 through 2007 from this data set were used to determine species presence or absence.

NOTE: After a review of current literature and consultation with experts at the NCDMF, it was determined that common carp, a species mapped in the 2011 North Carolina ESI Atlas, have the potential to be present year round in all waterbodies in the area of interest. Common carp were introduced to North America in the 1800s from Eurasia. This species is mentioned here in lieu of mapping their distribution.

Expert contacts for North Carolina fish*:

Name	Agency	City	Phone	Species
Alan Bianchi	NCDMF	Morehead City, NC	252-808-8092	Commercial fisheries statistics
Anne Markwith	NCDMF	Wilmington, NC	910-796-7292	Black sea bass, Sheepshead
Holly White	NCDMF	Elizabeth City, NC	252-264-3911	American shad, Black sea bass, Hickory shad, River herring, Scup, Summer flounder
Kevin Dockendorf	NCWRC	Elizabeth City, NC	252-335-9898	Inland/freshwater fishes
Lee Paramore	NCDMF	Manteo, NC	252-473-5734	Red drum
Lisa Wickliffe	NOAA	Beaufort, NC	252-838-0802	Anadromous fish, Red drum, Southern flounder, Summer flounder
Mike Loeffler	NCDMF	Elizabeth City, NC	252-264-3911	Atlantic sturgeon, Southern flounder

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

Major Data Sources Used: Fish

- Able, K.W. and M.P. Fahay. 2010. Ecology of Estuarine Fishes: Temperate Waters of the Western North Atlantic. The Johns Hopkins University Press, Baltimore, MD.
- Dockendorf, K. 2009. Species List for Lake Mattamuskeet. North Carolina Wildlife Resources Commission. Document.
- North Carolina Department of Environmental Quality, North Carolina Division of Marine Fisheries. 2015. North Carolina Monthly Commercial Fisheries Landings by Species and Waterbody 2006 – 2015. Spreadsheet.
- North Carolina Department of Environmental Quality, North Carolina Division of Marine Fisheries. 2015. North Carolina Recreational Catch Estimates and Sampling Totals 2006 – 2015. Spreadsheet.
- North Carolina Department of Environmental Quality, North Carolina Division of Marine Fisheries. 2016. Program 120 Data for Summer Flounder and Southern Flounder 1990 - 2014. Spreadsheet.
- North Carolina Department of Environmental Quality, North Carolina Division of Marine Fisheries. 2016. Program 195 Data for Summer Flounder and Southern Flounder 1987 – 2014. Spreadsheet.
- North Carolina Department of Environmental Quality, North Carolina Division of Marine Fisheries. 2016. Stock Status Report 2016. <http://portal.ncdenr.org/web/mf/2016-stock-status-report>
- North Carolina Wildlife Resources Commission. 2016. North Carolina Species. <http://www.ncwildlife.org/Learning/Species#5528105-fish>
- Potoka, K. M., McCargo, J.W. and Thomas, C.D. 2014. Sportfish Population Dynamics in Lake Mattamuskeet, 2013, and Discussion of an Active Lake Level Management Plan to Enhance these Fisheries. North Carolina Wildlife Resources Commission. Federal Aid in Sport Fish Restoration Project F-108 Final Report. Raleigh, NC.
- Rachels, K.T. and Ricks, B. R. 2016. Characteristics of Recreationally Important Fish Populations of the White Oak River. North Carolina Wildlife Resources Commission. Federal Aid in Sport Fish Restoration Project F-108 Final Report. Raleigh, NC.
- SEAMAP-SA Data Management Work Group. January 11, 2016. SEAMAP-SA online database. Retrieved from: <http://www.dnr.sc.gov/SEAMAP/data.html> by: Jennifer Bohannon.
- Virginia Institute of Marine Science Multispecies Research Group. June 2016. Northeast Area Monitoring and Assessment Program (NEAMAP) Survey Data for North Carolina 2007-2015. Gloucester Pt., VA. Spreadsheet.
- Wickliffe, L.C. et al. 2016. A Biogeographical Assessment of Thirteen Key Species to Inform Coastal Management in North Carolina and South Carolina. NOAA Technical Memorandum NOS NCCOS. Beaufort, NC.

INVERTEBRATES

Invertebrates depicted in this atlas include selected marine and estuarine species of commercial, recreational, ecological, and/or conservation interest. Several known invertebrate concentrations, as well as larger, more general areas where invertebrate habitat exists, were mapped.

Most rare and endangered invertebrates included in this atlas were mapped using NCNHP data. These species include freshwater bivalves, insects, and one crayfish species. One of these insects is a recently-discovered butterfly, the crystal skipper (federal species of concern), that is restricted to 30 miles of barrier island habitat in North Carolina. Crystal skipper locations were clipped to land. The monarch butterfly, a federal candidate species, also occurs along the North Carolina coast, particularly during the fall migration, but has not been observed roosting in predictable locations or in large concentrations and thus was not mapped.

Freshwater bivalves included in the atlas consist of the alewife floater (state threatened), barrel floater (state endangered), Cape Fear spike (state species of concern), eastern lampmussel (state threatened), eastern pondmussel (state threatened), tidewater mucket (state threatened/federal species of concern), and Waccamaw spike (state endangered/federal species of concern). The NHP locations of these aquatic species, along with the Chowanoke crayfish (state species of concern) and giant swallowtail were modified to be congruent with ESI water polygon and line features and wetland polygons.

Marine invertebrates mapped in this atlas include blue crab, florida stone crab, white shrimp, brown shrimp, pink shrimp, bay scallop, hard clam, and eastern oyster. Blue crab, white shrimp, brown shrimp, pink shrimp, and eastern oyster are of high commercial value in North Carolina. According to the NCDMF, combined landings of these species in 2015 was approximately 42 million lbs. Bay scallop abundance in North Carolina is considered low and the current NCDMF stock status is 'concern'. Harvest of this species was not allowed 2006 through 2008 and in 2016, the main harvest season was not opened in many regions of the state (NCDMF). Florida stone crabs are associated with shell bottom in North Carolina and thus were mapped using the 'Estuarine Benthic Habitat Mapping' dataset (North Carolina Division of Marine Fisheries 2013).

Expert contacts for North Carolina invertebrates*:

Name	Agency	City	Phone	Species
Judith Ratcliffe	NCDNR NHP	Raleigh, NC	919-707-8628	Freshwater invertebrates
Tina Moore	NCDMF	Morehead City, NC	252-726-7021	Shellfish
Lisa Wickliffe	NOAA	Beaufort, NC	252-838-0802	Blue Crab, Penaeid Shrimp

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

Major Data Sources Used: Invertebrates

- Burns, J.M. 2015. Speciation in an insular sand dune habitat: *Atrytonopsis* (Hesperiidae: Hesperinae)-mainly from the southwestern United States and Mexico- off the North Carolina coast. *Journal of the Lepidopterists' Society*: 69:275-292.
- Jensen, C. 2014. North Carolina's Fishery Nursery Areas. North Carolina Division of Marine Fisheries. Vector digital data.
- North Carolina Department of Environmental Quality, North Carolina Division of Marine Fisheries. 2016. Stock Status Report 2016. <http://portal.ncdenr.org/web/mf/2016-stock-status-report>
- North Carolina Division of Marine Fisheries. 2013. Estuarine Benthic Habitat Mapping. Vector digital data.
- North Carolina Division of Marine Fisheries. 2012. Shellfish Densities. Vector digital data.
- North Carolina Natural Heritage Program. 2016. Biotics Database. Division of Land and Water Stewardship. Department of Natural and Cultural Resources, Raleigh, North Carolina.
- Theuerkauf, S. 2014. Pamlico Sound Oyster Reef Inventory. Clutch-planting sites, intertidal/subtidal reef, sanctuaries. Vector digital datasets.
- Wickliffe, L.C. et al. 2016. A Biogeographical Assessment of Thirteen Key Species to Inform Coastal Management in North Carolina and South Carolina. NOAA Technical Memorandum NOS NCCOS. Beaufort, NC.

BENTHIC HABITATS

Benthic habitats mapped in this atlas consist of submerged aquatic vegetation (SAV) and rock reefs. SAV species in moderate to high salinity estuarine areas include eelgrass (*Zostera marina*), shoalgrass (*Halodule wrightii*), and widgeon grass (*Ruppia maritima*). The best available SAV data at the time of mapping was the NCDENR/APNEP SAV data from a 2007-2008 aerial survey. These areas of SAV were mapped as having "High Ecological Value" for the spawning, nursery, and foraging habitat they provide, with a concentration value of "Present." The NCDMF also maintains a mosaic of SAV data that represents all potential SAV habitat mapped from 1981-2011. SAV from the mosaic that did not overlap the NCDENR/APNEP SAV distribution was mapped as "General Distribution" with a concentration of "Potential." A rare freshwater plant, loose watermilfoil (*Myriophyllum laxum*; state endangered/federal species of concern), was also mapped as SAV with a mapping qualifier of "Vulnerable Occurrence" and a concentration of "Current" or "Historical" using data from the NCNHP database.

In addition to SAV, several marine and intertidal limestone outcrops in Onslow Bay were mapped as rock reefs with a mapping qualifier of "High Ecological Value." These outcrops support reef communities of

subtropical fish, corals, algae, mollusks, sponges, and crustaceans. These locations were taken from the NCNHP database.

Expert contacts for North Carolina benthic*:

Name	Agency	City	Phone	Species
Anne Deaton	NCDMF	Morehead City, NC	252-726-7021	SAV

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

Major Data Sources Used: Benthic

North Carolina Department of Environment and Natural Resources and Albermarle-Pamlico National Estuary Partnership. 2008. Submerged Aquatic Vegetation – SAV. Vector Digital Data.

North Carolina Division of Marine Fisheries Habitat Section. 2008. Mosaic of SAV mapped from 1981 to 2011. Vector Digital Data.

North Carolina Natural Heritage Program. 2016. Biotics Database. Division of Land and Water Stewardship. Department of Natural and Cultural Resources, Raleigh, North Carolina.

HABITATS

Threatened, endangered, and rare plants and rare plant communities were mapped primarily with data from NCNHP and were given the mapping qualifier of “Vulnerable Occurrence.” Critically imperiled, imperiled, and vulnerable wetland and upland plant community types were generalized as “Rare Upland Community” or “Rare Wetland Community.” Wetland habitats with a high degree (> 60%) of overlap with the ESI wetland polygons were not included to reduce redundancy in the atlas. Plant and natural community records mapped with low or very low accuracy, as well as historical and obscure records, were also excluded. The only exception to this was that all seabeach amaranth and Virginia jointvetch (both species are state/federally threatened) were mapped regardless of location accuracy or historical status. These annual species have seedbanks and could become reestablished in historical areas under certain environmental conditions. The concentration field indicates whether the location is “Current” or “Historical.” Plants with data sensitivities were masked as “Endangered Plant” and locations were buffered. Small, isolated plant polygons (< 500 m²) were converted to points so that they would be more visible in the atlas. All plant and natural community features were clipped to land except for aquatic plants blue waterhyssop and Carolina grasswort. Shoreline seapurslane, narrowleaf evening-primrose, and seabeach amaranth distributions that closely followed the shoreline were modified to correspond with the ESI shoreline. Common names for plants may differ between the ESI standard and the NCNHP name; a table for cross-referencing names is provided below (Table 1).

Table 1. Rare plant ESI common name and NCNHP common name.

ESI Common Name	NCNHP Common Name
Bearded sprangletop	Salt-meadow grass
Chapman's tridens	Chapman's redtop
Cypress panicgrass	Blue witch grass
Dixie sandmat	Southern seaside spurge
Georgia frostweed	Georgia sunrose
Globe beaksedge	Small's beaksedge
Glowing nightshade	Graceful nightshade
Hairy-seed goldenrod	Coastal goldenrod
Lanceleaf primrose-willow	Lanceleaf seedbox
Low nutrush	Savanna nutrush
Narrowleaf evening primrose	Riverbank evening-primrose
Pine barren frostweed	Pinebarren sunrose
Redcardinal	Coralbean
Reticulated nutrush	Netted nutrush
Seashore paspalum	Seashore crown grass
Slim spikerush	Florida spikerush
Small's bogbutton	Brown bogbutton
Tiny leaved buckthorn	Small-flowered buckthorn
Tough bully	Tough bumelia
Virginia jointvetch	Sensitive jointvetch
Virginia pinweed	Maritime pinweed
Virginia wildrye	Terrell grass
Weatherby's arrowhead	Grassleaf arrowhead
Winged primrose-willow	Winged seedbox
Woolly beachheather	Sand heather

Expert contacts for North Carolina habitats and rare plants*:

Name	Agency	City	Phone	Species
Anne Deaton	NCDMF	Morehead City, NC	252-726-7021	Coastal habitats
Laura Robinson	NCDEQ	Raleigh, NC	919-707-8647	Rare plants and natural communities

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

Major Data Sources Used: Habitats

North Carolina Natural Heritage Program. 2016. Biotics Database. Division of Land and Water Stewardship. Department of Natural and Cultural Resources, Raleigh, North Carolina.

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.

Invasive Species Contacts:

Dale Suiter, USFWS – 919-856-4520

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

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.

	Abandoned Vessel		Marina
	Access		Military Installation
	Airport		National Estuarine Research Reserve
	Anchorage		National Forest
	Archaeological Sites		National Park
	Army Corps of Engineers		Nature Conservancy
	Artificial Reef		Oil Facility
	Beach		Park
	Boat Ramp		Port
	Campground		Recreational Fishing
	Critical Habitat		Renewable Energy
	EPA Facility		Repeated Measurement Site
	Ferry		Staging
	Heliport		State Protected Area
	Historical Site		Waste Disposal
	Landfill		Water Intake
	Management Area		Wildlife Refuge

Abandoned Vessel: Data on locations of abandoned and derelict vessels comes from NOAA's Office of Coast Survey spreadsheet of ENC wreck features.

Access Site: Locations where it is possible to gain vehicular access to the shoreline were mapped from data provided by the N.C. Division of Coastal Management (NCDCM) and from the N.C. Geographic Response Plan.

Airport/Heliport: Locations of airports, airfields, landing strips, heliports, etc. were downloaded from the National Transportation Atlas Databases maintained by the Federal Aviation Administration. A few additional heliport locations were added based on inclusion in the N.C. Geographic Response Plan.

Anchorage: Locations where commercial vessels can be anchored offshore were provided by the NOAA Office for Coastal Management.

Archaeological Site: Grids were provided by the North Carolina Office of State Archaeology. The grids are attributed to show relative abundance of archaeological sites within. Low incidence grids contain less than 5 sites. Moderate incidence grids contain 6-20 sites. High incidence grids contain more than 20 sites. In the event of an oil spill or clean up activity please contact the State Archaeologist who can provide precise locational information of all sites.

Steve Claggett, State Archaeologist
North Carolina Office of State Archaeology
Department of Natural and Cultural Resources
Mailing Address: 4601 Mail Service Center
Raleigh, North Carolina 27699-4619
Phone: 919-807-6551

Army Corps of Engineers: U.S. Army Corps of Engineers (USACE) districts and divisions data were provided from the U.S. Army Engineer Research and Development Center.

Artificial Reef: Artificial reef data were provided by N.C. Division of Natural Resources (NCDNR).

Beach: Locations of recreational beaches used for activities such as swimming, sun-bathing, fishing, etc. were provided by NCDCM.

Boat Ramp: Boat ramp location data were provided by the N.C. Wildlife Resources Commission (NCWRC) and the North Carolina Geographic Response Plan.

Camp Ground: Locations of campgrounds were obtained from UScampgrounds.info, poi-factory.com and the N.C. Geographic Response Plan.

Coast Guard: U.S. Coast Guard (USCG) stations were provided by the USCG and USACE. USCG district boundaries were provided by the USCG.

County Boundary: Boundaries for counties were downloaded from the N.C. Department of Transportation (NCDOT).

Critical Habitat: Designated Critical Habitat was mapped for the piping plover, North Atlantic right whale, and loggerhead sea turtle. Data were provided by the USFWS and NOAA NMFS.

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

Environmental Protection Agency Facility: Represents facilities required to file a Risk Management Plan (RMP) due to the presence of extremely hazardous substances that may result in a chemical accident. This data comes from the USEPA.

Essential Habitat: Habitat Areas of Particular Concern (HAPCs) and/or Essential Fish Habitat (EFH) necessary to support the key life stages of snapper/grouper, dolphin/wahoo, coastal migratory pelagic, shrimp, spiny lobster and coral. These boundaries were provided as part of a collaborative effort of the Florida Fish and Wildlife Commission, the Florida Fish and Wildlife Research Institute, and the South Atlantic Fisheries Management Council.

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

Ferry: Ferry terminal locations were obtained from NCDOT.

Ferry Route: Ferry routes were digitized by Quantum Spatial Inc. using the ESRI World Street Map.

Fishery Area: Fishery area locations represent oyster sanctuaries in which fishing methods are regulated. Locational information was obtained from the N.C. Division of Marine Fisheries (NCDMF).

Historical Site: Historical sites were provided by the National Park Service's (NPS) National Register of Historic Places (2014). Additional sites were provided by the N.C. Natural Heritage Program (NCNHP) as part of their Managed Areas Database.

Landfill: Permanent waste and debris disposal locations were mapped with data obtained from NCDENRs Division of Waste management.

Management Area: Management areas in this ESI atlas include coastal reserves and National Audubon Sanctuaries. These data were provided by NCNHP as part of their Managed Areas Database.

Marina: Marina location data were obtained from the N.C. Department of Natural Resources, Division of Environmental Health, Shellfish Sanitation and Recreational Water Quality Section. Supplemental attribute information was obtained from Salty Southeast Cruisers' Net and Marinas.com.

Military Installation: Military installation data were provided by NCNHP as part of their Managed Areas Database.

National Estuarine Research Reserve (NERR): NERR boundary data were provided by the North Carolina Department of Environmental Quality (NCDEQ), Division of Coastal Management.

National Forest: The boundary of the Croatan National Forest was obtained from NCNHP as part of their Federal Lands Database.

National Guard: Army National Guard Units were provided by Environmental Systems Research Institute (ESRI).

National Landmark: National landmark locations were obtained from NCNHP as part of their Federal Lands and Managed Areas Databases.

National Park: National park boundaries were obtained from NCNHP as part of their Federal Lands Database.

Nature Conservancy: Boundaries of The Nature Conservancy (TNC) properties were obtained from NCNHP as part of their Managed Areas Database.

Oil Facility: Petroleum product terminal locations were obtained from the U.S. Energy Information Administration.

Park: State park boundaries were obtained from NCNHP as part of their Managed Areas Database.

Port: Major port location data were compiled from the National Atlas of the United States.

Rail Route: Locations of railways were obtained from the NCDOT Rail Division.

Recreational Fishing: Locations of recreational fishing piers were mapped using information found at Fishing-NC.com and from the N.C. Geographical Response Plan.

Renewable Energy: Renewable energy locations were obtained from the EPA's Office of Atmospheric Programs, Clean Air Markets Division and include solar and nuclear facilities.

Repeated Measurement Site: Repeated measurement sites represent NOAA national data buoy locations (DB), NOAA Mussel Watch monitoring sites (MWS) and NOAA National Water Level Observation Network (NWLON).

Shipping Lane: Shipping lanes in N.C. Waters were obtained from the National Waterway Network served by the Vanderbilt Engineering Center for Transportation Operations and Research, Vanderbilt University.

Staging: Oil spill response staging areas were obtained from the N.C. Geographic Response Plan.

State Protected Areas: State protected areas presented in this atlas represent protected Game Lands and Preserves. These boundaries were obtained from NCWRC.

State Waters: The N.C. state waters boundary was obtained from the Bureau of Ocean Management, Regulation and Enforcement, Mapping and Boundary Branch.

Waste Disposal: Locations represent transfer stations and were obtained from the N.C. Division of Waste Management.

Water Intake: Locations of water intakes were obtained from the N.C. Department of Environmental and Natural Resources (NCDENR) – Division of Water Quality.

Wildlife Refuge: Nine National Wildlife Refuges (NWR) fall within the ESI atlas area: Alligator River NWR, Cedar Island NWR, Currituck NWR, Mackay Island NWR, Mattamuskeet NWR, Pea Island NWR, Pocosin Lakes NWR, Roanoke River NWR and Swanquarter NWR. Land boundaries of NWRs were obtained from NCNHP as part of their Federal Lands 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 when security risks allow. Bridges and railroads are mapped as line features.

ACKNOWLEDGMENTS

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The biological and human-use data included on the maps were provided by numerous individuals and agencies. Staff at NOAA's National Centers for Coastal Ocean Science, the North Carolina Department of Marine Fisheries, North Carolina Wildlife Resources Commission, and North Carolina Audubon contributed a vast amount of information to this effort, including first-hand expertise, publications, maps, and digital data. Other agencies and organizations contributing to data development and review included: U.S. Fish and Wildlife Service and the North Carolina Coastal Reserve and National Estuarine Research Reserve. This work was profoundly enhanced by the collaboration and guidance offered by the staff at the North Carolina Natural Heritage Program, specifically John Finnegan, Judith Ratcliffe, Misty Buchanan and Scott Pohlman.

At Quantum Spatial (QSI), numerous scientific, GIS, and graphic staff were involved with different phases of the project. Jennifer Halleran and Lisa Misenheimer were Project Managers. The biological and human-use data were collected, compiled, and produced into the geodatabase by Audrey Killoran, Elizabeth Rogers, Jennifer Bohannon, and Tim Marcella. Elizabeth Rogers, Jennifer Bohannon, and Tim Marcella prepared the final text documents and metadata. The basemap, shoreline and wetland habitat collection and classification was completed by Alex Burr, Bryan Deslauries, Emily Foster and Raymond Bower. Cover photo courtesy of Bryan Deslauriers, Quantum Spatial, Inc.

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 North Carolina Department of Environmental Quality, North Carolina Audubon, the North Carolina State Natural Heritage Program, 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		Marsh wren	<i>Cistothorus palustris</i>
HARDBOTTOM		Nelson's sparrow	<i>Ammodramus nelsoni</i>
Rock reef	-	Painted bunting	<i>Passerina ciris</i>
SAV		<u>Red-cockaded woodpecker</u>	<u><i>Picoides borealis</i></u>
Submersed aquatic vegetation	-	Saltmarsh sparrow	<i>Ammodramus caudacutus</i>
Loose watermilfoil	<i>Myriophyllum laxum</i>	Seaside sparrow	<i>Ammodramus maritimus</i>
BIRDS		PELAGIC	
ALCID		Audubon's shearwater	<i>Puffinus lherminieri</i>
Atlantic puffin	<i>Fratercula arctica</i>	Black-capped petrel	<i>Pterodroma hasitata</i>
Dovekie	<i>Alle alle</i>	Cory's shearwater	<i>Calonectris diomedea</i>
Razorbill	<i>Alca torda</i>	Great shearwater	<i>Puffinus gravis</i>
DIVING		Leach's storm-petrel	<i>Oceanodroma leucorhoa</i>
Anhinga	<i>Anhinga anhinga</i>	Long-tailed jaeger	<i>Stercorarius longicaudus</i>
Brown pelican	<i>Pelecanus occidentalis</i>	Manx shearwater	<i>Puffinus puffinus</i>
Common loon	<i>Gavia immer</i>	Northern fulmar	<i>Fulmarus glacialis</i>
Double-crested cormorant	<i>Phalacrocorax auritus</i>	Northern gannet	<i>Morus bassanus</i>
Horned grebe	<i>Podiceps auritus</i>	Parasitic jaeger	<i>Stercorarius parasiticus</i>
Loons	<i>Gavia spp.</i>	Pelagic birds	-
Red-throated loon	<i>Gavia stellata</i>	Pomarine jaeger	<i>Stercorarius pomarinus</i>
GULL/TERN		Red-billed tropicbird	<i>Phaethon aethereus</i>
Arctic tern	<i>Sterna paradisaea</i>	Sooty shearwater	<i>Puffinus griseus</i>
Black skimmer	<i>Rynchops niger</i>	South polar skua	<i>Catharacta maccormicki</i>
Bonaparte's gull	<i>Larus philadelphia</i>	White-tailed tropicbird	<i>Phaethon lepturus</i>
Bridled tern	<i>Onychoprion anaethetus</i>	Wilson's storm-petrel	<i>Oceanites oceanicus</i>
Caspian tern	<i>Hydroprogne caspia</i>	RAPTOR	
Common tern	<i>Sterna hirundo</i>	American kestrel	<i>Falco sparverius</i>
Forster's tern	<i>Sterna forsteri</i>	<u>Bald eagle</u>	<u><i>Haliaeetus leucocephalus</i></u>
Great black-backed gull	<i>Larus marinus</i>	Golden eagle	<i>Aquila chrysaetos</i>
Gull-billed tern	<i>Gelochelidon nilotica</i>	Northern harrier	<i>Circus cyaneus</i>
Gulls	-	Osprey	<i>Pandion haliaetus</i>
Herring gull	<i>Larus argentatus</i>	<u>Peregrine falcon</u>	<u><i>Falco peregrinus</i></u>
Laughing gull	<i>Larus atricilla</i>	Short-eared owl	<i>Asio flammeus</i>
<u>Least tern</u>	<u><i>Sternula antillarum</i></u>	SHOREBIRD	
Ring-billed gull	<i>Larus delawarensis</i>	American avocet	<i>Recurvirostra americana</i>
Royal tern	<i>Thalasseus maximus</i>	American oystercatcher	<i>Haematopus palliatus</i>
Sandwich tern	<i>Thalasseus sandwicensis</i>	Black-bellied plover	<i>Pluvialis squatarola</i>
Sooty tern	<i>Onychoprion fuscatus</i>	Black-necked stilt	<i>Himantopus mexicanus</i>
Terns	-	Marbled godwit	<i>Limosa fedoa</i>
PASSERINE		<u>Piping plover</u>	<u><i>Charadrius melodus</i></u>
Bachman's sparrow	<i>Peucaea aestivalis</i>	<u>Red knot</u>	<u><i>Calidris canutus</i></u>
Black-throated green warbler	<i>Setophaga virens waynei</i>	Red phalarope	<i>Phalaropus fulicarius</i>
		Red-necked phalarope	<i>Phalaropus lobatus</i>
		Sanderling	<i>Calidris alba</i>

SPECIES LIST

Common Name*	Scientific Name*	Common Name*	Scientific Name*
BIRDS cont.			
Semipalmated plover	<i>Charadrius semipalmatus</i>	Hooded merganser	<i>Lophodytes cucullatus</i>
Shorebirds	-	Lesser scaup	<i>Aythya affinis</i>
Short-billed dowitcher	<i>Limnodromus griseus</i>	Long-tailed duck	<i>Clangula hyemalis</i>
Willet	<i>Tringa semipalmata</i>	Mallard	<i>Anas platyrhynchos</i>
Wilson's plover	<i>Charadrius wilsonia</i>	Mergansers	-
WADING		Northern pintail	<i>Anas acuta</i>
American bittern	<i>Botaurus lentiginosus</i>	Northern shoveler	<i>Anas clypeata</i>
American woodcock	<i>Scolopax minor</i>	Red-breasted merganser	<i>Mergus serrator</i>
Black rail	<i>Laterallus jamaicensis</i>	Redhead	<i>Aythya americana</i>
Black-crowned night-heron	<i>Nycticorax nycticorax</i>	Ring-necked duck	<i>Aythya collaris</i>
Cattle egret	<i>Bubulcus ibis</i>	Ruddy duck	<i>Oxyura jamaicensis</i>
Clapper rail	<i>Rallus longirostris</i>	Scaup	<i>Aythya spp.</i>
Glossy ibis	<i>Plegadis falcinellus</i>	Scoters	<i>Melanitta spp.</i>
Great blue heron	<i>Ardea herodias</i>	Sea ducks	-
Great egret	<i>Ardea alba</i>	Snow goose	<i>Chen caerulescens</i>
Green heron	<i>Butorides virescens</i>	Surf scoter	<i>Melanitta perspicillata</i>
King rail	<i>Rallus elegans</i>	Tundra swan	<i>Cygnus columbianus</i>
Least bittern	<i>Ixobrychus exilis</i>	Waterfowl	-
Little blue heron	<i>Egretta caerulea</i>	White-winged scoter	<i>Melanitta fusca</i>
Snowy egret	<i>Egretta thula</i>	Wood duck	<i>Aix sponsa</i>
Sora	<i>Porzana carolina</i>		
Tricolored heron	<i>Egretta tricolor</i>	FISH	
Virginia rail	<i>Rallus limicola</i>	DIADROMOUS	
Wading birds	-	Alewife	<i>Alosa pseudoharengus</i>
White ibis	<i>Eudocimus albus</i>	American eel	<i>Anguilla rostrata</i>
<u>Wood stork</u>	<u><i>Mycteria americana</i></u>	American shad	<i>Alosa sapidissima</i>
Yellow-crowned night-heron	<i>Nyctanassa violacea</i>	Atlantic sturgeon	<i>Acipenser oxyrinchus</i>
WATERFOWL		Blueback herring	<i>Alosa aestivalis</i>
American black duck	<i>Anas rubripes</i>	Gizzard shad	<i>Dorosoma cepedianum</i>
American coot	<i>Fulica americana</i>	Hickory shad	<i>Alosa mediocris</i>
American wigeon	<i>Anas americana</i>	<u>Shortnose sturgeon</u>	<u><i>Acipenser brevirostrum</i></u>
Black scoter	<i>Melanitta americana</i>	Striped bass	<i>Morone saxatilis</i>
Blue-winged teal	<i>Anas discors</i>	ESTUARINE NURSERY	
Brant	<i>Branta bernicla</i>	Atlantic croaker	<i>Micropogonias undulatus</i>
Bufflehead	<i>Bucephala albeola</i>	Atlantic cutlassfish	<i>Trichiurus lepturus</i>
Canada goose	<i>Branta canadensis</i>	Atlantic menhaden	<i>Brevoortia tyrannus</i>
Canvasback	<i>Aythya valisineria</i>	Bay anchovy	<i>Anchoa mitchilli</i>
Common merganser	<i>Mergus merganser</i>	Black drum	<i>Pogonias cromis</i>
Gadwall	<i>Anas strepera</i>	Black sea bass	<i>Centropristis striata</i>
Greater scaup	<i>Aythya marila</i>	Bluefish	<i>Pomatomus saltatrix</i>
Green-winged teal	<i>Anas crecca</i>	Gulf flounder	<i>Paralichthys albigutta</i>
		Hogchoker	<i>Trinectes maculatus</i>
		Ladyfish	<i>Elops saurus</i>

SPECIES LIST

Common Name*	Scientific Name*	Common Name*	Scientific Name*
FISH cont.		Warmouth	<i>Lepomis gulosus</i>
Northern kingfish	<i>Menticirrhus saxatilis</i>	Western mosquitofish	<i>Gambusia affinis</i>
Northern puffer	<i>Sphoeroides maculatus</i>	Yellow perch	<i>Perca flavescens</i>
Pinfish	<i>Lagodon rhomboides</i>	MARINE BENTHIC	
Red drum	<i>Sciaenops ocellatus</i>	Atlantic spadefish	<i>Chaetodipterus faber</i>
Scup	<i>Stenotomus chrysops</i>	Bank sea bass	<i>Centropristis ocyurus</i>
Sheepshead	<i>Archosargus</i>	Florida pompano	<i>Trachinotus carolinus</i>
Southern flounder	<i>Paralichthys lethostigma</i>	Goosefish	<i>Lophius americanus</i>
Southern kingfish	<i>Menticirrhus americanus</i>	Little tunny	<i>Euthynnus alletteratus</i>
Spot	<i>Leiostomus xanthurus</i>	Spotted hake	<i>Urophycis regia</i>
Spotted seatrout	<i>Cynoscion nebulosus</i>	Tautog	<i>Tautoga onitis</i>
Striped mullet	<i>Mugil cephalus</i>	MARINE PELAGIC	
Summer flounder	<i>Paralichthys dentatus</i>	Atlantic bonito	<i>Sarda sarda</i>
Tarpon	<i>Megalops atlanticus</i>	Atlantic needlefish	<i>Strongylura marina</i>
Weakfish	<i>Cynoscion regalis</i>	Blacknose shark	<i>Carcharhinus acronotus</i>
White mullet	<i>Mugil curema</i>	Bluefin tuna	<i>Thunnus thynnus</i>
White perch	<i>Morone americana</i>	Butterfish	<i>Peprilus triacanthus</i>
Windowpane	<i>Scophthalmus aquosus</i>	Cobia	<i>Rachycentron canadum</i>
ESTUARINE RESIDENT		Dolphinfish	<i>Coryphaena hippurus</i>
Inland silverside	<i>Menidia beryllina</i>	Dusky shark	<i>Carcharhinus obscurus</i>
Silver perch	<i>Bairdiella chrysoura</i>	Greater amberjack	<i>Seriola dumerili</i>
Striped killifish	<i>Fundulus majalis</i>	Harvestfish	<i>Peprilus alepidotus</i>
FISH		King mackerel	<i>Scomberomorus cavalla</i>
<u>Hammerhead shark</u>	<u><i>Sphyrna spp.</i></u>	Sailfish	<i>Istiophorus platypterus</i>
Triggerfish	<i>Balistes spp.</i>	Sandbar shark	<i>Carcharhinus plumbeus</i>
FRESHWATER		Sharks	-
Black crappie	<i>Pomoxis nigromaculatus</i>	Spanish mackerel	<i>Scomberomorus</i>
Bluegill	<i>Lepomis macrochirus</i>	Thresher shark	<i>Alopias vulpinus</i>
Bluespotted sunfish	<i>Enneacanthus gloriosus</i>	HABITATS	
Bowfin	<i>Amia calva</i>	PLANT	
<u>Bridle shiner</u>	<u><i>Notropis bifrenatus</i></u>	Basketgrass	<i>Oplismenus hirtellus ssp.</i>
Chain pickerel	<i>Esox niger</i>	Beaked spikerush	<i>Eleocharis rostellata</i>
Channel catfish	<i>Ictalurus punctatus</i>	Bearded sprangletop	<i>Leptochloa fusca ssp.</i>
Golden shiner	<i>Notemigonus crysoleucas</i>	Blue waterhyssop	<i>Bacopa caroliniana</i>
Largemouth bass	<i>Micropterus salmoides</i>	Cabbage palmetto	<i>Sabal palmetto</i>
Longnose gar	<i>Lepisosteus osseus</i>	Carolina bishopweed	<i>Ptilimnium ahlesii</i>
Pumpkinseed	<i>Lepomis gibbosus</i>	Chapman's arrowhead	<i>Sagittaria graminea var.</i>
Redbreast sunfish	<i>Lepomis auritus</i>	Chapman's tridens	<i>Tridens flavus var.</i>
Redear sunfish	<i>Lepomis microlophus</i>	Clustered pellitory	<i>Parietaria praetermissa</i>
Redfin pickerel	<i>Esox americanus</i>	Coastal beaksedge	<i>Rhynchospora pleiantha</i>
Swamp darter	<i>Etheostoma fusiforme</i>	Confederate huckleberry	<i>Gaylussacia nana</i>
Threadfin shad	<i>Dorosoma petenense</i>	Cypress panicgrass	<i>Dichanthelium</i>

SPECIES LIST

Common Name*	Scientific Name*	Common Name*	Scientific Name*
HABITATS cont.		Weatherby's arrowhead	<i>Sagittaria graminea</i> var. <i>weatherbiana</i>
Dixie sandmat	<i>Chamaesyce bombensis</i>	Welsh mudwort	<i>Limosella australis</i>
Dune bluecurls	<i>Trichostema species 1</i>	Winged primrose-willow	<i>Ludwigia alata</i>
Endangered plant	-	Woolly beachheather	<i>Hudsonia tomentosa</i>
Florida adder's-mouth orchid	<i>Malaxis spicata</i>	UPLAND	
Florida scrub frostweed	<i>Helianthemum nashii</i>	Beach morning glory	<i>Ipomoea pescaprea</i>
Fourangle flatsedge	<i>Cyperus tetragonus</i>	Rare upland community	-
Fragrant beaksedge	<i>Rhynchospora odorata</i>	Seaside knotweed	<i>Polygonum glaucum</i>
Georgia frostweed	<i>Helianthemum georgianum</i>	Tiny leaved buckthorn	<i>Sageretia minutiflora</i>
Globe beaksedge	<i>Rhynchospora globularis</i> var. <i>pinetorum</i>	WETLAND	
Glowing nightshade	<i>Solanum pseudogracile</i>	Carolina grasswort	<i>Lilaeopsis carolinensis</i>
Gulf Coast spikerush	<i>Eleocharis cellulosa</i>	Coastal dropseed	<i>Sporobolus virginicus</i>
Hairy-seed goldenrod	<i>Solidago villosicarpa</i>	Godfrey's sandwort	<i>Minuartia godfreyi</i>
Ivy buttercup	<i>Ranunculus hederaceus</i>	Low nutrush	<i>Scleria verticillata</i>
Lanceleaf primrose-willow	<i>Ludwigia lanceolata</i>	Rare wetland community	-
Le Conte's flatsedge	<i>Cyperus lecontei</i>	Reticulated nutrush	<i>Scleria reticularis</i>
Long's bittercress	<i>Cardamine longii</i>	Saltmarsh spikerush	<i>Eleocharis halophila</i>
Moundlily yucca	<i>Yucca gloriosa</i>	Seabeach amaranth	<i>Amaranthus pumilus</i>
Mudbank crowngrass	<i>Paspalum dissectum</i>	Seashore paspalum	<i>Paspalum vaginatum</i>
Narrowleaf evening primrose	<i>Oenothera fruticosa</i>	Spoon-flower	<i>Peltandra sagittifolia</i>
Nerved witchgrass	<i>Dichanthelium aciculare</i> var. <i>aciculare</i>	Virginia jointvetch	<i>Aeschynomene virginica</i>
Pine barren frostweed	<i>Helianthemum corymbosum</i>	HERPETOFAUNA	
Redcardinal	<i>Erythrina herbacea</i>	ALLIGATOR	
Ribbed mock bishopweed	<i>Ptilimnium costatum</i>	American alligator	<i>Alligator mississippiensis</i>
Sand spikerush	<i>Eleocharis montevidensis</i>	AMPHIBIAN	
Shoreline seapurslane	<i>Sesuvium portulacastrum</i>	Carolina gopher frog	<i>Lithobates capito</i>
Slender seapurslane	<i>Sesuvium maritimum</i>	Neuse River waterdog	<i>Necturus lewisi</i>
Slim spikerush	<i>Eleocharis elongata</i>	FROG	
Small's bogbutton	<i>Lachnocaulon minus</i>	Ornate chorus frog	<i>Pseudacris ornata</i>
Southern beaksedge	<i>Rhynchospora microcarpa</i>	Southern chorus frog	<i>Pseudacris nigrita</i>
Spreading sandwort	<i>Arenaria lanuginosa</i> var. <i>lanuginosa</i>	SNAKE	
Tough bully	<i>Sideroxylon tenax</i>	Carolina water snake	<i>Nerodia sipedon</i>
Tracy's beaksedge	<i>Rhynchospora tracyi</i>	Coachwhip	<i>Coluber flagellum</i>
Virginia pinweed	<i>Lechea maritima</i> var. <i>virginica</i>	<u>Coral snake</u>	<u><i>Micrurus</i> sp.</u>
Virginia wildrye	<i>Elymus virginicus</i> var. <i>halophilus</i>	<u>Eastern diamond-backed rattlesnake</u>	<u><i>Crotalus adamanteus</i></u>
Viviparous spikerush	<i>Eleocharis vivipara</i>	Eastern kingsnake	<i>Lampropeltis getula</i>
		Rainbow snake	<i>Farancia erythrogramma</i>
		Rare snake	-
		Southern hog-nosed snake	<i>Heterodon simus</i>

SPECIES LIST

Common Name*	Scientific Name*	Common Name*	Scientific Name*
HERPETOFAUNA cont.		MARINE MAMMALS	
TURTLE		DOLPHIN	
Chicken turtle	<i>Deirochelys reticularia</i>	Atlantic spotted dolphin	<i>Stenella frontalis</i>
Diamondback terrapin	<i>Malaclemys terrapin</i>	Bottlenose dolphin	<i>Tursiops truncatus</i>
<u>Green sea turtle</u>	<u><i>Chelonia mydas</i></u>	Harbor porpoise	<i>Phocoena phocoena</i>
<u>Hawksbill sea turtle</u>	<u><i>Eretmochelys imbricata</i></u>	Short-beaked common dolphin	<i>Delphinus delphis</i>
<u>Kemp's ridley sea turtle</u>	<u><i>Lepidochelys kempii</i></u>	MANATEE	
<u>Leatherback sea turtle</u>	<u><i>Dermochelys coriacea</i></u>	<u>West Indian manatee</u>	<u><i>Trichechus manatus</i></u>
<u>Loggerhead sea turtle</u>	<u><i>Caretta caretta</i></u>	PINNIPED	
INVERTEBRATES		Gray seal	<i>Halichoerus grypus</i>
BIVALVE		Harbor seal	<i>Phoca vitulina</i>
<u>Alewife floater</u>	<u><i>Anodonta implicata</i></u>	Harp seal	<i>Pagophilus groenlandicus</i>
Barrel floater	<i>Utterbackia couperiana</i>	Hooded seal	<i>Cystophora cristata</i>
Bay scallop	<i>Argopecten irradians</i>	WHALE	
Cape Fear spike	<i>Elliptio marsupibesa</i>	Fin whale	<i>Balaenoptera physalus</i>
<u>Eastern lampmussel</u>	<u><i>Lampsilis radiata</i></u>	<u>Humpback whale</u>	<u><i>Megaptera novaeangliae</i></u>
Eastern oyster	<i>Crassostrea virginica</i>	<u>North Atlantic right whale</u>	<u><i>Eubalaena glacialis</i></u>
<u>Eastern pondmussel</u>	<u><i>Ligumia nasuta</i></u>	TERRESTRIAL MAMMALS	
Quahog	<i>Mercenaria spp.</i>	SMALL MAMMAL	
<u>Tidewater mucket</u>	<u><i>Leptodea ochracea</i></u>	Buxton Woods white-footed	<i>Peromyscus leucopus</i>
<u>Waccamaw spike</u>	<u><i>Elliptio waccamawensis</i></u>	Dismal Swamp bog lemming	<i>Synaptomys cooperi</i>
CRAB		<u>Florida eastern woodrat</u>	<u><i>Neotoma floridana</i></u>
Blue crab	<i>Callinectes sapidus</i>	Pungo white-footed deermouse	<i>Peromyscus leucopus easti</i>
CRAYFISH		UNGULATE	
Chowanoke crayfish	<i>Orconectes virginienensis</i>	Horse	<i>Equus caballus</i>
INSECT		* Underlined species are listed as either threatened or endangered under the federal ESA, and/or are listed as threatened, endangered, or special concern by North Carolina	
Crystal skipper	<i>Atrytonopsis quinteri</i>		
Giant swallowtail	<i>Papilio cresphontes</i>		
SHRIMP			
Brown shrimp	<i>Farfantepenaeus aztecus</i>		
Florida stone crab	<i>Menippe mercenaria</i>		
Pink shrimp	<i>Farfantepenaeus</i>		
White shrimp	<i>Penaeus vannamei</i>		

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 sparse to moderate
- 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

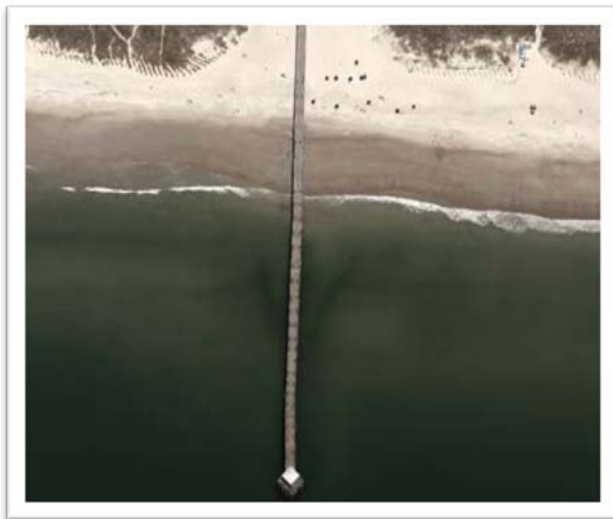
SHORELINE DESCRIPTIONS

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 include ghost crabs and amphipods; lower beach fauna can be moderate, but highly variable
- They are generally areas of heavy recreational use
- Most common along the barrier islands



PREDICTED OIL BEHAVIOR

- Light oil accumulations will be deposited as oily swashes or bands along the upper
- 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 limited to prevent contamination of clean areas and disturbance of habitat and birds
- Manual cleanup is advised to minimize the volume of sand removed from the shore and requiring disposal, particularly for non-amenity beaches
- Mechanical sand sifters may be effective on oil in the form of tarballs and patties
- 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 can be effective along outer beaches

SHORELINE DESCRIPTIONS

SCARPS AND STEEP SLOPES IN 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
- Prevalent near topographic highs along canals and rivers

PREDICTED OIL BEHAVIOR

- Any stranded oil will concentrate at the high-water line and may penetrate sandy sediments
- 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; sorbents can be deployed to recover oil being mobilized from the shore
- 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 sloping, of variable width, and have soft sediments. These characteristics combine to lower their trafficability
- Generally species density and diversity is lower than on fine-grained sand beaches
- They occur along 3.6% of the shoreline, mostly along 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
- Biological impacts include temporary declines in infaunal populations, which can also affect important shorebird foraging areas



RESPONSE CONSIDERATIONS

- Removed 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 to release the oil 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

RIPRAP

ESI = 6B

DESCRIPTION

- Riprap structures are composed of cobble- to boulder-sized blocks of rock 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, residential areas, and inlets

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

- Exposed tidal flats are broad, flat, intertidal areas composed primarily of sand and minor amounts of shell
- The presence of sand and gravel indicates that tidal currents and waves are strong enough to mobilize the sediments
- They are often associated with another shoreline type on the landward side of the flat, though they can occur as separate shoals; they are commonly associated with tidal inlets
- Biological utilization can be very high, with large numbers of infauna, heavy use by birds for roosting and foraging, and by foraging fish
- Present at tidal inlets between barrier islands, along the outer coast, and exposed areas of the bays



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
- 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, 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 structures 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 and residential waterfront areas



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 rock 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

PREDICTED OIL BEHAVIOR

- Deep penetration of oil between the blocks is likely
- Oil adheres readily to the rough surfaces
- 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 heavily oiled beaches and replace them in high-use areas

SHORELINE DESCRIPTIONS

SHELTERED TIDAL FLATS

ESI = 9A

DESCRIPTION

- Sheltered tidal flats are composed primarily of mud with minor amounts of sand and shell
- 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
- 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
- They are heavily utilized by birds for foraging
- Common along marsh channels and sheltered areas of the 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 can 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 appropriate for use under heavy oiling

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
- Present along upper canals and rivers

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, the oil will cover and coat the grasses and base of trees
- 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 may be 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 high-use areas

SHORELINE DESCRIPTIONS

SALT- AND BRACKISH-WATER MARSHES

ESI = 10A

DESCRIPTION

- These are grassy intertidal wetlands containing emergent, herbaceous vegetation
- Width of the marsh can vary widely, from a narrow fringe to extensive areas; many have been extensively ditched
- Sediments are composed of organic muds except on the margins of islands where sand is abundant
- Exposed areas are located along bays with wide fetches and along heavily trafficked waterways
- Sheltered areas 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
- Very common behind barrier islands



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 one meter); heavy oils will thickly cover or pool on the sediment surface

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 should 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 in the upper estuary and along major rivers and along creeks and rivers
- Those along major channels are exposed to strong currents and boat wakes; smaller channels tend to be sheltered
- Resident flora and fauna are abundant
- Present along tidal freshwater sections of rivers

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
- Most of the time, there will be a narrow band because of the small tidal range; the band can be very large during high- water events
- 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
- 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 meters
- 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
- Common along upper sections of rivers

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
- Oiled 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
- 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 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-SHRUB WETLANDS

ESI = 10D

DESCRIPTION

- Scrub-shrub wetlands consist of woody vegetation less than 6 meters 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
- Uncommon, occurring in low areas adjacent to canals and rivers

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 in the wetland
- During dry periods, terrestrial spills flow downhill and accumulate in depressions or reach water bodies

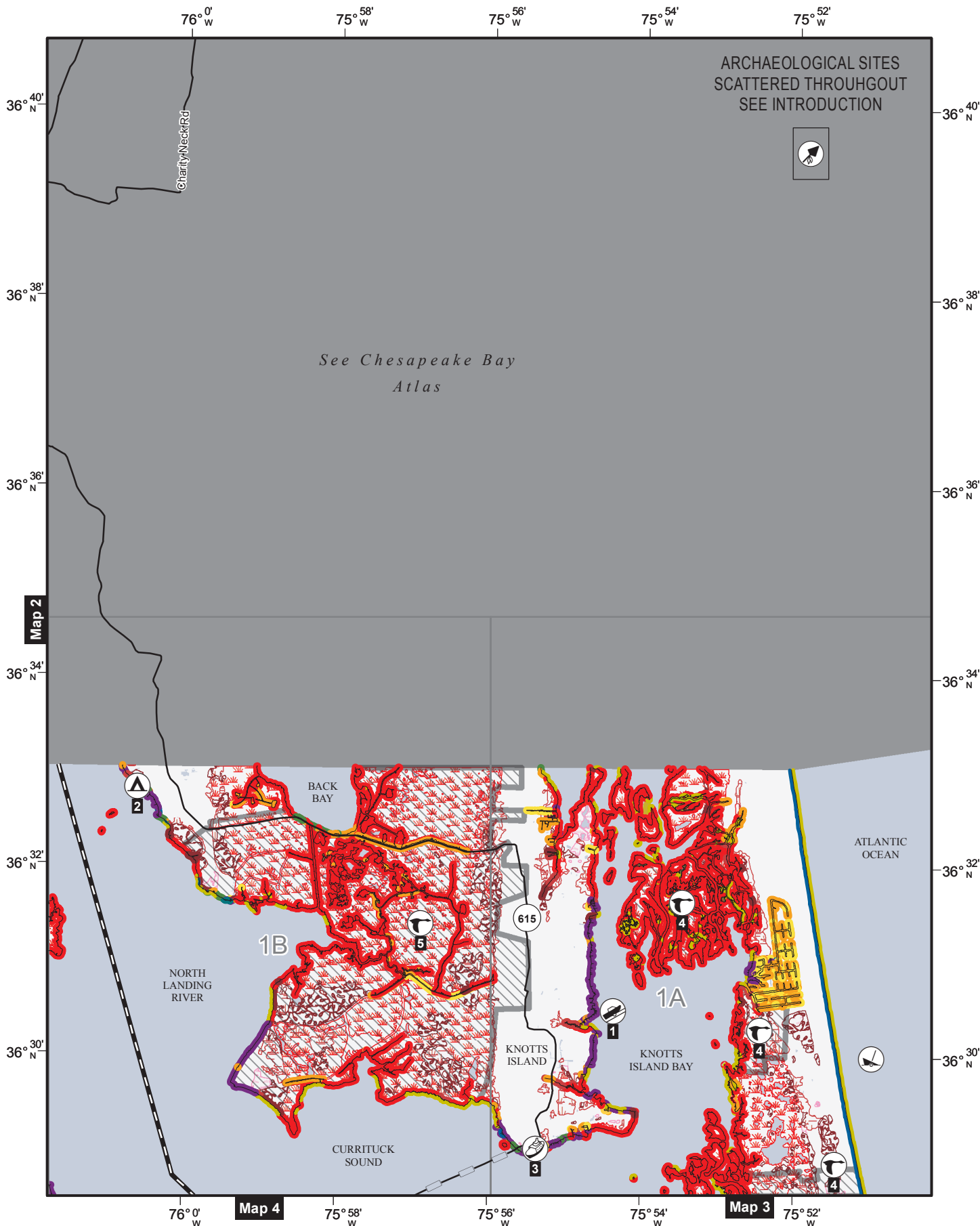


RESPONSE CONSIDERATIONS

- 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 1
North Carolina

Map 1
North Carolina

HUMAN USE RESOURCES

DISPLAYED ON MAP (POINTS)			
Map ID	Type	Name	Phone
1	BOAT RAMP	BRUMLEY ROAD, KNOTTS ISLAND	252-426-2255
2	CAMPGROUND	SANDY POINT RESORT	252-429-3415
3	FERRY	KNOTTS ISLAND FERRY TERMINAL	

DISPLAYED ON MAP (POLYGONS)			
Map ID	Type	Name	Phone
4	WILDLIFE REFUGE	CURRITUCK NATIONAL WILDLIFE REFUGE	252-429-3100
5	WILDLIFE REFUGE	MACKEY ISLAND NATIONAL WILDLIFE REFUGE	252-429-3100

ALSO PRESENT IN MAPPED AREA (POLYGONS)			
Type	Name	Contact	Phone
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT; COASTAL MIG. PELAGICS	DAVID DALE, SOUTHEAST REGION	727-824-5317
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT; SHRIMP	DAVID DALE, SOUTHEAST REGION	727-824-5317
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT; SNAPPER GROUPER	DAVID DALE, SOUTHEAST REGION	727-824-5317
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT; SPINY LOBSTER	DAVID DALE, SOUTHEAST REGION	727-824-5317

JURISDICTIONS			
COUNTY:	CURRITUCK	FEMA:	REGION I
COAST GUARD:	DISTRICT 5, SECTOR NORTH CAROLINA	EPA:	REGION 4
USACE:	NORTH ATLANTIC DIVISION, SOUTH ATLANTIC DIVISION, NORFOLK DISTRICT, WILMINGTON 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	7,271.74	11.36
10B	Freshwater Marshes	134.95	0.21
10C	Swamps	787.31	1.23
10D	Scrub and Shrub Wetlands	1,074.30	1.68
9A	Sheltered Tidal Flats	32.02	0.05
7	Exposed Tidal Flats	230.97	0.36



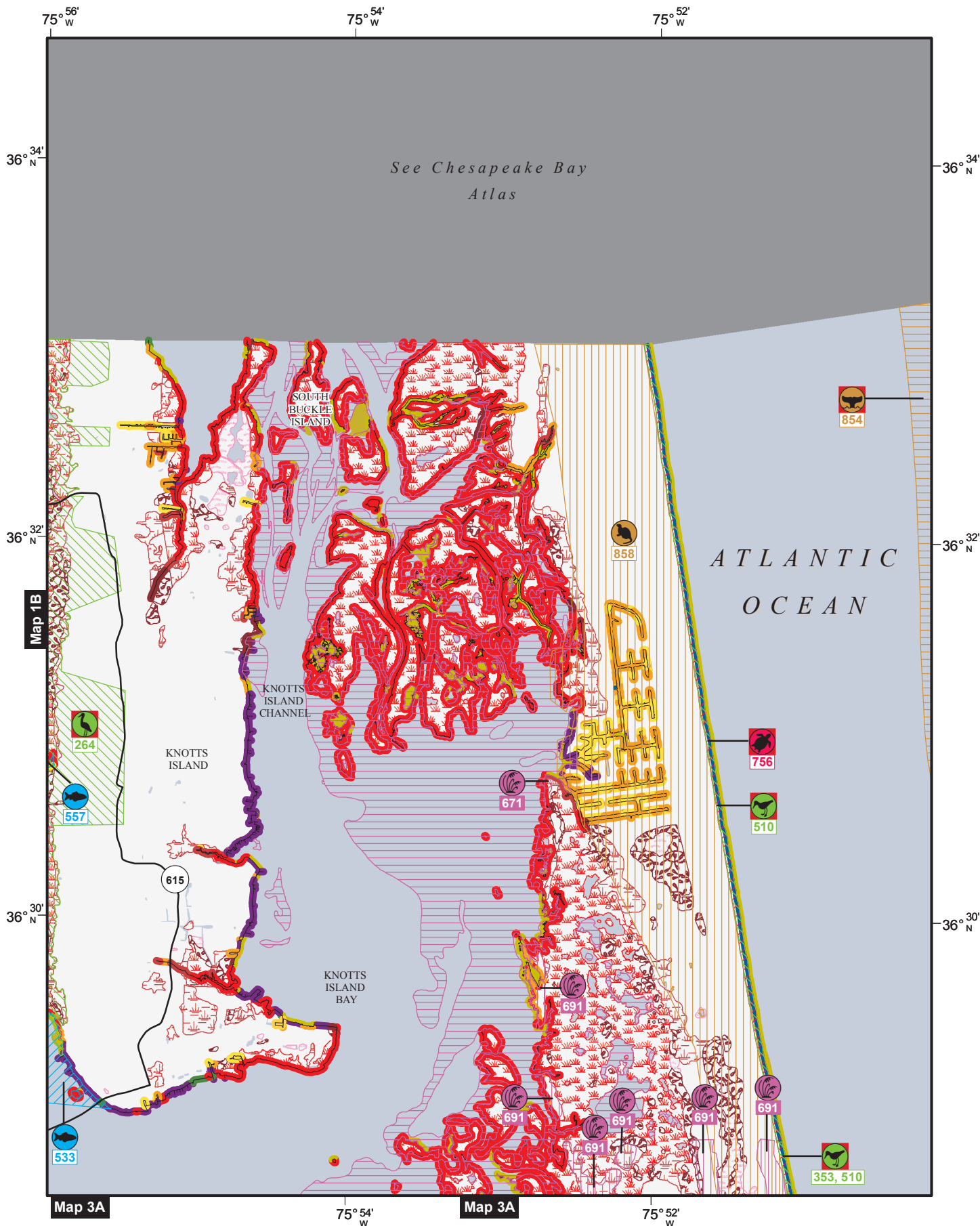
ESI SHORELINE HABITAT TYPES

<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	263,853.26	163.95	61%
10C	Swamps	4,626.85	2.87	1%
10D	Scrub-shrub wetlands	5,125.10	3.18	1%
9A	Sheltered tidal flats	21,260.99	13.21	5%
9B	Sheltered, vegetated low banks	22,771.68	14.15	5%
8B	Sheltered, solid man-made structures	13,613.91	8.46	3%
8C	Sheltered riprap	376.12	0.23	< 1%
7	Exposed tidal flats	73,532.07	45.69	17%
6B	Exposed riprap	2,403.46	1.49	1%
3A	Fine- to medium-grained sand beaches	9,806.26	6.09	2%
3B	Scarps and steep slopes in sand	133.68	0.08	< 1%
1B	Exposed, solid man-made structures	13,811.75	8.58	3%
Total ESI Shoreline:		431,315.14	268.01	
Total Shoreline:		333,274.00	207.09	

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 1A
North Carolina



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

0 1 Miles
Not for Navigation
0 1 Kilometers

1:50,000



Map 1A
North Carolina

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											
SAV	Submerged aquatic veg	High Ecological Value			Present	J	F	M	A	M	J	J	A	S	O	N	D

BIRDS

Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence											
264	Wading	King rail	Concentration Area			High	J	F	M	A	M	J	J	A	S	O	N	D
	Wading	Least bittern	Migration	C		-												
	Wading	Virginia rail	Concentration Area			High	J	F	M	A	M	J	J	A	S	O	N	D
353	Shorebird	Piping plover	Nesting	E	E	1 Pair												
510	Shorebird	Piping plover	Wintering	E	E	1S												
	Shorebird	Red knot	Migration	T		100S												

FISH

Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence											
533	Diadromous	Alewife	Nursery Area			Present	J	F	M	A	M	J	J	A	S	O	N	D
	Diadromous	Blueback herring	Nursery Area			Present												
557	Diadromous	Alewife	Spawning Area			Present												
	Diadromous	American shad	Spawning Area			Present												
	Diadromous	Blueback herring	Spawning Area			Present												

HABITATS & RARE PLANTS

Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence											
671	Plant	Winged primrose-willow	Vulnerable Occurrence			Current	J	F	M	A	M	J	J	A	S	O	N	D
691	Upland	Rare upland community	Vulnerable Occurrence			Current												

REPTILES & AMPHIBIANS

Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence											
756	Turtle	Green sea turtle	Nesting	T	T	1 Nest												
	Turtle	K. ridley sea turtle	Nesting	E	E	1 Nest												
	Turtle	Leatherback sea turtle	Nesting	E	E	1 Nest												
	Turtle	Loggerhead sea turtle	Nesting	T	T	0.3 Nests/Km												

MARINE MAMMALS

Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Mating	Calving	Pupping	Molt
854	Whale	Humpback whale	General Distribution		E	High	J	F	M	A	M	J	J	A	S	O	N	D	-	-	-	-

TERRESTRIAL MAMMALS




Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence															
858	Small Mammal	Pungo wht.-foot deermouse	Vulnerable Occurrence			-	J	F	M	A	M	J	J	A	S	O	N	D				

WIDESPREAD IN MAPPED AREA (> 10 SQUARE KILOMETERS)


BIRDS

Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt
Diving	Brown pelican	Wintering			1000S	J	F	M	A	M	J	J	A	S	O	N	D	-	-	-	-
	D. crested cormorant	Wintering			10000S													-	-	-	-
	Red-throated loon	Wintering			1000S													-	-	-	-
	Bonaparte's gull	Wintering			1000S													-	-	-	-
	G. black-backed gull	Wintering			1000S													-	-	-	-
Gull/Tern	Gulls	Concentration Area			High - Foraging													-	-	-	-
	Herring gull	Wintering			1000S													-	-	-	-
	Ring-billed gull	Wintering			4000S													-	-	-	-
	Terns	Vulnerable Occurrence			Foraging													-	-	-	-
	Northern gannet	Wintering			10000S													-	-	-	-
Pelagic	American black duck	Wintering			1000S													-	Feb-Mar	Oct-Nov	-
	American coot	Wintering			1000S													-	Feb-Mar	Oct-Nov	-
	American wigeon	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	Black scoter	Wintering			1000S													-	Feb-Mar	Oct-Nov	-
	Bufflehead	Wintering			100S													-	Feb-Mar	Oct-Nov	-
Waterfowl	Canada goose	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	Gadwall	Wintering			1000S													-	Feb-Mar	Oct-Nov	-
	Green-winged teal	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	Hooded merganser	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	Mallard	Wintering			1000S													-	Feb-Mar	Oct-Nov	-
	Northern pintail	Wintering			1000S													-	Feb-Mar	Oct-Nov	-
	Red-breasted merganser	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	Redhead	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	Ring-necked duck	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	Ruddy duck	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	Scaup	Wintering			1000S													-	Feb-Mar	Oct-Nov	-
	Snow goose	Wintering			1000S													-	Feb-Mar	Oct-Nov	-
	Surf scoter	Wintering			1000S													-	Feb-Mar	Oct-Nov	-
	Tundra swan	Wintering			1000S													-	Feb-Mar	Oct-Nov	-
	Waterfowl	Wintering			100S													-	Feb-Mar	Oct-Nov	-


FISH

Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
						J	F	M	A	M	J	J	A	S	O	N	D					
	Diadromous	Alewife			Present													-	-	May-Aug	Jul-Mar	Jan-Dec
		Atlantic sturgeon	C		-													-	-	-	Jan-Dec	Jan-Dec
		Atlantic sturgeon	C		-													-	-	-	-	Oct-Mar
		Blueback herring			Present													-	-	May-Jul	Aug-Oct	-
	Gizzard shad	Spawning Area			Present													Mar-May	Mar-May	Apr-Jun	May-Sep	-
	Striped bass	Concentration Area			Medium													Apr-Jun	Apr-Jun	Apr-Jun	Jan-Dec	Jan-Dec
	Bluefish	Spawning Area			Abundant													Jun-Aug	Jun-Aug	Jul-Sep	Jan-Dec	Jan-Dec
	Southern flounder	Spawning Area			Highly Abundant													Nov-Jan	Nov-Feb	Nov-Apr	-	Jan-Dec
	Hammerhead shark	Migration	T		-													-	-	-	-	Sep-Dec
	Cobia	Spawning Area			-													May-Jul	-	-	-	-
	Greater amberjack	Spawning Area			Common													Mar-Jul	-	-	-	-


REPTILES & AMPHIBIANS

Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Nest	Hatch	Internest	Juveniles	Adults
						J	F	M	A	M	J	J	A	S	O	N	D					
	Turtle	General Distribution	T	T	Rare In Winter													-	-	-	Jan-Dec	Jan-Dec
		Hawksbill sea turtle	E	E	Rare In Winter													-	-	-	Jan-Dec	Jan-Dec
		K. ridley sea turtle	E	E	Rare In Winter													-	-	-	Jan-Dec	Jan-Dec
		K. ridley sea turtle	E	E	Interesting - Rare													-	-	Apr-Sep	Jun-Sep	Apr-Sep
	Leatherback sea turtle	General Distribution	E	E	-													-	-	-	Jan-Dec	Jan-Dec
	Loggerhead sea turtle	General Distribution	T	T	Rare In Winter													-	-	-	Jan-Dec	Jan-Dec
	Loggerhead sea turtle	Vulnerable Occurrence	T	T	Interesting													-	-	Apr-Sep	Jun-Sep	Apr-Sep

INVERTEBRATES

Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
						J	F	M	A	M	J	J	A	S	O	N	D					
	Shrimp	Nursery Area			Abundant													-	-	Feb-Apr	Mar-Aug	-
		Spawning Area			Common													Oct-Nov	-	-	-	-
		Spawning Area			-													Apr-Jul	Apr-Jul	May-Nov	-	-
		Spawning Area			Abundant													Mar-Nov	Mar-Nov	Jun-Dec	-	-

MARINE MAMMALS

Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Mating	Calving	Pupping	Molt
						J	F	M	A	M	J	J	A	S	O	N	D				
	Manatee	General Distribution	E	E	-													-	-	-	-
		General Distribution	E	E	Low													-	-	-	-
		Migration	E	E	Low													-	-	-	-

ALSO PRESENT IN MAPPED AREA (GENERAL DISTRIBUTION)

BENTHIC

Subelement	Species	Monthly Presence											
SAV	Submerged aquatic veg	J	F	M	A	M	J	J	A	S	O	N	D

BIRDS

Subelement	Species	Monthly Presence											
Waterfowl	American black duck	J	F	M	A	M	J	J	A	S	O	N	D
	Blue-winged teal												
	Gadwall												
	Wood duck												

FISH

Subelement	Species	Monthly Presence											
Diadromous	Alewife	J	F	M	A	M	J	J	A	S	O	N	D
	American eel												
	American eel												
	American shad												
	American shad												
	Blueback herring												
	Hickory shad												
	Hickory shad												
	Striped bass												
	Striped bass												
Estuarine Nursery	Atlantic croaker												
	Atlantic croaker												
	Atlantic cutlassfish												
	Atlantic menhaden												
	Atlantic menhaden												
	Bay anchovy												
	Bay anchovy												
	Black drum												
	Black sea bass												
	Bluefish												
	Hogchoker												
	Ladyfish												
	Northern kingfish												
	Northern puffer												
	Pinfish												
	Red drum												
	Red drum												
	Scup												



FISH (continued)

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	Sheepshead													-	-	-	-	May-Dec
	Southern flounder													-	-	Dec-Mar	Jan-Dec	Jan-Dec
	Southern kingfish													Apr-Oct	Apr-Oct	-	-	Mar-Dec
	Spot													-	-	-	Mar-Jun	Mar-Dec
	Spot													-	-	Jan-Mar	Jan-Dec	May-Oct
	Spotted seatrout													-	-	-	Nov-Apr	Jan-Dec
	Spotted seatrout													-	-	-	-	Jan-Dec
	Striped mullet													May-Aug	May-Aug	Jun-Aug	Jun-Oct	-
	Striped mullet													-	-	-	Mar-Oct*	Mar-Oct*
	Summer flounder													-	-	-	Jan-Dec	-
	Summer flounder													Oct-Mar	Oct-Apr	Oct-May	Sep-Mar	Jan-Dec
	Tarpon													-	-	Oct-May	Jan-Dec	-
	Weakfish													-	-	-	-	Jul-Aug
	Weakfish													Mar-Oct	Mar-Oct	-	Jan-Dec	Jan-Dec
	White mullet													-	-	Mar-Jul	Sep-Jan	-
	White mullet													-	-	-	Jan-Dec	Jan-Dec
	White perch													Mar-Jun	Mar-Jun	May-Aug	Jan-Dec	Jul-Feb
	Windowpane													Mar-Nov	Mar-Nov	Mar-Nov	Jan-Dec	Dec-Feb
	Inland silverside													Mar-Aug	Mar-Aug	Jun-Sep	-	-
	Inland silverside													-	-	-	-	-
	Silver perch													Apr-Aug	Apr-Aug	-	Mar-Jun	Mar-Dec
	Triggerfish													-	-	-	-	May-Oct
	Bluegill													Apr-Oct	Apr-Oct	-	Jan-Dec	Jan-Dec
	Bowfin													Mar-Jun	Mar-Jun	-	Jan-Dec	Jan-Dec
	Largemouth bass													May-Jun	May-Jun	May-Jun	-	Jan-Dec
	Yellow perch													-	-	-	Apr-Dec	Apr-Dec
	Yellow perch													Jan-Mar	Jan-Mar	Jan-Mar	Apr-Dec	Apr-Dec
	Atlantic spadefish													May-Oct	May-Oct	May-Oct	Sep-Dec	May-Dec
	Florida pompano													-	-	Jun-Aug	-	May-Dec
	Goosefish													Mar-Jun	Mar-Jun	Mar-Jun	-	Jan-Dec
	Little tunny													-	-	-	-	May-Feb
	Spotted hake													Feb-Apr	Feb-Apr	Mar-May	Jan-Dec	Jan-Dec
	Tautog													May-Aug	May-Aug	Jun-Aug	-	Sep-Apr
	Atlantic bonito													-	-	-	-	May-Oct
	Atlantic needlefish													May-Jul	May-Jul	Jun-Aug	Jun-Oct	-
	Atlantic needlefish													-	-	-	Nov-May*	Mar-Oct
	Bluefin tuna													-	-	-	-	Jan-Dec
	Butterfish													May-Jul	May-Jul	Jun-Aug	Jan-Dec	Jan-Dec
	Cobia													-	-	-	-	May-Oct
	Dolphinfish													Jan-Dec	-	-	-	Jan-Dec
	Greater amberjack													-	-	-	-	Jan-Dec
	Harvestfish													-	-	-	-	Jan-Dec
	King mackerel													-	-	-	-	Jan-Dec
	Sharks													-	-	-	-	Jan-Dec



FISH (continued)

Subelement	Species	Monthly Presence											
		J	F	M	A	M	J	J	A	S	O	N	D
	Spanish mackerel												
	Thresher shark												

INVERTEBRATES

Subelement	Species	Monthly Presence											
		J	F	M	A	M	J	J	A	S	O	N	D
	Crab												
	Blue crab												
	Blue crab												
	Shrimp												
	Brown shrimp												

MARINE MAMMALS

Subelement	Species	Monthly Presence											
		J	F	M	A	M	J	J	A	S	O	N	D
	Dolphin												
	Atl. spotted dolphin												
	Bottlenose dolphin												
	Bottlenose dolphin												
	Harbor porpoise												
	Short-beaked common dolphin												
	Whale												
	Fin 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	2,216.41	3.46
10B	Freshwater Marshes	99.73	0.16
10C	Swamps	485.66	0.76
10D	Scrub and Shrub Wetlands	355.86	0.56
7	Exposed Tidal Flats	196.80	0.31

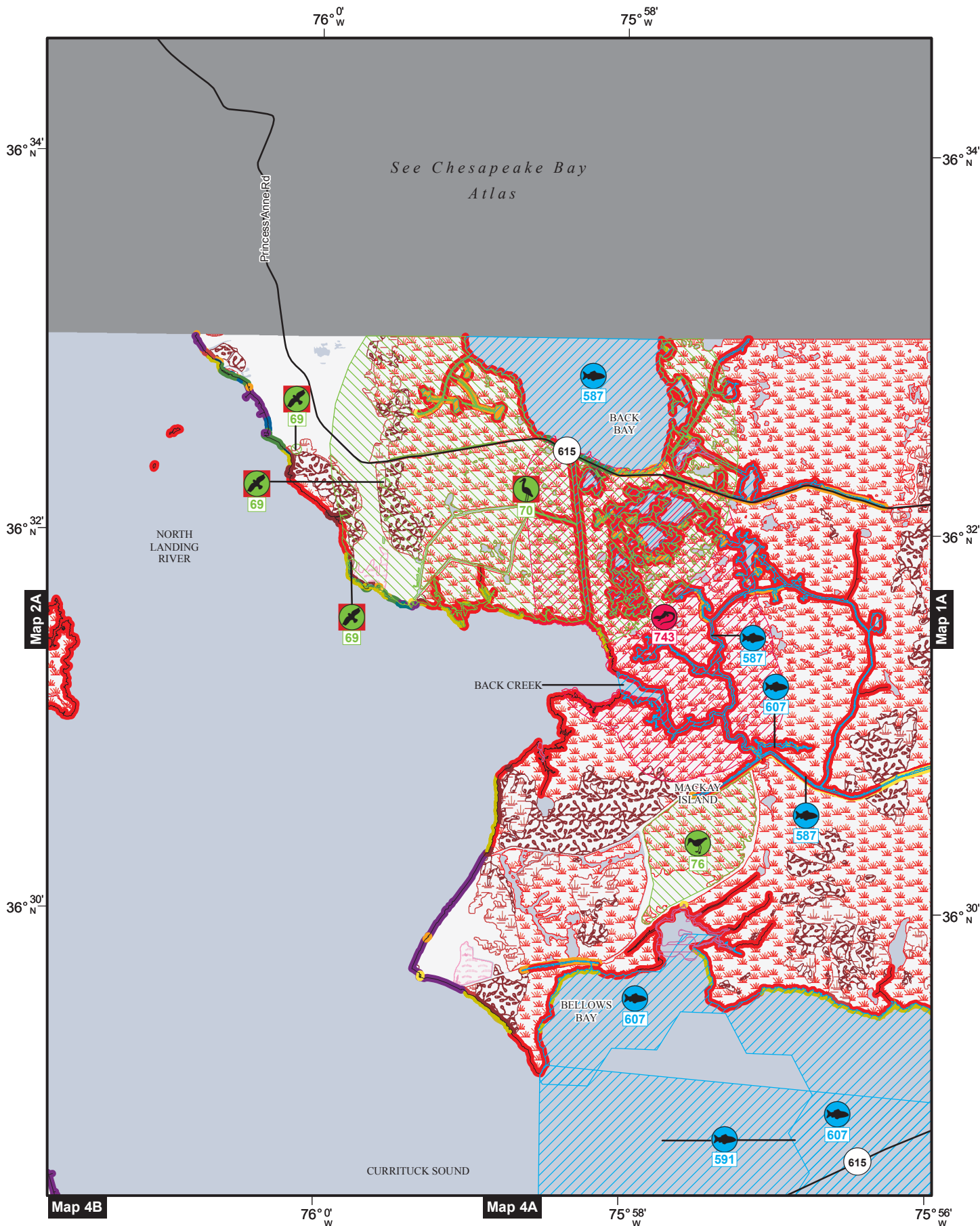
ESI SHORELINE HABITAT TYPES

ESI Rank	Shoreline Habitat Classification	Length (Meters)	Length (Miles)	% of ESI Shoreline
10A	Salt- and brackish-water marshes	156,185.06	97.05	56%
10C	Swamps	3,844.06	2.39	1%
10D	Scrub-shrub wetlands	2,088.80	1.30	1%
9A	Sheltered tidal flats	4,388.16	2.73	2%
9B	Sheltered, vegetated low banks	17,919.31	11.13	6%
8B	Sheltered, solid man-made structures	11,346.65	7.05	4%
8C	Sheltered riprap	338.75	0.21	< 1%
7	Exposed tidal flats	62,589.15	38.89	22%
6B	Exposed riprap	607.30	0.38	< 1%
3A	Fine- to medium-grained sand beaches	8,705.37	5.41	3%
1B	Exposed, solid man-made structures	10,537.19	6.55	4%
Total ESI Shoreline:		278,549.80	173.08	
Total Shoreline:		209,864.97	130.40	

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 1B
North Carolina

Map 1B
North Carolina

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	J	F	M	A	M	J	J	A	S	O	N	D	Monthly Presence
SAV	Submerged aquatic veg	High Ecological Value			Present													

BIRDS

Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N	D	Nest	Mig.(S)	Mig.(F)	Juveniles	Adults	Molt
69	Raptor	Bald eagle	Nesting	T		1 Pair													Jan-Jun	-	-	-	-	-
70	Wading	Black rail	Nesting	C		-													May-Aug	-	-	-	-	-
76	Shorebird	Black-necked stilt	Nesting			-													May-Aug	-	-	-	-	-

FISH

Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N	D	Spawn	Eggs	Larvae	Juveniles	Adults
587	Diadromous	Alewife	Spawning Area			Present													Mar-Jul	Mar-Jul	May-Aug	-	-
591	Diadromous	Blueback herring	Spawning Area			Present													Mar-Jul	Mar-Jul	May-Jul	-	-
	Diadromous	Alewife	Migration			Present													-	-	May-Aug	Jul-Mar	-
	Diadromous	Blueback herring	Migration			Present													-	-	May-Jul	Aug-Oct	-
607	Diadromous	Striped bass	Concentration Area			Medium													Apr-Jun	Apr-Jun	Apr-Jun	Jan-Dec	Jan-Dec

REPTILES & AMPHIBIANS

Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N	D	Nest	Hatch	Internest	Juveniles	Adults
743	Snake	Rainbow snake	Vulnerable Occurrence			-													May-Sep	Aug-Nov	-	Jan-Dec	Jan-Dec

BIRDS

Subelement	Species	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				
Wading	King rail	Concentration Area			High													-	-	-	-
	Least bittern	Migration	C		-													-	Apr-May	-	-
	Least bittern	Nesting	C		6 Pairs													Apr-Aug	-	-	-
	Virginia rail	Concentration Area			High													-	-	-	-
Waterfowl	American black duck	Wintering			1000S													-	Feb-Mar	Oct-Nov	-
	American coot	Wintering			1000S													-	Feb-Mar	Oct-Nov	-
	American wigeon	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	Bufflehead	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	Canada goose	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	Gadwall	Wintering			1000S													-	Feb-Mar	Oct-Nov	-
	Green-winged teal	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	Hooded merganser	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	Mallard	Wintering			1000S													-	Feb-Mar	Oct-Nov	-
	Northern pintail	Wintering			1000S													-	Feb-Mar	Oct-Nov	-
	Redhead	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	Ring-necked duck	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	Ruddy duck	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	Scaup	Wintering			1000S													-	Feb-Mar	Oct-Nov	-
	Snow goose	Wintering			1000S													-	Feb-Mar	Oct-Nov	-
	Tundra swan	Wintering			1000S													-	Feb-Mar	Oct-Nov	-
	Waterfowl	Wintering			100S													-	Feb-Mar	Oct-Nov	-

FISH

Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
						J	F	M	A	M	J	J	A	S	O	N	D					
Diadromous	Alewife	Nursery Area			Present													-	-	May-Aug	Jul-Oct	-
	American shad	Spawning Area			Present													Apr-Jun	Apr-Jun	May-Jul	Feb-May	-
	Atlantic sturgeon	General Distribution	C		-													-	-	-	Jan-Dec	Jan-Dec
	Blueback herring	Nursery Area			Present													-	-	May-Jul	Jul-Oct	-
	Gizzard shad	Spawning Area			Present													Mar-May	Mar-May	Apr-Jun	May-Sep	-

INVERTEBRATES

Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
						J	F	M	A	M	J	J	A	S	O	N	D					
Shrimp	Brown shrimp	Nursery Area			Abundant													-	-	Feb-Apr	Mar-Aug	-

MARINE MAMMALS

Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Mating	Calving	Pupping	Molt																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
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BENTHIC

Subelement	Species
SAV	Submerged aquatic veg



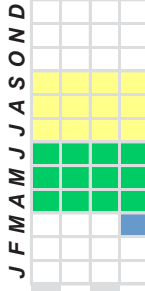
Monthly Presence



BIRDS

Subelement	Species
	American black duck
	Blue-winged teal
	Gadwall
	Wood duck

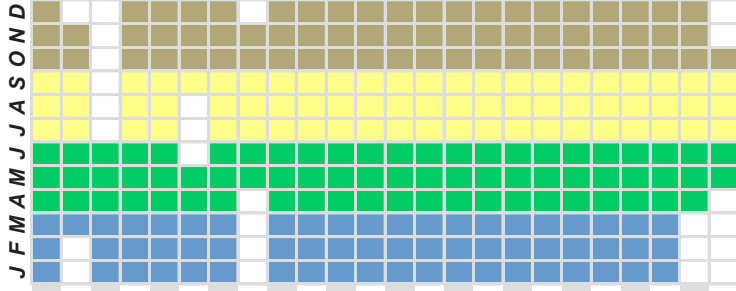
Monthly Presence



FISH

Subelement	Species
	American eel
	American shad
	Hickory shad
	Striped bass
	Atlantic croaker
	Atlantic menhaden
	Bay anchovy
	Bluefish
	Red drum
	Southern flounder
	Spot
	Spotted seatrout
	Striped mullet
	Summer flounder
	Weakfish
	White mullet
	White perch
	Inland silverside
	Bluegill
	Bowfin
	Largemouth bass
	Yellow perch
	Yellow perch
	Atlantic needlefish

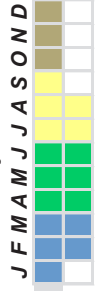
Monthly Presence



INVERTEBRATES

Subelement	Species
	Blue crab
	Brown shrimp

Monthly Presence



Monthly Presence

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

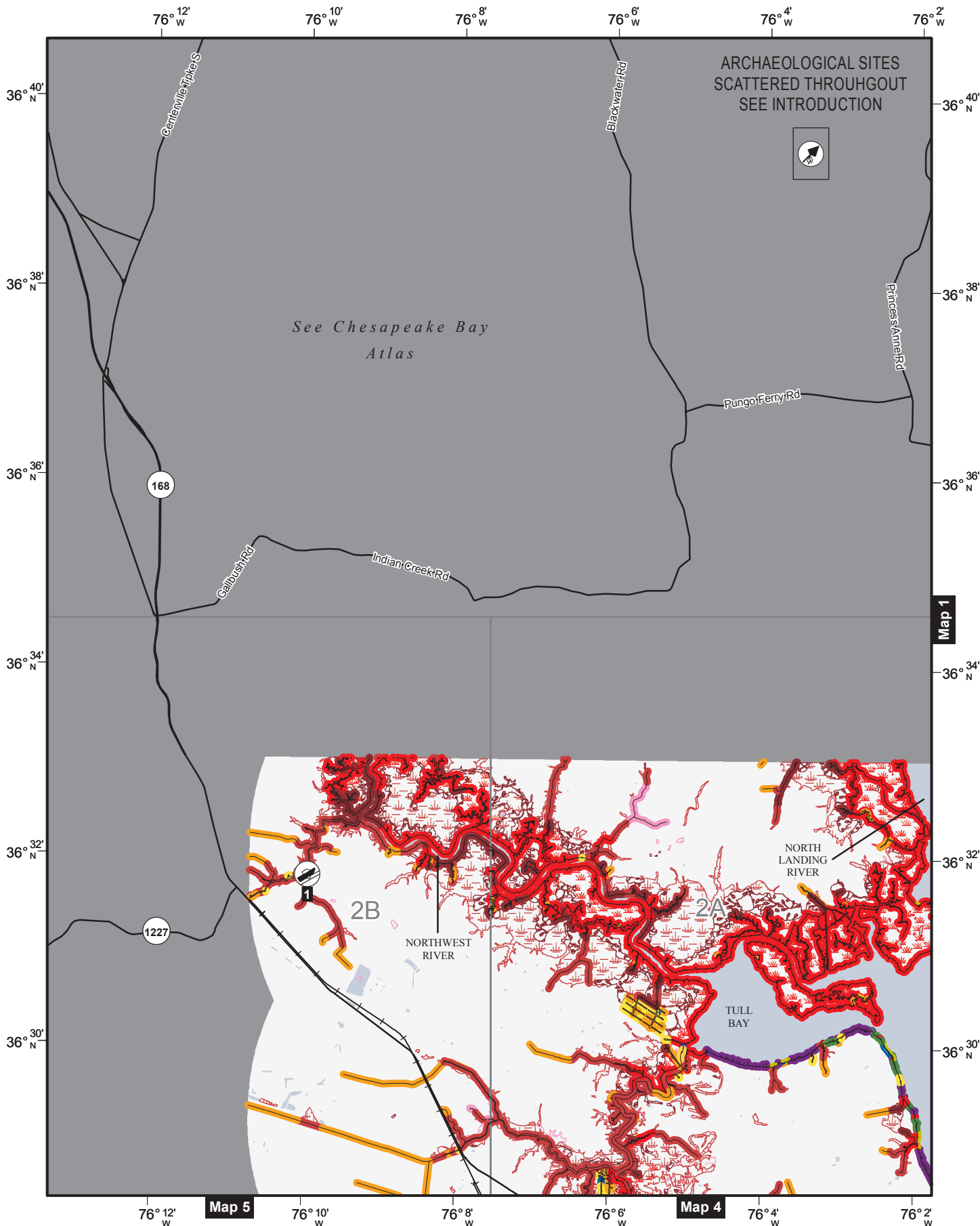
ESI POLYGON HABITAT TYPES

ESI Rank	Shoreline Habitat
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9
10	10
11	11
12	12
13	13
14	14
15	15
16	16
17	17
18	18
19	19
20	20
21	21
22	22
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88	88
89	89
90	90
91	91
92	92
93	93
94	94
95	95
96	96
97	97
98	98
99	99
100	100

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

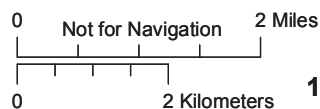




Map 2
North Carolina



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



1:100,000



Map 2
North Carolina

HUMAN USE RESOURCES

DISPLAYED ON MAP (POINTS)			
Map ID	Type	Name	Phone
1	BOAT RAMP	SHINGLE LANDING	252-232-3007

ALSO PRESENT IN MAPPED AREA (POLYGONS)			
Type	Name	Contact	Phone
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT; SHRIMP	DAVID DALE, SOUTHEAST REGION	727-824-5317
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT; SNAPPER GROUPER	DAVID DALE, SOUTHEAST REGION	727-824-5317
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT; SPINY LOBSTER	DAVID DALE, SOUTHEAST REGION	727-824-5317
STATE PROTECTED AREA	GAME LAND	NC WILDLIFE RESOURCES COMMISSION	

JURISDICTIONS

COUNTY: CURRITUCK
COAST GUARD: DISTRICT 5, SECTOR NORTH CAROLINA
USACE: SOUTH ATLANTIC DIVISION, WILMINGTON DISTRICT

FEMA: REGION I
EPA: REGION 4

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	3,227.36	5.04
10B	Freshwater Marshes	152.77	0.24
10C	Swamps	3,047.04	4.76
10D	Scrub and Shrub Wetlands	1,348.83	2.11
9A	Sheltered Tidal Flats	18.22	0.03
7	Exposed Tidal Flats	6.44	0.01



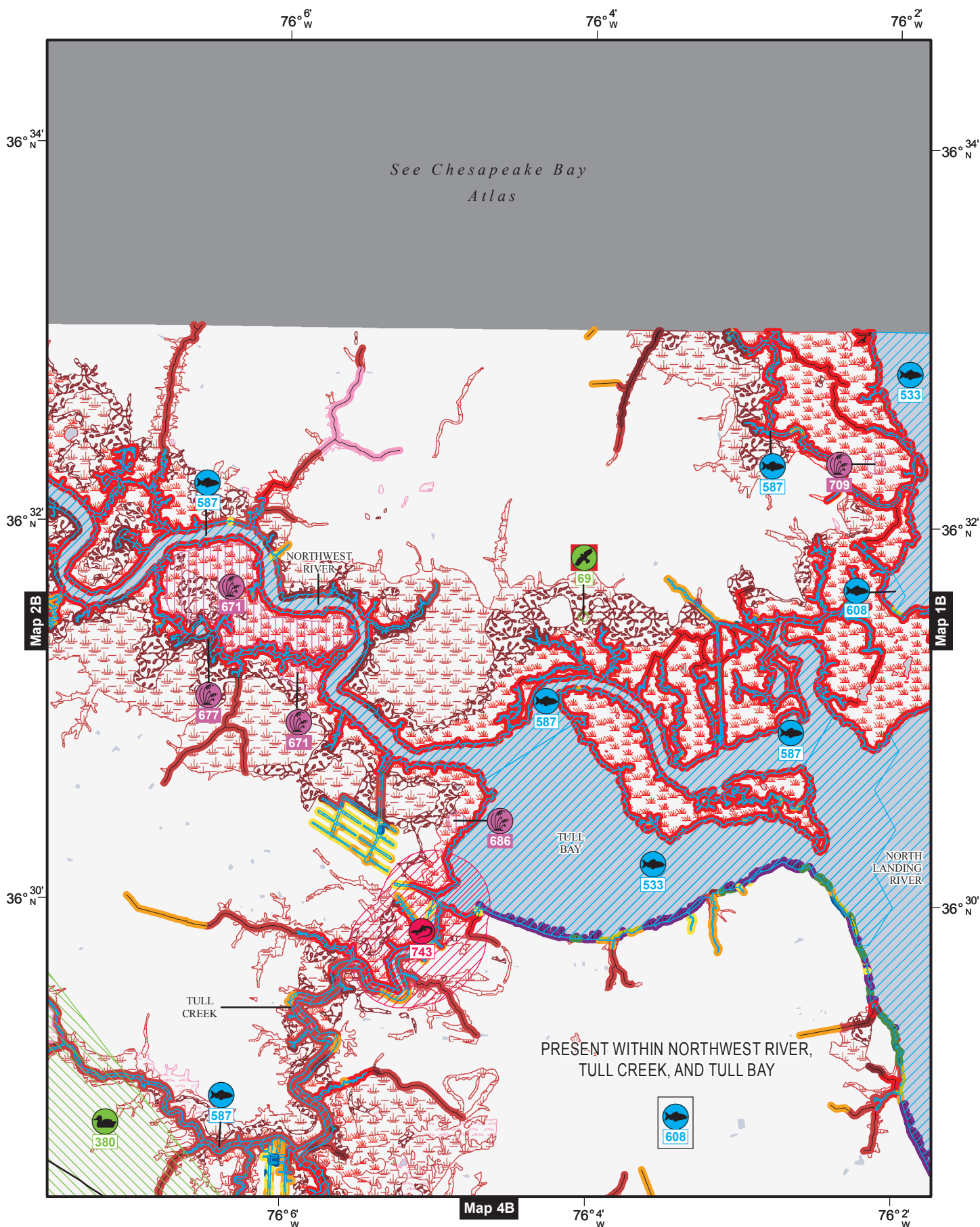
ESI SHORELINE HABITAT TYPES

<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	178,810.52	111.11	55%
10B	Freshwater marshes	2,791.00	1.73	1%
10C	Swamps	57,710.31	35.86	18%
10D	Scrub-shrub wetlands	27,083.28	16.83	8%
9A	Sheltered tidal flats	15,660.76	9.73	5%
9B	Sheltered, vegetated low banks	20,800.01	12.92	6%
8B	Sheltered, solid man-made structures	7,865.18	4.89	2%
8C	Sheltered riprap	766.20	0.48	< 1%
7	Exposed tidal flats	2,751.94	1.71	1%
6B	Exposed riprap	1,599.98	0.99	< 1%
3A	Fine- to medium-grained sand beaches	431.28	0.27	< 1%
3B	Scarps and steep slopes in sand	620.05	0.39	< 1%
1B	Exposed, solid man-made structures	6,865.98	4.27	2%
Total ESI Shoreline:		323,756.50	201.17	
Total Shoreline:		304,598.39	189.27	

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

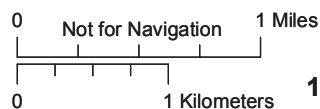




Map 2A
North Carolina



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 2A
North Carolina

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	S	F	Concentration	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Juveniles	Adults
							J	F	M	A	M	J	J	A	S	O	N	D					
69	Raptor	Bald eagle	Nesting	T		1 Pair													Jan-Jun	-	-	-	-
380	Waterfowl	Mallard	Wintering			100S													-	Feb-Mar	Oct-Nov	-	-
	Waterfowl	Scaup	Wintering			100S													-	Feb-Mar	Oct-Nov	-	-

FISH

Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
							J	F	M	A	M	J	J	A	S	O	N	D					
533	Diadromous	Alewife	Nursery Area			Present													-	-	May-Aug	Jul-Oct	-
	Diadromous	Blueback herring	Nursery Area			Present													-	-	May-Jul	Jul-Oct	-
587	Diadromous	Alewife	Spawning Area			Present													Mar-Jul	Mar-Jul	May-Aug	-	-
	Diadromous	Blueback herring	Spawning Area			Present													Mar-Jul	Mar-Jul	May-Jul	-	-
608	Diadromous	Striped bass	Nursery Area			Low													Apr-Jun	Apr-Jun	Apr-Jun	Jan-Dec	Jan-Dec

HABITATS & RARE PLANTS


Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Nest	Hatch	Interest	Juveniles	Adults
							J	F	M	A	M	J	J	A	S	O	N	D					
671	Plant	Winged primrose-willow	Vulnerable Occurrence			Current																	
677	Plant	Cypress panicgrass	Vulnerable Occurrence			Current																	
686	Plant	Beaked spikerush	Vulnerable Occurrence			Current																	
709	Plant	Bearded sprangletop	Vulnerable Occurrence			Current																	

REPTILES & AMPHIBIANS


Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Nest	Hatch	Interest	Juveniles	Adults
							J	F	M	A	M	J	J	A	S	O	N	D					
743	Snake	Rainbow snake	Vulnerable Occurrence			-													May-Sep	Aug-Nov	-	Jan-Dec	Jan-Dec

WIDESPREAD IN MAPPED AREA (> 10 SQUARE KILOMETERS)

BIRDS

Subelement	Species	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				
	American black duck	Wintering			1000S													-	Feb-Mar	Oct-Nov	-
	American black duck	Wintering			-													-	Feb-Mar	Oct-Nov	-
	American coot	Wintering			1000S													-	Feb-Mar	Oct-Nov	-
	American wigeon	Wintering			-													-	Feb-Mar	Oct-Nov	-
	American wigeon	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	Blue-winged teal	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Bufflehead	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Bufflehead	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	Canada goose	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	Canada goose	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Canada goose	Wintering			2000													-	Feb-Mar	Oct-Nov	-
	Canvasback	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Gadwall	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Gadwall	Wintering			1000S													-	Feb-Mar	Oct-Nov	-
	Greater scaup	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Green-winged teal	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	Green-winged teal	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Hooded merganser	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	Lesser scaup	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Mallard	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Mallard	Wintering			1000S													-	Feb-Mar	Oct-Nov	-
	Northern pintail	Wintering			1000S													-	Feb-Mar	Oct-Nov	-
	Northern pintail	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Northern shoveler	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Redhead	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	Redhead	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Ring-necked duck	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	Ring-necked duck	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Ruddy duck	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	Scaup	Wintering			1000S													-	Feb-Mar	Oct-Nov	-
	Snow goose	Wintering			1500													-	Feb-Mar	Oct-Nov	-
	Snow goose	Wintering			1000S													-	Feb-Mar	Oct-Nov	-
	Tundra swan	Wintering			5000													-	Feb-Mar	Oct-Nov	-
	Tundra swan	Wintering			1000S													-	Feb-Mar	Oct-Nov	-
	Waterfowl	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	Wood duck	Wintering			-													-	Feb-Mar	Oct-Nov	-

FISH

Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
						J	F	M	A	M	J	J	A	S	O	N	D					
	American shad	Spawning Area			Present													Apr-Jun	Apr-Jun	May-Jul	Feb-May	-
	Atlantic sturgeon	General Distribution	C		-													-	-	-	Jan-Dec	Jan-Dec
	Gizzard shad	Spawning Area			Present													Mar-May	Mar-May	Apr-Jun	May-Sep	-

INVERTEBRATES

Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Eggs	Larvae	Juveniles	Adults
Shrimp	Brown shrimp	Nursery Area			Abundant	J	F	M	A	M	J	J	A	S	O	N	D	-	Feb-Apr	Mar-Aug	-

MARINE MAMMALS

Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Calving	Pupping	Molt
						J	F	M	A	M	J	J	A	S	O	N	D			
Manatee	West Indian manatee	General Distribution	E	E	-															

ALSO PRESENT IN MAPPED AREA (GENERAL DISTRIBUTION)

BENTHIC

Subelement	Species	Monthly Presence											
SAV	Submerged aquatic veg	J	F	M	A	M	J	J	A	S	O	N	D

BIRDS

Subelement	Species	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt
Waterfowl	American black duck	J	F	M	A	M	J	J	A	S	O	N	D	Apr-May	-	-	-
	Wood duck	J	F	M	A	M	J	J	A	S	O	N	D	Mar-Jun	-	-	-

FISH

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
Diadromous	American eel	J	F	M	A	M	J	J	A	S	O	N	D	-	-	Jan-Dec	Jan-Dec	Sep-Dec
	American shad	J	F	M	A	M	J	J	A	S	O	N	D	-	-	Mar-Jul	May-Nov	-
	Hickory shad	J	F	M	A	M	J	J	A	S	O	N	D	Apr-Jun	-	-	Jan-Apr	-
	Striped bass	J	F	M	A	M	J	J	A	S	O	N	D	Apr-Jun	Apr-Jun	Apr-Jun	Jan-Dec	Jan-Dec
Estuarine Nursery	Atlantic croaker	J	F	M	A	M	J	J	A	S	O	N	D	-	-	Sep-Mar	Jan-Dec	Jan-Dec
	Atlantic menhaden	J	F	M	A	M	J	J	A	S	O	N	D	-	-	-	-	Sep-May
	Bay anchovy	J	F	M	A	M	J	J	A	S	O	N	D	Apr-Nov	Apr-Nov	Jun-Nov	Jun-Nov	-
	Bluefish	J	F	M	A	M	J	J	A	S	O	N	D	-	-	-	May-Nov	-
	Red drum	J	F	M	A	M	J	J	A	S	O	N	D	-	-	-	Jan-Dec	Jan-Dec
	Southern flounder	J	F	M	A	M	J	J	A	S	O	N	D	-	-	Dec-Mar	Jan-Dec	Jan-Dec
	Spot	J	F	M	A	M	J	J	A	S	O	N	D	-	-	Jan-Mar	Jan-Dec	May-Oct
	Spotted seatrout	J	F	M	A	M	J	J	A	S	O	N	D	May-Aug	May-Aug	Jun-Aug	Jun-Oct	-
	Striped mullet	J	F	M	A	M	J	J	A	S	O	N	D	-	-	-	Jan-Dec	-
	Summer flounder	J	F	M	A	M	J	J	A	S	O	N	D	-	-	Oct-May	Jan-Dec	-
	Weakfish	J	F	M	A	M	J	J	A	S	O	N	D	Mar-Oct	Mar-Oct	-	Jan-Dec	Jan-Dec
	White mullet	J	F	M	A	M	J	J	A	S	O	N	D	-	-	-	Jan-Dec	Jan-Dec
	White perch	J	F	M	A	M	J	J	A	S	O	N	D	Mar-Jun	Mar-Jun	May-Aug	Jan-Dec	Jul-Feb
Estuarine Resident	Inland silverside	J	F	M	A	M	J	J	A	S	O	N	D	Mar-Aug	Mar-Aug	Jun-Sep	-	-
Freshwater	Bluegill	J	F	M	A	M	J	J	A	S	O	N	D	Apr-Oct	Apr-Oct	-	Jan-Dec	Jan-Dec
	Bowfin	J	F	M	A	M	J	J	A	S	O	N	D	Mar-Jun	Mar-Jun	-	Jan-Dec	Jan-Dec
	Largemouth bass	J	F	M	A	M	J	J	A	S	O	N	D	May-Jun	May-Jun	May-Jun	-	Jan-Dec
	Yellow perch	J	F	M	A	M	J	J	A	S	O	N	D	Jan-Mar	Jan-Mar	Jan-Mar	Apr-Dec	Apr-Dec
Marine Pelagic	Atlantic needlefish	J	F	M	A	M	J	J	A	S	O	N	D	May-Jul	May-Jul	Jun-Aug	Jun-Oct	-

INVERTEBRATES

Subelement	Species	Monthly Presence												Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D				
Crab	Blue crab																Jan-Dec
Shrimp	Brown shrimp														Feb-Apr	Mar-Aug	-

MARINE MAMMALS

Subelement	Species	Monthly Presence												Mating	Calving	Pupping	Molt
		J	F	M	A	M	J	J	A	S	O	N	D				
Dolphin	Bottlenose dolphin													Sep-Oct	Sep-Oct	-	-

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	2,763.37	4.32
10B	Freshwater Marshes	126.15	0.20
10C	Swamps	2,157.84	3.37
10D	Scrub and Shrub Wetlands	1,039.70	1.62
9A	Sheltered Tidal Flats	14.94	0.02
7	Exposed Tidal Flats	6.44	0.01

ESI SHORELINE HABITAT TYPES

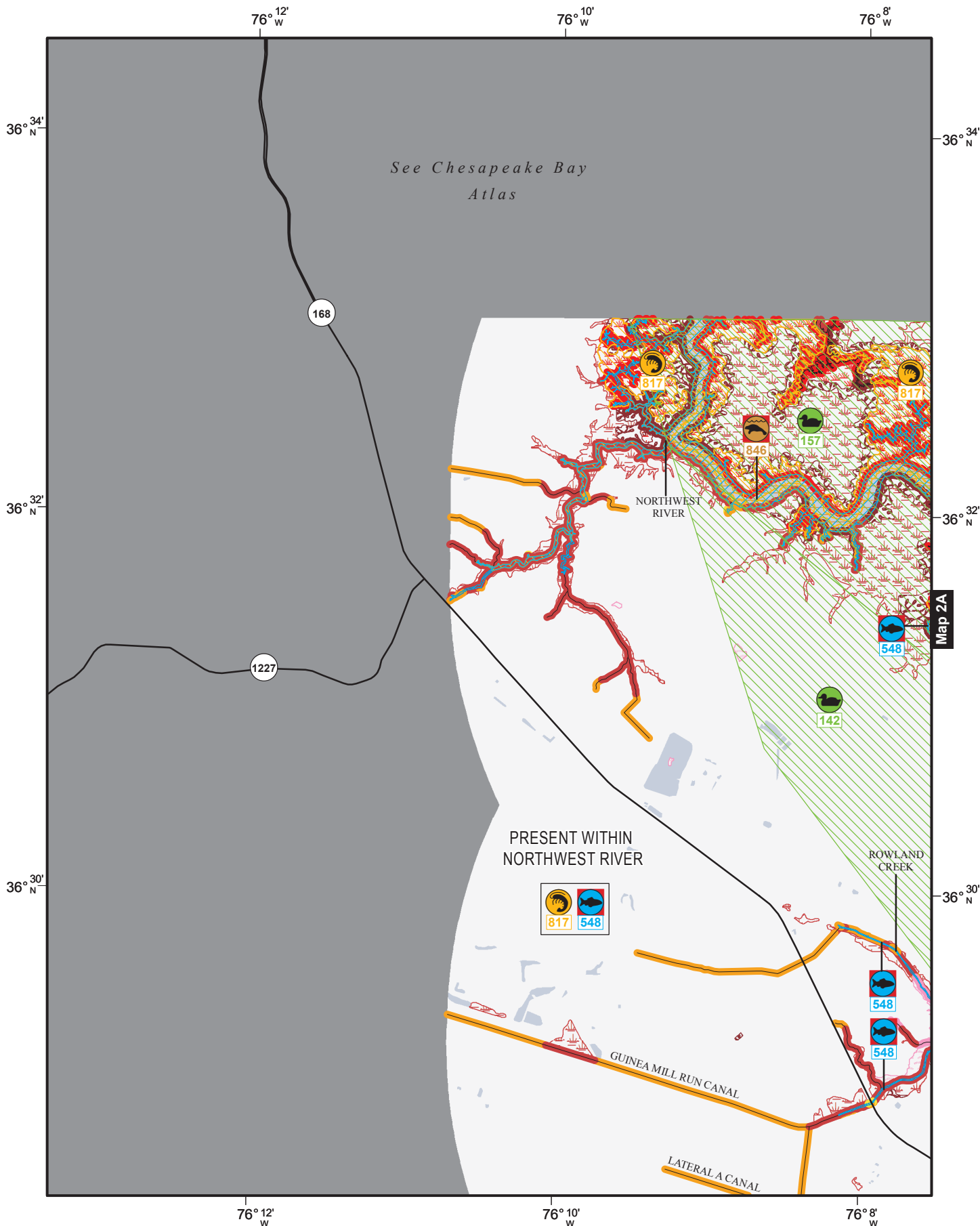
ESI Rank	Shoreline Habitat Classification	Length (Meters)	Length (Miles)	% of ESI Shoreline
10A	Salt- and brackish-water marshes	149,319.31	92.78	61%
10B	Freshwater marshes	2,173.26	1.35	1%
10C	Swamps	35,562.52	22.10	14%
10D	Scrub-shrub wetlands	15,400.09	9.57	6%
9A	Sheltered tidal flats	13,212.09	8.21	5%
9B	Sheltered, vegetated low banks	10,120.65	6.29	4%
8B	Sheltered, solid man-made structures	7,517.16	4.67	3%
8C	Sheltered riprap	766.20	0.48	< 1%
7	Exposed tidal flats	2,751.94	1.71	1%
6B	Exposed riprap	1,599.98	0.99	1%
3A	Fine- to medium-grained sand beaches	431.28	0.27	< 1%
3B	Scarps and steep slopes in sand	620.05	0.39	< 1%
1B	Exposed, solid man-made structures	6,865.99	4.27	3%

Total ESI Shoreline: 246,340.52 Total ESI Shoreline: 153.07
Total Shoreline: 229,746.14 Total Shoreline: 142.76

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 2B
North Carolina



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 2B
North Carolina

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	S	F	Concentration	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Juveniles	Adults
							J	F	M	A	M	J	J	A	S	O	N	D					
142	Waterfowl	American wigeon	Wintering	-	-	-													-	Feb-Mar	Oct-Nov	-	-
	Waterfowl	Canada goose	Wintering	-	-	-													-	Feb-Mar	Oct-Nov	-	-
	Waterfowl	Snow goose	Wintering	-	-	1500													-	Feb-Mar	Oct-Nov	-	-
	Waterfowl	Tundra swan	Wintering	-	-	5000													-	Feb-Mar	Oct-Nov	-	-
157	Waterfowl	Blue-winged teal	Wintering	-	-	-													-	Feb-Mar	Oct-Nov	-	-
	Waterfowl	Canada goose	Wintering	-	-	2000													-	Feb-Mar	Oct-Nov	-	-
	Waterfowl	Canvasback	Wintering	-	-	-													-	Feb-Mar	Oct-Nov	-	-
	Waterfowl	Northern pintail	Wintering	-	-	-													-	Feb-Mar	Oct-Nov	-	-
	Waterfowl	Redhead	Wintering	-	-	-													-	Feb-Mar	Oct-Nov	-	-

FISH

Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
							J	F	M	A	M	J	J	A	S	O	N	D					
548	Diadromous	Alewife	Spawning Area	-	-	Present													Mar-Jul	Mar-Jul	May-Aug	-	-
	Diadromous	American shad	Spawning Area	-	-	Present													Apr-Jun	Apr-Jun	May-Jul	Feb-May	-
	Diadromous	Atlantic sturgeon	General Distribution	C	-	-													-	-	-	Jan-Dec	Jan-Dec
	Diadromous	Blueback herring	Spawning Area	-	-	Present													Mar-Jul	Mar-Jul	May-Jul	-	-
	Diadromous	Gizzard shad	Spawning Area	-	-	Present													Mar-May	Mar-May	Apr-Jun	May-Sep	-
	Diadromous	Striped bass	Nursery Area	-	-	Low													Apr-Jun	Apr-Jun	Apr-Jun	Jan-Dec	Jan-Dec

INVERTEBRATES


Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
							J	F	M	A	M	J	J	A	S	O	N	D					
817	Shrimp	Brown shrimp	Nursery Area	-	-	Abundant													-	-	Feb-Apr	Mar-Aug	-

MARINE MAMMALS

Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Mating	Calving	Pupping	Molt
							J	F	M	A	M	J	J	A	S	O	N	D				
846	Manatee	West Indian manatee	General Distribution	E	E	-													-	-	-	-

WIDESPREAD IN MAPPED AREA (> 10 SQUARE KILOMETERS)

BIRDS



Subelement	Species	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				
	American black duck	Wintering	-	-	-													-	Feb-Mar	Oct-Nov	-
	Bufflehead	Wintering	-	-	-													-	Feb-Mar	Oct-Nov	-
	Canada goose	Wintering	-	-	100S													-	Feb-Mar	Oct-Nov	-
	Gadwall	Wintering	-	-	-													-	Feb-Mar	Oct-Nov	-
	Greater scaup	Wintering	-	-	-													-	Feb-Mar	Oct-Nov	-
	Green-winged teal	Wintering	-	-	-													-	Feb-Mar	Oct-Nov	-
	Lesser scaup	Wintering	-	-	-													-	Feb-Mar	Oct-Nov	-
	Mallard	Wintering	-	-	100S													-	Feb-Mar	Oct-Nov	-
	Mallard	Wintering	-	-	-													-	Feb-Mar	Oct-Nov	-
	Northern shoveler	Wintering	-	-	-													-	Feb-Mar	Oct-Nov	-
	Ring-necked duck	Wintering	-	-	-													-	Feb-Mar	Oct-Nov	-
	Ruddy duck	Wintering	-	-	100S													-	Feb-Mar	Oct-Nov	-
	Scaup	Wintering	-	-	100S													-	Feb-Mar	Oct-Nov	-
	Snow goose	Wintering	-	-	1000S													-	Feb-Mar	Oct-Nov	-
	Tundra swan	Wintering	-	-	1000S													-	Feb-Mar	Oct-Nov	-
	Wood duck	Wintering	-	-	-													-	Feb-Mar	Oct-Nov	-

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				
	American black duck													Apr-May	-	-	-
	Wood duck													Mar-Jun	-	-	-

FISH

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	American eel													-	-	Jan-Dec	Jan-Dec	Sep-Dec
	American shad													-	-	Mar-Jul	May-Nov	-
	Hickory shad													Apr-Jun	-	-	-	Jan-Apr
	Striped bass													Apr-Jun	Apr-Jun	Apr-Jun	Jan-Dec	Jan-Dec
	Atlantic croaker													-	-	Sep-Mar	Jan-Dec	Jan-Dec
	Atlantic menhaden													-	-	-	-	Sep-May
	Bay anchovy													Apr-Nov	Apr-Nov	Jun-Nov	Jun-Nov	-
	Bluefish													-	-	-	May-Nov	-
	Red drum													-	-	-	Jan-Dec	Jan-Dec
	Southern flounder													-	-	Dec-Mar	Jan-Dec	Jan-Dec
	Spot													-	-	Jan-Mar	Jan-Dec	May-Oct
	Spotted seatrout													May-Aug	May-Aug	Jun-Aug	Jun-Oct	-
	Striped mullet													-	-	-	Jan-Dec	-
	Summer flounder													-	-	Oct-May	Jan-Dec	-

FISH (continued)

Subelement	Species	Monthly Presence												Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D				
 Estuarine Resident Freshwater	Weakfish													Mar-Oct	-	Jan-Dec	Jan-Dec
	White perch													Mar-Jun	May-Aug	Jan-Dec	Jul-Feb
	Inland silverside													Mar-Aug	Jun-Sep	-	-
	Bluegill													Apr-Oct	-	Jan-Dec	Jan-Dec
	Bowfin													Mar-Jun	-	Jan-Dec	Jan-Dec
 Marine Pelagic	Largemouth bass													May-Jun	May-Jun	-	Jan-Dec
	Yellow perch													Jan-Mar	Jan-Mar	Apr-Dec	Apr-Dec
	Atlantic needlefish													May-Jul	Jun-Aug	Jun-Oct	-

INVERTEBRATES

Subelement	Species	Monthly Presence												Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D				
Crab	Blue crab													-	-	Jan-Dec	Jan-Dec
Shrimp	Brown shrimp													-	Feb-Apr	Mar-Aug	-

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	464.02	0.73
10B	Freshwater Marshes	26.62	0.04
10C	Swamps	889.20	1.39
10D	Scrub and Shrub Wetlands	309.13	0.48
9A	Sheltered Tidal Flats	3.28	0.01

ESI SHORELINE HABITAT TYPES

ESI Rank	Shoreline Habitat Classification	Length (Meters)	Length (Miles)	% of ESI Shoreline
10A	Salt- and brackish-water marshes	29,491.87	18.33	38%
10B	Freshwater marshes	617.74	0.38	1%
10C	Swamps	22,147.67	13.76	29%
10D	Scrub-shrub wetlands	11,683.20	7.26	15%
9A	Sheltered tidal flats	2,448.66	1.52	3%
9B	Sheltered, vegetated low banks	10,676.53	6.63	14%
8B	Sheltered, solid man-made structures	348.02	0.22	< 1%

Total ESI Shoreline: 77,413.69 Total ESI Shoreline: 48.10
 Total Shoreline: 74,849.97 Total Shoreline: 46.51

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 3
North Carolina

HUMAN USE RESOURCES

DISPLAYED ON MAP (POINTS)			
Map ID	Type	Name	Phone
1	BOAT RAMP	POPLAR BRANCH	252-426-2255
2	BOAT RAMP	OUTER BANKS CENTER FOR WILDLIFE EDUCATION	252-453-0221

DISPLAYED ON MAP (POLYGONS)			
Map ID	Type	Name	Phone
3	MANAGEMENT AREA	PINE ISLAND AUDUBON SANCTUARY	252-453-0603
4	NATIONAL ESTUARINE RESEARCH RESERVE	CURRITUCK BANKS	252-261-8891
5	WILDLIFE REFUGE	CURRITUCK NATIONAL WILDLIFE REFUGE	252-429-3100

ALSO PRESENT IN MAPPED AREA (POLYGONS)			
Type	Name	Contact	Phone
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT; COASTAL MIG. PELAGICS	DAVID DALE, SOUTHEAST REGION	727-824-5317
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT; SHRIMP	DAVID DALE, SOUTHEAST REGION	727-824-5317
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT; SNAPPER GROUPEY	DAVID DALE, SOUTHEAST REGION	727-824-5317
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT; SPINY LOBSTER	DAVID DALE, SOUTHEAST REGION	727-824-5317
STATE PROTECTED AREA	BLACK BEAR SANCTUARY	NC WILDLIFE RESOURCES COMMISSION	
STATE PROTECTED AREA	GAME LAND	THE NATURE CONSERVANCY	

JURISDICTIONS			
COUNTY:	CURRITUCK	FEMA:	REGION I
COAST GUARD:	DISTRICT 5, SECTOR NORTH CAROLINA	EPA:	REGION 4
USACE:	SOUTH ATLANTIC DIVISION, WILMINGTON 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	4,061.96	6.35
10B	Freshwater Marshes	124.52	0.19
10C	Swamps	1,481.87	2.32
10D	Scrub and Shrub Wetlands	847.22	1.32
9A	Sheltered Tidal Flats	0.64	0.00
7	Exposed Tidal Flats	839.29	1.31

ESI SHORELINE HABITAT TYPES

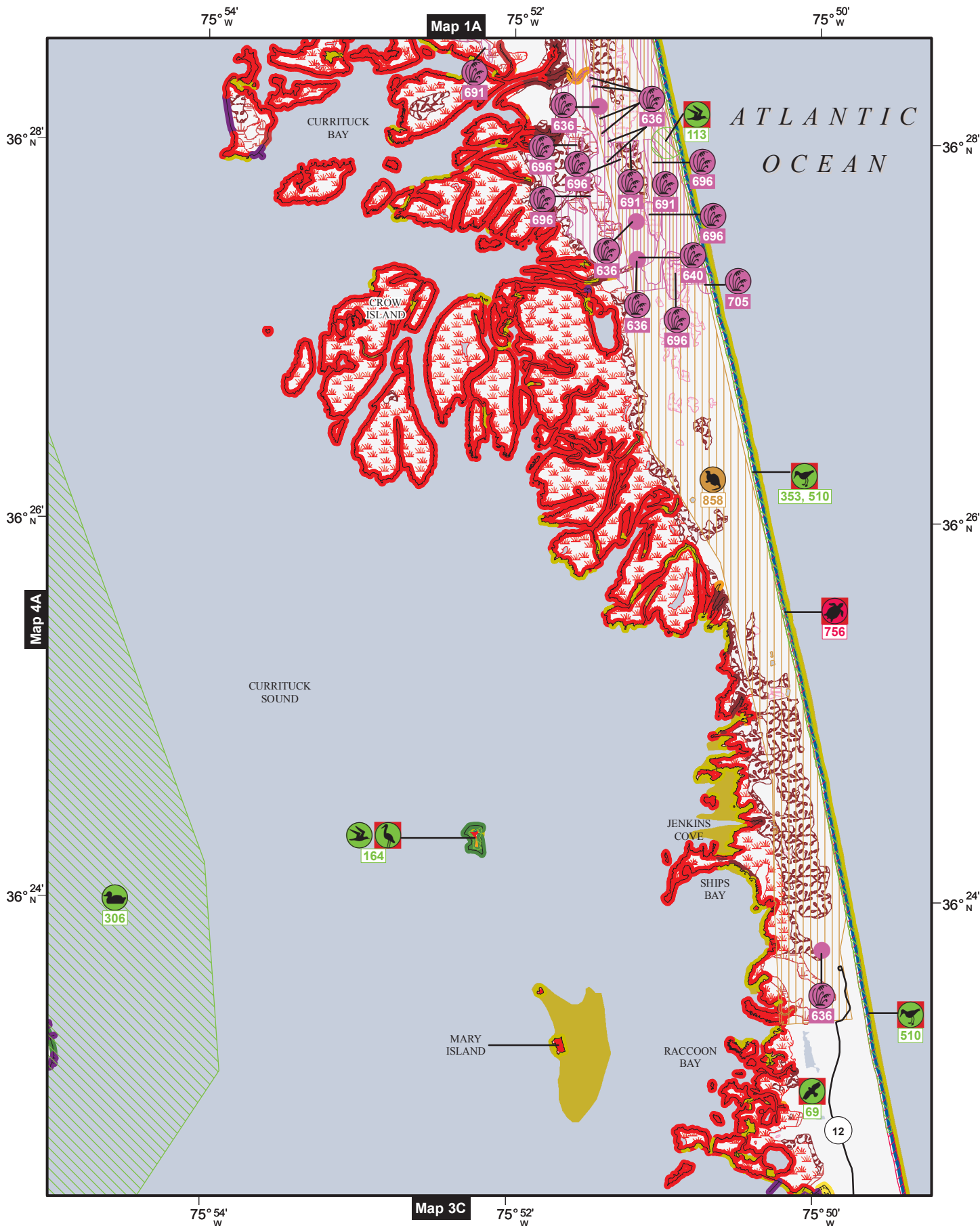
<i>ESI Rank</i>	<i>Shoreline Habitat Classification</i>	<i>Length (Meters)</i>	<i>Length (Miles)</i>	<i>% of ESI Shoreline</i>
10A	Salt- and brackish-water marshes	329,964.98	205.03	66%
10C	Swamps	1,380.27	0.86	< 1%
10D	Scrub-shrub wetlands	7,143.21	4.44	1%
9A	Sheltered tidal flats	2,434.11	1.51	< 1%
9B	Sheltered, vegetated low banks	4,995.55	3.10	1%
8B	Sheltered, solid man-made structures	1,902.14	1.18	< 1%
7	Exposed tidal flats	112,896.04	70.15	23%
6B	Exposed riprap	2,611.54	1.62	1%
3A	Fine- to medium-grained sand beaches	25,376.07	15.77	5%
3B	Scarps and steep slopes in sand	517.11	0.32	< 1%
1B	Exposed, solid man-made structures	12,171.51	7.56	2%

Total ESI Shoreline: 501,392.52 Total ESI Shoreline: 311.55
 Total Shoreline: 382,352.95 Total Shoreline: 237.58

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 3A
North Carolina



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

0 1 Miles
0 1 Kilometers
1:50,000



Map 3A
North Carolina

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	S	F	Concentration	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Juveniles	Molt
							J	F	M	A	M	J	J	A	S	O	N	D					
69	Raptor	Bald eagle	Nesting	T		1 Pair													Jan-Jun	-	-	-	-
113	Gull/Tern	Least tern	Nesting	C	E	2 Pairs													May-Aug	-	-	-	-
164	Gull/Tern	G. black-backed gull	Nesting			1 Pair													Mar-Aug	-	-	-	-
	Wading	BC night-heron	Nesting			2-8 Pairs													Apr-Aug	-	-	-	-
	Wading	Cattle egret	Nesting			69-108 Pairs													Apr-Oct	-	-	-	-
	Wading	Glossy ibis	Nesting	C		28-80 Pairs													Apr-Jul	-	-	-	-
	Wading	Great egret	Nesting			507-751 Pairs													Mar-Aug	-	-	-	-
	Wading	Little blue heron	Nesting	C		332-625 Pairs													Apr-Oct	-	-	-	-
	Wading	Snowy egret	Nesting	C		69-100 Pairs													Mar-Jul	-	-	-	-
	Wading	Tricolored heron	Nesting	C		15-36 Pairs													Apr-Aug	-	-	-	-
	Wading	White ibis	Nesting			1-65 Pairs													Mar-Sep	-	-	-	-
306	Waterfowl	American coot	Wintering			100S													-	Feb-Mar	Oct-Nov	-	-
	Waterfowl	Gadwall	Wintering			100S													-	Feb-Mar	Oct-Nov	-	-
	Waterfowl	Scaup	Wintering			100S													-	Feb-Mar	Oct-Nov	-	-
	Waterfowl	Tundra swan	Wintering			100S													-	Feb-Mar	Oct-Nov	-	-
353	Shorebird	Piping plover	Nesting	E	E	1 Pair													Apr-Aug	-	-	-	-
510	Shorebird	Piping plover	Wintering	E	E	1S													-	Feb-Apr	Jul-Sep	-	-
	Shorebird	Red knot	Migration		T	100S													-	Apr-Jun	-	-	-

HABITATS & RARE PLANTS

Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence											
							J	F	M	A	M	J	J	A	S	O	N	D
636	Plant	Woolly beachheather	Vulnerable Occurrence			Current												
640	Plant	Virginia pinweed	Vulnerable Occurrence			Current												
691	Upland	Rare upland community	Vulnerable Occurrence			Current												
696	Wetland	Rare wetland community	Vulnerable Occurrence			Current												
705	Wetland	Seabeach amaranth	Vulnerable Occurrence			Historical												

REPTILES & AMPHIBIANS

Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Nest	Hatch	Internest	Juveniles	Adults
							J	F	M	A	M	J	J	A	S	O	N	D					
756	Turtle	Green sea turtle	Nesting	T	T	1 Nest													May-Aug	Jun-Sep	-	-	-
	Turtle	K. ridley sea turtle	Nesting	E	E	1 Nest													May-Aug	Jun-Sep	-	-	-
	Turtle	Leatherback sea turtle	Nesting	E	E	1 Nest													May-Aug	Jun-Sep	-	-	-
	Turtle	Loggerhead sea turtle	Nesting	T	T	0.3 Nests/km													May-Aug	Jun-Sep	-	-	-

TERRESTRIAL MAMMALS

Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence											
							J	F	M	A	M	J	J	A	S	O	N	D
858	Small Mammal	Pungo wht.-foot deer mouse	Vulnerable Occurrence			-												





BENTHIC

Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence
SAV	Submerged aquatic veg	High Ecological Value			Present	J F M A M J J A S O N D


BIRDS

Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence	Nest	Mig.(S)	Mig.(F)	Molt
Diving	Brown pelican	Wintering			1000S	J F M A M J J A S O N D	-	-	-	-
	D. crested cormorant	Wintering			10000S	J F M A M J J A S O N D	-	-	-	-
	Red-throated loon	Wintering			1000S	J F M A M J J A S O N D	-	-	-	-
Gull/Tern	Bonaparte's gull	Wintering			1000S	J F M A M J J A S O N D	-	-	-	-
	G. black-backed gull	Wintering			1000S	J F M A M J J A S O N D	-	-	-	-
	Gulls	Concentration Area			High - Foraging	J F M A M J J A S O N D	-	-	-	-
	Herring gull	Wintering			1000S	J F M A M J J A S O N D	-	-	-	-
	Ring-billed gull	Wintering			4000S	J F M A M J J A S O N D	-	-	-	-
	Terns	Vulnerable Occurrence			Foraging	J F M A M J J A S O N D	-	-	-	-
Pelagic	Northern gannet	Wintering			10000S	J F M A M J J A S O N D	-	-	-	-
Waterfowl	American black duck	Wintering			1000S	J F M A M J J A S O N D	-	Feb-Mar	Oct-Nov	-
	American coot	Wintering			1000S	J F M A M J J A S O N D	-	Feb-Mar	Oct-Nov	-
	American wigeon	Wintering			100S	J F M A M J J A S O N D	-	Feb-Mar	Oct-Nov	-
	Black scoter	Wintering			1000S	J F M A M J J A S O N D	-	Feb-Mar	Oct-Nov	-
	Bufflehead	Wintering			100S	J F M A M J J A S O N D	-	Feb-Mar	Oct-Nov	-
	Canada goose	Wintering			1000S	J F M A M J J A S O N D	-	Feb-Mar	Oct-Nov	-
	Canada goose	Wintering			100S	J F M A M J J A S O N D	-	Feb-Mar	Oct-Nov	-
	Canvasback	Wintering			100S	J F M A M J J A S O N D	-	Feb-Mar	Oct-Nov	-
	Gadwall	Wintering			1000S	J F M A M J J A S O N D	-	Feb-Mar	Oct-Nov	-
	Green-winged teal	Wintering			100S	J F M A M J J A S O N D	-	Feb-Mar	Oct-Nov	-
	Green-winged teal	Wintering			1000S	J F M A M J J A S O N D	-	Feb-Mar	Oct-Nov	-
	Hooded merganser	Wintering			100S	J F M A M J J A S O N D	-	Feb-Mar	Oct-Nov	-
	Mallard	Wintering			100S	J F M A M J J A S O N D	-	Feb-Mar	Oct-Nov	-
	Mallard	Wintering			1000S	J F M A M J J A S O N D	-	Feb-Mar	Oct-Nov	-
	Northern pintail	Wintering			1000S	J F M A M J J A S O N D	-	Feb-Mar	Oct-Nov	-
	Red-breasted merganser	Wintering			100S	J F M A M J J A S O N D	-	Feb-Mar	Oct-Nov	-
	Redhead	Wintering			100S	J F M A M J J A S O N D	-	Feb-Mar	Oct-Nov	-
	Ring-necked duck	Wintering			100S	J F M A M J J A S O N D	-	Feb-Mar	Oct-Nov	-
	Ruddy duck	Wintering			100S	J F M A M J J A S O N D	-	Feb-Mar	Oct-Nov	-
	Scaup	Wintering			1000S	J F M A M J J A S O N D	-	Feb-Mar	Oct-Nov	-
	Snow goose	Wintering			1000S	J F M A M J J A S O N D	-	Feb-Mar	Oct-Nov	-
	Surf scoter	Wintering			1000S	J F M A M J J A S O N D	-	Feb-Mar	Oct-Nov	-
	Tundra swan	Wintering			1000S	J F M A M J J A S O N D	-	Feb-Mar	Oct-Nov	-
	Waterfowl	Wintering			100S	J F M A M J J A S O N D	-	Feb-Mar	Oct-Nov	-


FISH

Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Eggs	Larvae	Juveniles	Adults
						J	F	M	A	M	J	J	A	S	O	N	D				
	Diadromous	Alewife			Present													-	May-Aug	Jul-Mar	-
		Atlantic sturgeon	C		-													-	-	Jan-Dec	Jan-Dec
		Atlantic sturgeon	C		-													-	-	-	Oct-Mar
		Blueback herring			Present													-	May-Jul	Aug-Oct	-
	Gizzard shad	Spawning Area			Present													Mar-May	Apr-Jun	May-Sep	-
	Striped bass	Concentration Area			Medium													Apr-Jun	Apr-Jun	Jan-Dec	Jan-Dec
	Bluefish	Spawning Area			Abundant													Jun-Aug	Jul-Sep	Jan-Dec	Jan-Dec
	Southern flounder	Spawning Area			Highly Abundant													Nov-Jan	Nov-Apr	-	Jan-Dec
	Summer flounder	Concentration Area			Highly Abundant													-	Oct-May	Jan-Dec	May-Oct
	Hammerhead shark	Migration	T		-													-	-	-	Sep-Dec
	Cobia	Spawning Area			-													May-Jul	-	-	-
	Greater amberjack	Spawning Area			Common													Mar-Jul	-	-	-


REPTILES & AMPHIBIANS

Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Nest	Hatch	Internest	Juveniles	Adults
						J	F	M	A	M	J	J	A	S	O	N	D					
	Turtle	General Distribution	T		Rare In Winter													-	-	-	Jan-Dec	Jan-Dec
	Hawksbill sea turtle	General Distribution	E		Rare In Winter													-	-	-	Jan-Dec	Jan-Dec
	K. ridley sea turtle	General Distribution	E		Rare In Winter													-	-	-	Jan-Dec	Jan-Dec
	K. ridley sea turtle	Vulnerable Occurrence	E		Interesting - Rare													-	-	Apr-Sep	Jun-Sep	Apr-Sep
	Leatherback sea turtle	General Distribution	E		-													-	-	-	Jan-Dec	Jan-Dec
	Loggerhead sea turtle	General Distribution	T		Rare In Winter													-	-	-	Jan-Dec	Jan-Dec
	Loggerhead sea turtle	Vulnerable Occurrence	T		Interesting													-	-	Apr-Sep	Jun-Sep	Apr-Sep

INVERTEBRATES

Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
						J	F	M	A	M	J	J	A	S	O	N	D					
	Shrimp	Nursery Area			Abundant													-	-	Feb-Apr	Mar-Aug	-
	Brown shrimp	Spawning Area			Common													Oct-Nov	-	-	-	-
	Pink shrimp	Spawning Area			-													Apr-Jul	Apr-Jul	May-Nov	-	-
	White shrimp	Spawning Area			Abundant													Mar-Nov	Mar-Nov	Jun-Dec	-	-

MARINE MAMMALS

Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Mating	Calving	Pupping	Molt
						J	F	M	A	M	J	J	A	S	O	N	D				
	Manatee	General Distribution	E		-													-	-	-	-
	Humpback whale	General Distribution	E		Low													-	-	-	-
	N.A. right whale	Migration	E		Low													-	-	-	-

BENTHIC

Monthly Presence



Subelement	Species
SAV	Submerged aquatic veg

BIRDS

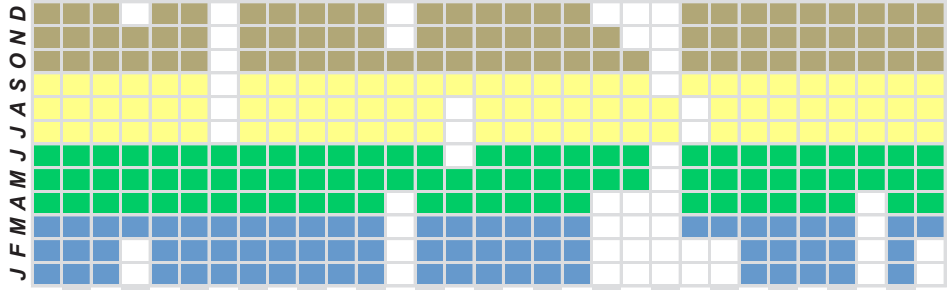
Monthly Presence



Subelement	Species
Waterfowl	American black duck Wood duck






FISH

Monthly Presence





Subelement	Species
Diadromous	Alewife American eel American eel American shad American shad Blueback herring Hickory shad Hickory shad Striped bass Striped bass Atlantic croaker Atlantic croaker Atlantic cutlassfish Atlantic menhaden Atlantic menhaden Bay anchovy Bay anchovy Black drum Black sea bass Bluefish Hogchoker Ladyfish Northern kingfish Northern puffer Pinfish Red drum Red drum Scup Sheepshead Southern flounder Southern kingfish


FISH (continued)

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	Spot													-	-	-	Mar-Jun	Mar-Dec
	Spot													-	-	Jan-Mar	Jan-Dec	May-Oct
	Spotted seatrout													-	-	-	Nov-Apr	Jan-Dec
	Spotted seatrout													May-Aug	May-Aug	Jun-Aug	Jun-Oct	-
	Striped mullet													-	-	-	Mar-Oct*	Mar-Oct*
	Striped mullet													-	-	-	Jan-Dec	-
	Summer flounder													Oct-Mar	Oct-Apr	Oct-May	Sep-Mar	Jan-Dec
	Summer flounder													-	-	Oct-May	Jan-Dec	-
	Tarpon													-	-	-	-	Jul-Aug
	Weakfish													-	-	-	Mar-Dec	Jan-Dec
	Weakfish													Mar-Oct	Mar-Oct	-	Jan-Dec	Jan-Dec
	White mullet													-	-	-	Jan-Dec	Jan-Dec
	White mullet													-	-	Mar-Jul	Sep-Jan	-
	White perch													Mar-Jun	Mar-Jun	May-Aug	Jan-Dec	Jul-Feb
	Windowpane													Mar-Nov	Mar-Nov	Mar-Nov	Jan-Dec	Dec-Feb
	Inland silverside													-	-	-	-	-
	Inland silverside													Mar-Aug	Mar-Aug	Jun-Sep	-	-
	Silver perch													Apr-Aug	Apr-Aug	-	Mar-Jun	Mar-Dec
	Triggerfish													-	-	-	-	May-Oct
	Bluegill													Apr-Oct	Apr-Oct	-	Jan-Dec	Jan-Dec
	Bowfin													Mar-Jun	Mar-Jun	-	Jan-Dec	Jan-Dec
	Largemouth bass													May-Jun	May-Jun	May-Jun	-	Jan-Dec
	Yellow perch													-	-	-	Apr-Dec	Apr-Dec
	Atlantic spadefish													May-Oct	May-Oct	May-Oct	Sep-Dec	May-Dec
	Florida pompano													-	-	Jun-Aug	-	May-Dec
	Goosefish													Mar-Jun	Mar-Jun	Mar-Jun	-	Jan-Dec
	Little tunny													-	-	-	-	May-Feb
	Spotted hake													Feb-Apr	Feb-Apr	Mar-May	Jan-Dec	Jan-Dec
	Tautog													May-Aug	May-Aug	Jun-Aug	-	Sep-Apr
	Atlantic bonito													-	-	-	-	May-Oct
	Atlantic needlefish													May-Jul	May-Jul	Jun-Aug	Jun-Oct	-
	Atlantic needlefish													-	-	-	Nov-May*	Mar-Oct
	Bluefin tuna													-	-	-	-	Jan-Dec
	Butterfish													May-Jul	May-Jul	Jun-Aug	Jan-Dec	Jan-Dec
	Cobia													-	-	-	-	May-Oct
	Dolphinfish													Jan-Dec	-	-	-	Jan-Dec
	Greater amberjack													-	-	-	-	Jan-Dec
	Harvestfish													-	-	-	-	Jan-Dec
	King mackerel													-	-	-	-	Jan-Dec
	Sharks													-	-	-	-	Jan-Dec
	Spanish mackerel													May-Sep	May-Sep	-	-	May-Oct
	Thresher shark													-	-	-	-	Jun-Feb

INVERTEBRATES

Subelement	Species	Monthly Presence											
		J	F	M	A	M	J	J	A	S	O	N	D
	Crab												
	Blue crab												
	Blue crab												
	Brown shrimp												

MARINE MAMMALS

Subelement	Species	Monthly Presence											
		J	F	M	A	M	J	J	A	S	O	N	D
	Dolphin												
	Bottlenose dolphin												
	Bottlenose dolphin												
	Harbor porpoise												

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	2,104.09	3.29
10B	Freshwater Marshes	103.00	0.16
10C	Swamps	140.82	0.22
10D	Scrub and Shrub Wetlands	533.77	0.83
7	Exposed Tidal Flats	397.12	0.62

ESI SHORELINE HABITAT TYPES

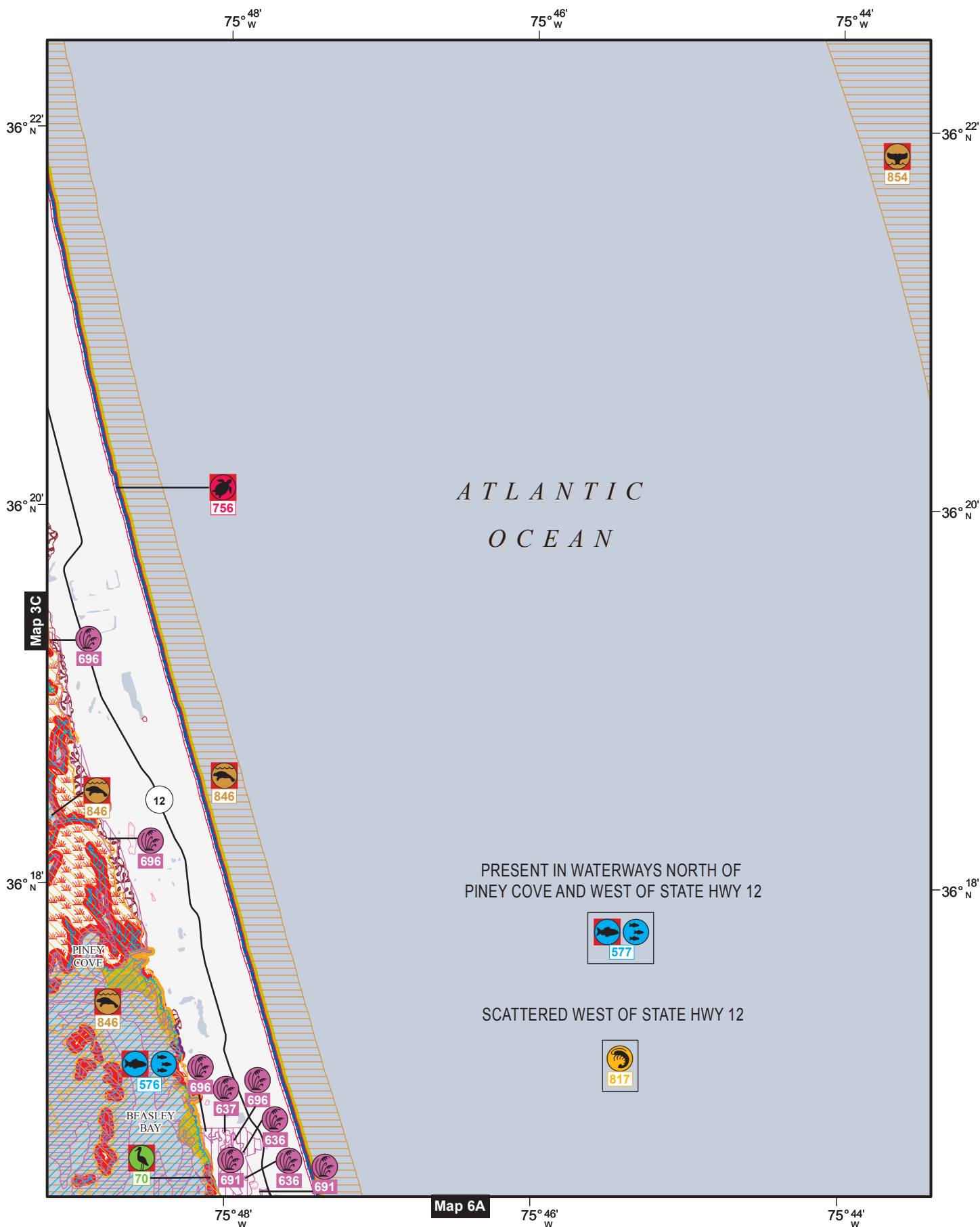
ESI Rank	Shoreline Habitat Classification	Length (Meters)	Length (Miles)	% of ESI Shoreline
10A	Salt- and brackish-water marshes	156,274.16	97.10	69%
10C	Swamps	659.15	0.41	< 1%
10D	Scrub-shrub wetlands	6,509.29	4.04	3%
9B	Sheltered, vegetated low banks	1,444.41	0.90	1%
8B	Sheltered, solid man-made structures	419.62	0.26	< 1%
7	Exposed tidal flats	47,986.98	29.82	21%
6B	Exposed riprap	1,027.65	0.64	< 1%
3A	Fine- to medium-grained sand beaches	12,056.45	7.49	5%
1B	Exposed, solid man-made structures	1,273.90	0.79	1%

Total ESI Shoreline: 227,651.62
Total ESI Shoreline: 141.46
Total Shoreline: 178,795.42
Total Shoreline: 111.10

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 3B
North Carolina

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
SAV	Submerged aquatic veg	High Ecological Value			Present	J F M A M J J A S O N D

BIRDS

Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence	Nest	Mig.(S)	Mig.(F)	Molt
70	Wading	Black rail	Nesting	C		-	J F M A M J J A S O N D	May-Aug	-	-	-

FISH

Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence	Spawn	Eggs	Larvae	Juveniles	Adults
576	Diadromous	Alewife	Migration			Present	J F M A M J J A S O N D	-	-	May-Aug	Jul-Mar	-
	Diadromous	Atlantic sturgeon	General Distribution	C		-	J F M A M J J A S O N D	-	-	May-Jul	Jan-Dec	Jan-Dec
	Diadromous	Blueback herring	Migration			Present	J F M A M J J A S O N D	-	-	Oct-May	Aug-Oct	-
	Estuarine Nursery	Summer flounder	Concentration Area			Highly Abundant	J F M A M J J A S O N D	-	-	May-Aug	Jan-Mar	May-Oct
577	Diadromous	Alewife	Migration			Present	J F M A M J J A S O N D	-	-	-	Jan-Dec	Jan-Dec
	Diadromous	Atlantic sturgeon	General Distribution	C		-	J F M A M J J A S O N D	-	-	May-Jul	Aug-Oct	-
	Diadromous	Blueback herring	Migration			Present	J F M A M J J A S O N D	-	-	Mar-May	May-Sep	-
	Diadromous	Gizzard shad	Spawning Area			Present	J F M A M J J A S O N D	Mar-May	Mar-May	Apr-Jun	May-Sep	-
	Estuarine Nursery	Summer flounder	Concentration Area			Highly Abundant	J F M A M J J A S O N D	-	-	Oct-May	Jan-Dec	May-Oct

HABITATS & RARE PLANTS

Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence
636	Plant	Woolly beachheather	Vulnerable Occurrence			Current	J F M A M J J A S O N D
637	Plant	Virginia pinweed	Vulnerable Occurrence			Current	J F M A M J J A S O N D
	Plant	Woolly beachheather	Vulnerable Occurrence			Current	J F M A M J J A S O N D
691	Upland	Rare upland community	Vulnerable Occurrence			Current	J F M A M J J A S O N D
696	Wetland	Rare wetland community	Vulnerable Occurrence			Current	J F M A M J J A S O N D

REPTILES & AMPHIBIANS

Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence	Nest	Hatch	Internest	Juveniles	Adults
756	Turtle	Green sea turtle	Nesting	T		1 Nest	J F M A M J J A S O N D	May-Aug	Jun-Sep	-	-	-
	Turtle	K. ridley sea turtle	Nesting	E	E	1 Nest	J F M A M J J A S O N D	May-Aug	Jun-Sep	-	-	-
	Turtle	Leatherback sea turtle	Nesting	E	E	1 Nest	J F M A M J J A S O N D	May-Aug	Jun-Sep	-	-	-
	Turtle	Loggerhead sea turtle	Nesting	T	T	0.3 Nests/Km	J F M A M J J A S O N D	May-Aug	Jun-Sep	-	-	-

INVERTEBRATES

Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Eggs	Larvae	Juveniles	Adults
817	Shrimp	Brown shrimp	Nursery Area			Abundant	J	F	M	A	M	J	J	A	S	O	N	D	-	Feb-Apr	Mar-Aug	-

MARINE MAMMALS




Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Calving	Pupping	Molt																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
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846	Manatee	West Indian manatee	General Distribution	E	E	-																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						

WIDESPREAD IN MAPPED AREA (> 10 SQUARE KILOMETERS)


BIRDS

Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt
Diving	Brown pelican	Wintering			1000S	J	F	M	A	M	J	J	A	S	O	N	D	-	-	-	-
	D. crested cormorant	Wintering			1000S	J	F	M	A	M	J	J	A	S	O	N	D	-	-	-	-
	Red-throated loon	Wintering			1000S	J	F	M	A	M	J	J	A	S	O	N	D	-	-	-	-
	Bonaparte's gull	Wintering			1000S	J	F	M	A	M	J	J	A	S	O	N	D	-	-	-	-
	G. black-backed gull	Wintering			1000S	J	F	M	A	M	J	J	A	S	O	N	D	-	-	-	-
	Gulls	Concentration Area			High - Foraging	J	F	M	A	M	J	J	A	S	O	N	D	-	-	-	-
	Herring gull	Wintering			1000S	J	F	M	A	M	J	J	A	S	O	N	D	-	-	-	-
	Ring-billed gull	Wintering			4000S	J	F	M	A	M	J	J	A	S	O	N	D	-	-	-	-
Pelagic	Terns	Vulnerable Occurrence			Foraging	J	F	M	A	M	J	J	A	S	O	N	D	-	-	-	-
	Northern gannet	Wintering			10000S	J	F	M	A	M	J	J	A	S	O	N	D	-	-	-	-
Waterfowl	American black duck	Wintering			1000S	J	F	M	A	M	J	J	A	S	O	N	D	-	Feb-Mar	Oct-Nov	-
	American coot	Wintering			1000S	J	F	M	A	M	J	J	A	S	O	N	D	-	Feb-Mar	Oct-Nov	-
	Black scoter	Wintering			1000S	J	F	M	A	M	J	J	A	S	O	N	D	-	Feb-Mar	Oct-Nov	-
	Bufflehead	Wintering			100S	J	F	M	A	M	J	J	A	S	O	N	D	-	Feb-Mar	Oct-Nov	-
	Canada goose	Wintering			1000S	J	F	M	A	M	J	J	A	S	O	N	D	-	Feb-Mar	Oct-Nov	-
	Canvasback	Wintering			1000S	J	F	M	A	M	J	J	A	S	O	N	D	-	Feb-Mar	Oct-Nov	-
	Gadwall	Wintering			1000S	J	F	M	A	M	J	J	A	S	O	N	D	-	Feb-Mar	Oct-Nov	-
	Green-winged teal	Wintering			1000S	J	F	M	A	M	J	J	A	S	O	N	D	-	Feb-Mar	Oct-Nov	-
	Mallard	Wintering			100S	J	F	M	A	M	J	J	A	S	O	N	D	-	Feb-Mar	Oct-Nov	-
	Red-breasted merganser	Wintering			100S	J	F	M	A	M	J	J	A	S	O	N	D	-	Feb-Mar	Oct-Nov	-
	Redhead	Wintering			100S	J	F	M	A	M	J	J	A	S	O	N	D	-	Feb-Mar	Oct-Nov	-
	Ruddy duck	Wintering			100S	J	F	M	A	M	J	J	A	S	O	N	D	-	Feb-Mar	Oct-Nov	-
	Scaup	Wintering			1000S	J	F	M	A	M	J	J	A	S	O	N	D	-	Feb-Mar	Oct-Nov	-
	Snow goose	Wintering			1000S	J	F	M	A	M	J	J	A	S	O	N	D	-	Feb-Mar	Oct-Nov	-
	Surf scoter	Wintering			1000S	J	F	M	A	M	J	J	A	S	O	N	D	-	Feb-Mar	Oct-Nov	-
	Tundra swan	Wintering			1000S	J	F	M	A	M	J	J	A	S	O	N	D	-	Feb-Mar	Oct-Nov	-


FISH

Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Eggs	Larvae	Juveniles	Adults
						J	F	M	A	M	J	J	A	S	O	N	D				
	Diadromous	Atlantic sturgeon	C		-													-			Oct-Mar
	Estuarine Nursery	Bluefish			Abundant													Jun-Aug	Jul-Sep	Jan-Dec	Jan-Dec
	Fish	Southern flounder	T		Highly Abundant													Nov-Jan	Nov-Apr	-	Jan-Dec
		Hammerhead shark			-													-	-	-	Sep-Dec
	Marine Pelagic	Cobia			-													May-Jul	-	-	-
	Greater amberjack	Spawning Area			Common													Mar-Jul	-	-	-
		Spawning Area																			


REPTILES & AMPHIBIANS

Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Hatch	Internest	Juveniles	Adults
						J	F	M	A	M	J	J	A	S	O	N	D				
	Turtle	Green sea turtle	T	T	Rare In Winter													-	-	Jan-Dec	Jan-Dec
		Hawksbill sea turtle	E	E	Rare In Winter													-	-	Jan-Dec	Jan-Dec
		K. ridley sea turtle	E	E	Rare In Winter													-	-	Jan-Dec	Jan-Dec
		K. ridley sea turtle	E	E	Interbreeding - Rare													-	Apr-Sep	Jun-Sep	Apr-Sep
		Leatherback sea turtle	E	E	-													-	-	Jan-Dec	Jan-Dec
		Loggerhead sea turtle	T	T	Rare In Winter													-	-	Jan-Dec	Jan-Dec
		Loggerhead sea turtle	T	T	Interbreeding													-	Apr-Sep	Jun-Sep	Apr-Sep

INVERTEBRATES


Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Eggs	Larvae	Juveniles	Adults
						J	F	M	A	M	J	J	A	S	O	N	D				
	Shrimp	Brown shrimp			Common													Oct-Nov	-	-	-
		Pink shrimp			-													Apr-Jul	May-Nov	-	-
		White shrimp			Abundant													Mar-Nov	Jun-Dec	-	-

MARINE MAMMALS

Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Calving	Pupping	Molt
						J	F	M	A	M	J	J	A	S	O	N	D			
	Whale	Humpback whale			Low													-	-	-
		N.A. right whale			Low													-	-	-

ALSO PRESENT IN MAPPED AREA (GENERAL DISTRIBUTION)

BENTHIC



Subelement	Species	Monthly Presence											
		J	F	M	A	M	J	J	A	S	O	N	D
	SAV												
	Submerged aquatic veg												

BIRDS






Subelement	Species	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt
		J	F	M	A	M	J	J	A	S	O	N	D				
	Waterfowl													Apr-May	-	-	-
	American black duck																

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	Dec-Sep
	American eel													-	-	Jan-Dec	Jan-Dec	Sep-Dec
	American eel													-	-	Jan-Dec	-	Sep-Dec
	American shad													-	-	-	Jan-Dec	Dec-Sep
	American shad													-	-	Mar-Jul	May-Nov	-
	Blueback herring													-	-	-	Jan-Dec	Dec-Sep
	Gizzard shad													-	-	-	Oct-Mar	-
	Hickory shad													-	-	-	Jan-Dec	Jan-Aug*
	Hickory shad													-	-	-	Jan-Dec	Jan-Apr
	Hickory shad													Apr-Jun	-	-	-	Jan-Apr
	Hickory shad													-	-	-	-	Jan-Apr
	Striped bass													-	-	-	-	Jan-Dec
	Striped bass													Apr-Jun	Apr-Jun	Apr-Jun	Jan-Dec	Jan-Dec
	Atlantic croaker													-	-	Sep-Mar	Jan-Dec	Jan-Dec
	Atlantic croaker													Sep-Mar	Sep-Mar	Sep-Mar	-	Jan-Dec
	Atlantic croaker													-	-	-	-	May-Oct
	Atlantic cutlassfish													-	-	-	-	Jul-Aug
	Atlantic cutlassfish													-	-	-	-	Jan-Dec
	Atlantic menhaden													-	-	-	-	Jan-Dec
	Atlantic menhaden													-	-	-	-	Sep-May
	Bay anchovy													Apr-Nov	Apr-Nov	Jun-Nov	Apr-Nov	Apr-Nov
	Bay anchovy													Apr-Nov	Apr-Nov	Jun-Nov	Jun-Nov	-
	Black drum													-	-	-	Dec-Mar	Sep-Dec
	Black drum													-	-	-	Dec-Mar	Jan-Dec
	Black sea bass													May-Oct	May-Oct	May-Nov	Jan-Dec	Jan-Dec
	Black sea bass													-	-	May-Nov	Dec-Apr	Dec-Apr
	Bluefish													-	-	-	May-Nov	-
	Hogchoker													-	-	-	-	May-Oct
	Ladyfish													-	-	-	-	-
	Northern kingfish													-	-	-	Mar-Dec*	Sep-Dec
	Northern puffer													Apr-Nov	Apr-Nov	-	-	Mar-Dec
	Pinfish													Oct-Mar	Oct-Mar	-	Oct-May	May-Aug
	Pinfish													Oct-Mar	Oct-Mar	-	Oct-May	Mar-Dec
	Red drum													Aug-Oct	Aug-Oct	Aug-Oct	-	Nov-Jul
	Red drum													-	-	-	Jan-Dec	Jan-Dec
	Red drum													-	-	-	-	Mar-Nov
	Scup													-	-	-	Nov-Apr	Jan-Dec
	Sheepshead													-	-	-	-	May-Dec
	Southern flounder													-	-	Dec-Mar	Jan-Dec	Jan-Dec
	Southern kingfish													Apr-Oct	Apr-Oct	-	-	Mar-Dec
	Spot													-	-	-	Mar-Jun	May-Oct
	Spot													-	-	-	Mar-Jun	Mar-Dec
	Spot													-	-	-	Jan-Dec	May-Oct
	Spotted seatrout													-	-	Jan-Mar	Jan-Dec	Jan-Dec
	Spotted seatrout													-	-	-	Nov-Apr	Jan-Dec
	Spotted seatrout													-	-	-	Nov-Apr	May-Oct*



FISH (continued)

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	Spotted seatrout													May-Aug	May-Aug	Jun-Aug	Jun-Oct	-
	Striped mullet													-	-	-	Jan-Dec	-
	Striped mullet													-	-	-	Mar-Oct*	Mar-Oct*
	Summer flounder													Oct-Mar	Oct-Apr	Oct-May	Sep-Mar	Jan-Dec
	Tarpon													-	-	-	-	Jul-Aug
	Weakfish													-	-	-	Mar-Dec	Jan-Dec
	Weakfish													Mar-Oct	Mar-Oct	-	Jan-Dec	Jan-Dec
	White mullet													-	-	Mar-Jul	Sep-Jan	-
	White mullet													-	-	-	Jan-Dec	Jan-Dec
	White perch													Mar-Jun	Mar-Jun	May-Aug	Jan-Dec	Jul-Feb
	Windowpane													Mar-Nov	Mar-Nov	Mar-Nov	Jan-Dec	Dec-Feb
	Inland silverside													-	-	-	-	-
	Inland silverside													Mar-Aug	Mar-Aug	Jun-Sep	-	-
	Silver perch													Apr-Aug	Apr-Aug	-	Mar-Jun	Mar-Dec
	Triggerfish													-	-	-	-	Jan-Dec
	Triggerfish													-	-	-	-	May-Oct
	Bluegill													Apr-Oct	Apr-Oct	-	Jan-Dec	Jan-Dec
	Bowfin													Mar-Jun	Mar-Jun	-	Jan-Dec	Jan-Dec
	Largemouth bass													May-Jun	May-Jun	May-Jun	-	Jan-Dec
	Yellow perch													-	-	-	Apr-Dec	Apr-Dec
	Atlantic spadefish													May-Oct	May-Oct	May-Oct	Sep-Dec	May-Dec
	Atlantic spadefish													May-Oct	May-Oct	May-Oct	-	May-Dec
	Florida pompano													-	-	Jun-Aug	-	May-Dec
	Goosefish													Mar-Jun	Mar-Jun	Mar-Jun	-	Jan-Dec
	Little tunny													-	-	-	-	Jan-Dec
	Little tunny													-	-	-	-	Jan-Dec
	Spotted hake													Feb-Apr	Feb-Apr	Mar-May	Jan-Dec	Jan-Dec
	Spotted hake													Aug-Apr*	Aug-Apr*	-	Dec-Jun	Jan-Jul*
	Tautog													May-Aug	May-Aug	Jun-Aug	-	Sep-Apr
	Atlantic bonito													-	-	-	-	May-Oct
	Atlantic bonito													-	-	-	-	Mar-Dec
	Atlantic needlefish													May-Jul	May-Jul	Jun-Aug	Jun-Oct	-
	Atlantic needlefish													-	-	-	Nov-May*	Mar-Oct
	Bluefin tuna													-	-	-	-	Jan-Dec
	Butterfish													May-Jul	May-Jul	Jun-Aug	Jan-Dec	Jan-Dec
	Cobia													-	-	-	-	May-Oct
	Dolphinfish													Jan-Dec	-	-	-	Jan-Dec
	Greater amberjack													-	-	-	-	May-Oct
	Greater amberjack													-	-	-	-	Jan-Dec
	Harvestfish													-	-	-	-	Jan-Dec
	King mackerel													-	-	-	-	Jan-Dec
	Sailfish													-	-	-	-	May-Oct
	Sharks													-	-	-	-	Jan-Dec
	Spanish mackerel													May-Sep	May-Sep	-	-	May-Oct



FISH (continued)

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	Spanish mackerel													May-Sep	May-Sep	-	-	Mar-Dec
	Thresher shark													-	-	-	-	Jun-Feb

INVERTEBRATES

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	Blue crab													-	-	-	Jan-Dec	Jan-Dec
	Blue crab													-	Apr-Sep	May-Oct	-	Oct-Mar
	Brown shrimp													-	-	Feb-Apr	Mar-Aug	-

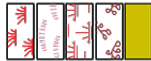
MARINE MAMMALS

Subelement	Species	Monthly Presence												Mating	Calving	Pupping	Molt
		J	F	M	A	M	J	J	A	S	O	N	D				
	Atl. spotted dolphin													-	-	-	-
	Bottlenose dolphin													Apr-Oct*	Apr-Oct*	-	-
	Bottlenose dolphin													Sep-Oct	Sep-Oct	-	-
	Harbor porpoise													-	-	-	-
	Short-beaked common dolphin													-	-	-	-
	Fin whale													-	-	-	-

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	297.04	0.46
10B	Freshwater Marshes	8.02	0.01
10C	Swamps	10.17	0.02
10D	Scrub and Shrub Wetlands	65.69	0.10
7	Exposed Tidal Flats	113.24	0.18



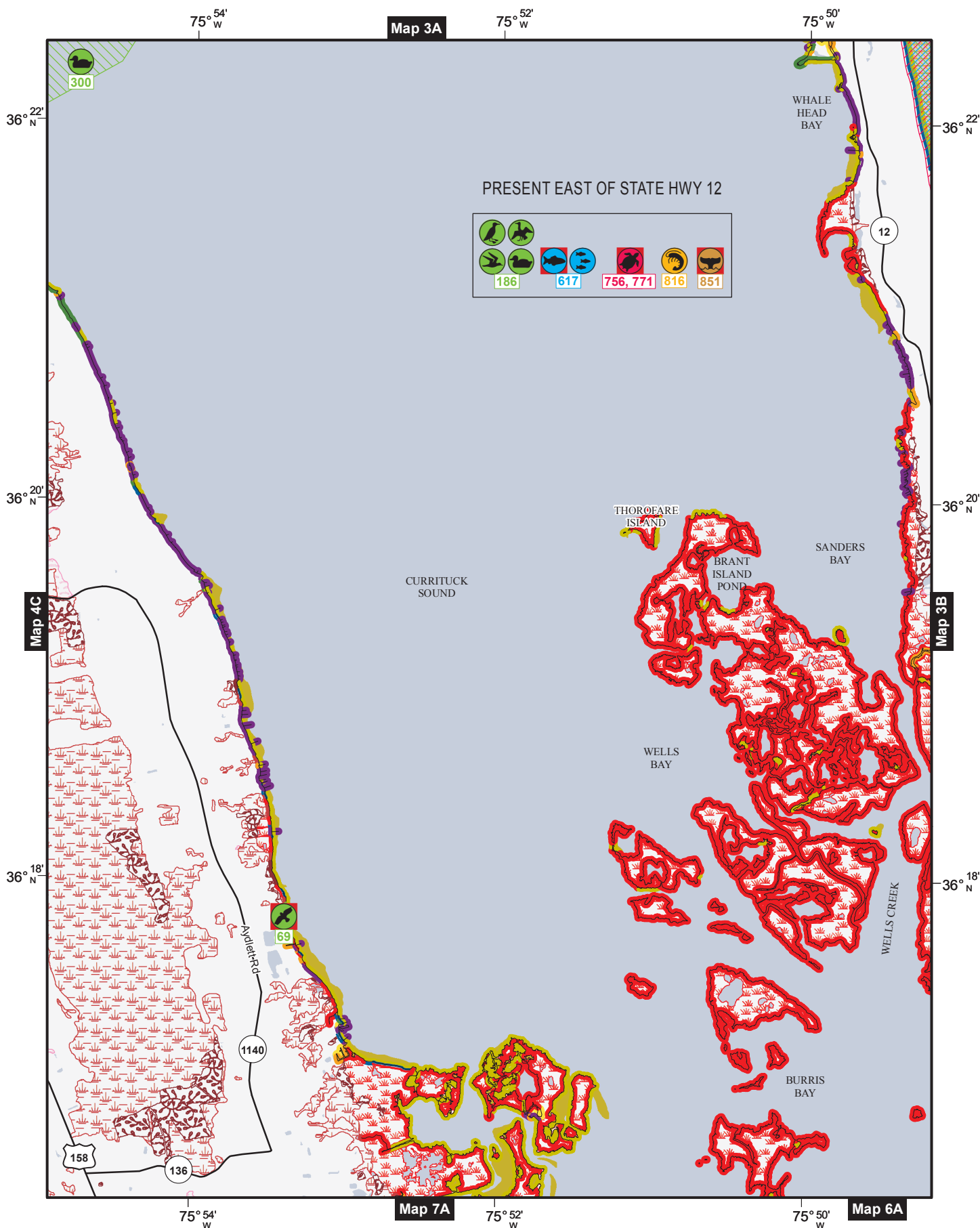
ESI SHORELINE HABITAT TYPES

<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	22,435.25	13.94	44%
10C	Swamps	30.22	0.02	< 1%
9A	Sheltered tidal flats	632.03	0.39	1%
9B	Sheltered, vegetated low banks	2,454.74	1.53	5%
7	Exposed tidal flats	14,324.74	8.90	28%
3A	Fine- to medium-grained sand beaches	10,416.29	6.47	21%
1B	Exposed, solid man-made structures	493.48	0.31	1%
Total ESI Shoreline:		50,786.74	31.56	
Total Shoreline:		34,742.59	21.59	

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 3C
North Carolina

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	S	F	Concentration	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt
							J	F	M	A	M	J	J	A	S	O	N	D				
69	Raptor	Bald eagle	Nesting	T		1 Pair													Jan-Jun	-	-	-
186	Diving	Brown pelican	Wintering			1000S													-	-	-	-
	Diving	D. crested cormorant	Wintering			10000S													-	-	-	-
	Diving	Red-throated loon	Wintering			1000S													-	-	-	-
	Gull/Tern	Bonaparte's gull	Wintering			1000S													-	-	-	-
	Gull/Tern	G. black-backed gull	Wintering			1000S													-	-	-	-
	Gull/Tern	Gulls	Concentration Area			High - Foraging													-	-	-	-
	Gull/Tern	Herring gull	Wintering			1000S													-	-	-	-
	Gull/Tern	Ring-billed gull	Wintering			4000S													-	-	-	-
	Gull/Tern	Terns	Vulnerable Occurrence			Foraging													-	-	-	-
	Pelagic	Northern gannet	Wintering			10000S													-	-	-	-
	Waterfowl	Black scoter	Wintering			1000S													-	Feb-Mar	Oct-Nov	-
	Waterfowl	Red-breasted merganser	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	Waterfowl	Surf scoter	Wintering			1000S													-	Feb-Mar	Oct-Nov	-
	Waterfowl	American coot	Wintering			100S													-	Feb-Mar	Oct-Nov	-
300	Waterfowl	Canada goose	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	Waterfowl	Gadwall	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	Waterfowl	Green-winged teal	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	Waterfowl	Scaup	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	Waterfowl	Tundra swan	Wintering			100S													-	Feb-Mar	Oct-Nov	-
																			-			-
																			-			-

FISH

Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
							J	F	M	A	M	J	J	A	S	O	N	D					
617	Diadromous	Atlantic sturgeon	General Distribution	C		-													-	-	-	-	Oct-Mar
	Estuarine Nursery	Bluefish	Spawning Area			Abundant													Jun-Aug	Jun-Aug	Jul-Sep	Jan-Dec	Jan-Dec
	Estuarine Nursery	Southern flounder	Spawning Area			Highly Abundant													Nov-Jan	Nov-Feb	Nov-Apr	-	Jan-Dec
	Fish	Hammerhead shark	Migration		T	-													-	-	-	-	Sep-Dec
	Marine Pelagic	Cobia	Spawning Area			-													May-Jul	-	-	-	-
	Marine Pelagic	Greater amberjack	Spawning Area			Common													Mar-Jul	-	-	-	-

REPTILES & AMPHIBIANS

Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Nest	Hatch	Internest	Juveniles	Adults
							J	F	M	A	M	J	J	A	S	O	N	D					
756	Turtle	Green sea turtle	Nesting	T	T	1 Nest													May-Aug	Jun-Sep	-	-	-
	Turtle	K. ridley sea turtle	Nesting	E	E	1 Nest													May-Aug	Jun-Sep	-	-	-
	Turtle	Leatherback sea turtle	Nesting	E	E	1 Nest													May-Aug	Jun-Sep	-	-	-
771	Turtle	Loggerhead sea turtle	Nesting	T	T	0.3 Nests/Km													May-Aug	Jun-Sep	-	-	-
	Turtle	Green sea turtle	General Distribution	T	T	Rare In Winter																Jan-Dec	Jan-Dec
	Turtle	Hawksbill sea turtle	General Distribution	E	E	Rare In Winter													-	-	-	Jan-Dec	Jan-Dec
	Turtle	K. ridley sea turtle	General Distribution	E	E	Rare In Winter													-	-	-	Jan-Dec	Jan-Dec
	Turtle	K. ridley sea turtle	Vulnerable Occurrence	E	E	Interneesting - Rare													-	-	Apr-Sep	Jun-Sep	Apr-Sep
	Turtle	Leatherback sea turtle	General Distribution	E	E	-													-	-	-	Jan-Dec	Jan-Dec
	Turtle	Loggerhead sea turtle	General Distribution	T	T	Rare In Winter													-	-	-	Jan-Dec	Jan-Dec
	Turtle	Loggerhead sea turtle	Vulnerable Occurrence	T	T	Interneesting													-	-	Apr-Sep	Jun-Sep	Apr-Sep

INVERTEBRATES

Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
							J	F	M	A	M	J	J	A	S	O	N	D					
816	Shrimp	Brown shrimp	Spawning Area			Common													Oct-Nov	-	-	-	-
	Shrimp	Pink shrimp	Spawning Area			-													Apr-Jul	Apr-Jul	May-Nov	-	-
	Shrimp	White shrimp	Spawning Area			Abundant													Mar-Nov	Mar-Nov	Jun-Dec	-	-

MARINE MAMMALS


Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Mating	Calving	Pupping	Molt
							J	F	M	A	M	J	J	A	S	O	N	D				
851	Whale	Humpback whale	General Distribution			Low													-	-	-	-
	Whale	N.A. right whale	Migration			Low													-	-	-	-

WIDESPREAD IN MAPPED AREA (> 10 SQUARE KILOMETERS)

BENTHIC

Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence											
						J	F	M	A	M	J	J	A	S	O	N	D
SAV	Submerged aquatic veg	High Ecological Value			Present												



BIRDS

Subelement	Species	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				
	Waterfowl	American black duck	Wintering			1000S												-	Feb-Mar	Oct-Nov	-
		American black duck	Wintering			-												-	Feb-Mar	Oct-Nov	-
		American coot	Wintering			1000S												-	Feb-Mar	Oct-Nov	-
		Blue-winged teal	Wintering			-												-	Feb-Mar	Oct-Nov	-
		Bufflehead	Wintering			100S												-	Feb-Mar	Oct-Nov	-
		Bufflehead	Wintering			-												-	Feb-Mar	Oct-Nov	-
		Canada goose	Wintering			2000												-	Feb-Mar	Oct-Nov	-
		Canada goose	Wintering			1000S												-	Feb-Mar	Oct-Nov	-
		Canvasback	Wintering			-												-	Feb-Mar	Oct-Nov	-

BIRDS (continued)

Subelement	Species	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				
	Canvasback	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	Gadwall	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Gadwall	Wintering			1000S													-	Feb-Mar	Oct-Nov	-
	Greater scaup	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Green-winged teal	Wintering			1000S													-	Feb-Mar	Oct-Nov	-
	Green-winged teal	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Lesser scaup	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Mallard	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Mallard	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	Northern pintail	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Northern shoveler	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Redhead	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	Redhead	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Ring-necked duck	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Ruddy duck	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	Scaup	Wintering			1000S													-	Feb-Mar	Oct-Nov	-
	Snow goose	Wintering			1000S													-	Feb-Mar	Oct-Nov	-
	Tundra swan	Wintering			1000S													-	Feb-Mar	Oct-Nov	-
	Wood duck	Wintering			-													-	Feb-Mar	Oct-Nov	-

FISH

Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
						J	F	M	A	M	J	J	A	S	O	N	D					
	Diadromous	Migration			Present													-	-	May-Aug	Jul-Mar	-
	Atlantic sturgeon	General Distribution		C	-													-	-	-	Jan-Dec	Jan-Dec
	Blueback herring	Migration			Present													-	-	May-Jul	Aug-Oct	-
	Gizzard shad	Spawning Area			Present													Mar-May	Mar-May	Apr-Jun	May-Sep	-
	Estuarine Nursery	Concentration Area			Highly Abundant													-	-	Oct-May	Jan-Dec	May-Oct


INVERTEBRATES

Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
						J	F	M	A	M	J	J	A	S	O	N	D					
	Shrimp	Nursery Area			Abundant													-	-	Feb-Apr	Mar-Aug	-

MARINE MAMMALS

Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Mating	Calving	Pupping	Molt
						J	F	M	A	M	J	J	A	S	O	N	D				
	Manatee	General Distribution		E	-													-	-	-	


BENTHIC

Subelement SAV  **Species** Submerged aquatic veg

Monthly Presence




BIRDS

Subelement  **Species** American black duck
Wood duck






Monthly Presence





FISH

Subelement	Species	Spawn	Eggs	Larvae	Juveniles	Adults
	Alewife	-	-	-	Jan-Dec	Dec-Sep
	American eel	-	-	Jan-Dec	Jan-Dec	Sep-Dec
	American eel	-	-	Jan-Dec	-	Sep-Dec
	American shad	-	-	-	Jan-Dec	Dec-Sep
	American shad	-	-	Mar-Jul	May-Nov	-
	Blueback herring	-	-	-	Jan-Dec	Dec-Sep
	Gizzard shad	-	-	-	Oct-Mar	-
	Hickory shad	Apr-Jun	-	-	-	Jan-Apr
	Hickory shad	-	-	-	Jan-Dec	Jan-Aug*
	Hickory shad	-	-	-	-	Jan-Apr
	Striped bass	-	-	-	-	Jan-Dec
	Striped bass	Apr-Jun	Apr-Jun	Apr-Jun	Jan-Dec	Jan-Dec
	Atlantic croaker	Sep-Mar	Sep-Mar	Sep-Mar	-	Jan-Dec
	Atlantic croaker	-	-	Sep-Mar	Jan-Dec	Jan-Dec
	Atlantic croaker	-	-	-	-	May-Oct
	Atlantic cutlassfish	-	-	-	-	Jan-Dec
	Atlantic menhaden	-	-	-	-	Jan-Dec
	Atlantic menhaden	-	-	-	-	Sep-May
	Bay anchovy	Apr-Nov	Apr-Nov	Jun-Nov	Apr-Nov	Apr-Nov
	Bay anchovy	Apr-Nov	Apr-Nov	Jun-Nov	Jun-Nov	-
	Black drum	-	-	-	Dec-Mar	Jan-Dec
	Black sea bass	-	-	May-Nov	Dec-Apr	Dec-Apr
	Bluefish	-	-	-	May-Nov	-
	Hogchoker	-	-	-	-	May-Oct
	Ladyfish	-	-	-	-	-
	Northern kingfish	-	-	-	Mar-Dec*	Sep-Dec
	Northern puffer	Apr-Nov	Apr-Nov	-	-	Mar-Dec
	Pinfish	Oct-Mar	Oct-Mar	-	Oct-May	Mar-Dec
	Red drum	Aug-Oct	Aug-Oct	Aug-Oct	-	Nov-Jul
	Red drum	-	-	-	Jan-Dec	Jan-Dec
	Scup	-	-	-	Nov-Apr	Jan-Dec
	Sheepshead	-	-	-	-	May-Dec


FISH (continued)

Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
						J	F	M	A	M	J	J	A	S	O	N	D					
	Southern flounder																	-	-	Dec-Mar	Jan-Dec	Jan-Dec
	Spot																	Apr-Oct	Apr-Oct	-	-	Mar-Dec
	Spot																	-	-	Jan-Mar	Mar-Jun	Mar-Dec
	Spotted seatrout																	-	-	Jan-Dec	Jan-Dec	May-Oct
	Spotted seatrout																	May-Aug	May-Aug	Jun-Aug	Jun-Oct	-
	Striped mullet																	-	-	-	Nov-Apr	Jan-Dec
	Striped mullet																	-	-	-	Jan-Dec	-
	Striped mullet																	-	-	-	Mar-Oct*	Mar-Oct*
	Summer flounder																	Oct-Mar	Oct-Apr	Oct-May	Sep-Mar	Jan-Dec
	Tarpon																	-	-	-	-	Jul-Aug
	Weakfish																	-	-	-	Mar-Dec	Jan-Dec
	Weakfish																	Mar-Oct	Mar-Oct	-	Jan-Dec	Jan-Dec
	White mullet																	-	-	Mar-Jul	Sep-Jan	-
	White mullet																	-	-	-	Jan-Dec	Jan-Dec
	White perch																	Mar-Jun	Mar-Jun	May-Aug	Jan-Dec	Jul-Feb
	Windowpane																	Mar-Nov	Mar-Nov	Mar-Nov	Jan-Dec	Dec-Feb
	Inland silverside																	-	-	-	-	-
	Inland silverside																	Mar-Aug	Mar-Aug	Jun-Sep	-	-
	Silver perch																	Apr-Aug	Apr-Aug	-	Mar-Jun	Mar-Dec
	Triggerfish																	-	-	-	-	May-Oct
	Bluegill																	Apr-Oct	Apr-Oct	-	Jan-Dec	Jan-Dec
	Bowfin																	Mar-Jun	Mar-Jun	-	Jan-Dec	Jan-Dec
	Largemouth bass																	May-Jun	May-Jun	May-Jun	-	Jan-Dec
	Yellow perch																	-	-	-	Apr-Dec	Apr-Dec
	Atlantic spadefish																	May-Oct	May-Oct	May-Oct	Sep-Dec	May-Dec
	Florida pompano																	-	-	Jun-Aug	-	May-Dec
	Goosefish																	Mar-Jun	Mar-Jun	Mar-Jun	-	Jan-Dec
	Little tunny																	-	-	-	-	May-Feb
	Spotted hake																	Feb-Apr	Feb-Apr	Mar-May	Jan-Dec	Jan-Dec
	Tautog																	May-Aug	May-Aug	Jun-Aug	-	Sep-Apr
	Atlantic bonito																	-	-	-	-	May-Oct
	Atlantic needlefish																	May-Jul	May-Jul	Jun-Aug	Jun-Oct	-
	Atlantic needlefish																	-	-	-	Nov-May*	Mar-Oct
	Bluefin tuna																	-	-	-	-	Jan-Dec
	Butterfish																	May-Jul	May-Jul	Jun-Aug	Jan-Dec	Jan-Dec
	Cobia																	-	-	-	-	May-Oct
	Dolphinfish																	Jan-Dec	-	-	-	Jan-Dec
	Greater amberjack																	-	-	-	-	Jan-Dec
	Harvestfish																	-	-	-	-	Jan-Dec
	King mackerel																	-	-	-	-	Jan-Dec
	Sharks																	-	-	-	-	Jan-Dec
	Spanish mackerel																	May-Sep	May-Sep	-	-	May-Oct
	Thresher shark																	-	-	-	-	Jun-Feb

INVERTEBRATES

Subelement	Species	Monthly Presence												Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D				
	Crab													-	-	Jan-Dec	Jan-Dec
	Blue crab													-	-	Jan-Dec	Jan-Dec
	Shrimp													-	-	Mar-Aug	Mar-Aug
	Brown shrimp													-	-	Mar-Aug	Mar-Aug

MARINE MAMMALS

Subelement	Species	Monthly Presence												Mating	Calving	Pupping	Molt
		J	F	M	A	M	J	J	A	S	O	N	D				
	Dolphin													Sep-Oct	Sep-Oct	-	-
	Bottlenose dolphin													Sep-Oct	Sep-Oct	-	-
														Apr-Oct*	Apr-Oct*	-	-
	Harbor porpoise													-	-	-	-

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	1,660.79	2.59
10B	Freshwater Marshes	13.49	0.02
10C	Swamps	1,330.78	2.08
10D	Scrub and Shrub Wetlands	247.75	0.39
9A	Sheltered Tidal Flats	0.64	0.00
7	Exposed Tidal Flats	328.92	0.51

ESI SHORELINE HABITAT TYPES

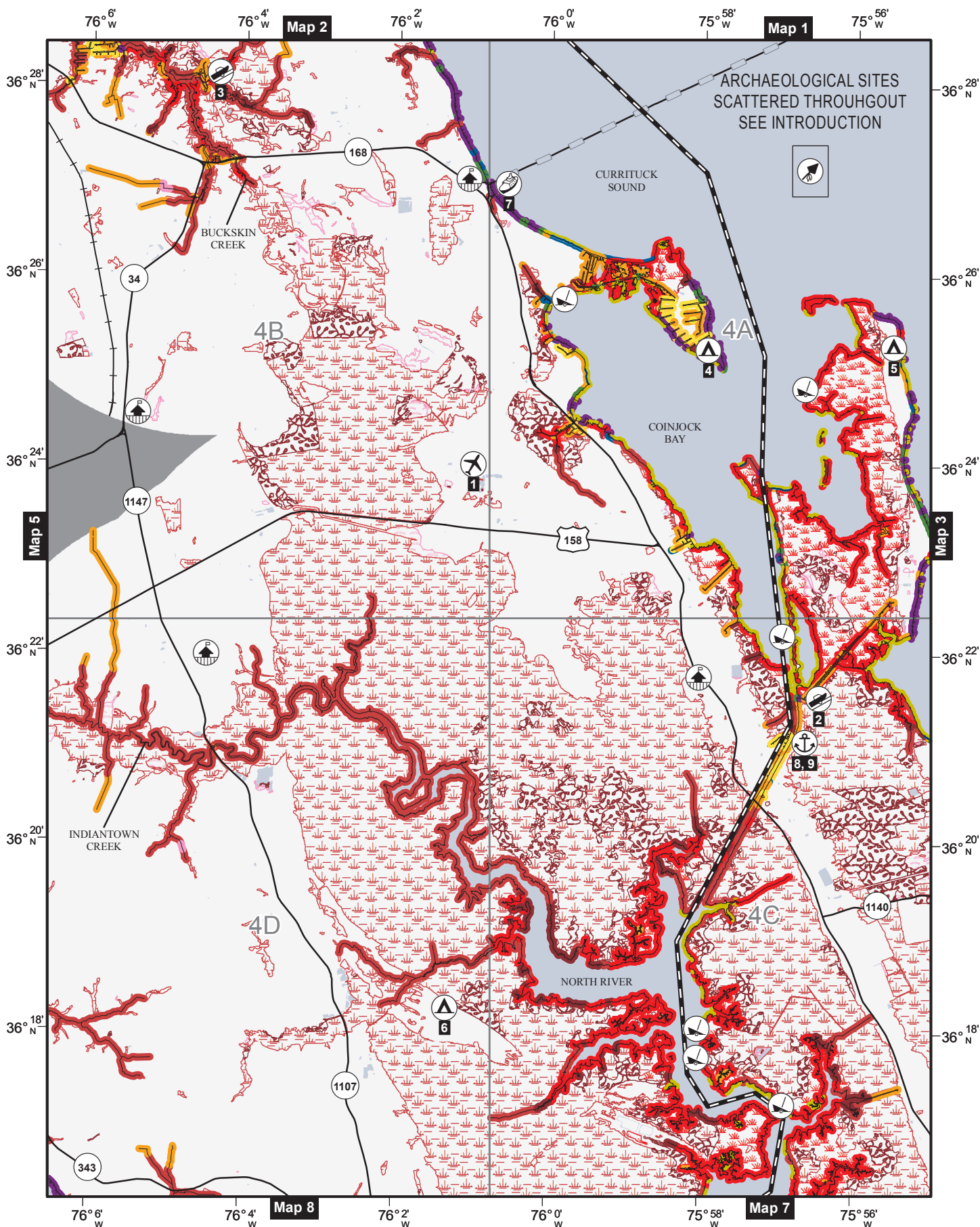
ESI Rank	Shoreline Habitat Classification	Length (Meters)	Length (Miles)	% of ESI Shoreline
10A	Salt- and brackish-water marshes	151,253.16	93.98	68%
10C	Swamps	690.90	0.43	< 1%
10D	Scrub-shrub wetlands	633.92	0.39	< 1%
9A	Sheltered tidal flats	1,802.08	1.12	1%
9B	Sheltered, vegetated low banks	1,096.40	0.68	< 1%
8B	Sheltered, solid man-made structures	1,482.52	0.92	1%
7	Exposed tidal flats	50,582.97	31.43	23%
6B	Exposed riprap	1,582.78	0.98	1%
3A	Fine- to medium-grained sand beaches	2,902.22	1.80	1%
3B	Scarps and steep slopes in sand	517.11	0.32	< 1%
1B	Exposed, solid man-made structures	10,403.65	6.46	5%

Total ESI Shoreline: 222,947.72
Total Shoreline: 168,809.86
Total ESI Shoreline: 138.53
Total Shoreline: 104.89

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 4
North Carolina



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 4
North Carolina

HUMAN USE RESOURCES

DISPLAYED ON MAP (POINTS)			
Map ID	Type	Name	Phone
1	AIRPORT	CURRITUCK COUNTY RGNL	252-453-2876
2	BOAT RAMP	COINJOCK, WATERLILLY	252-426-2255
3	BOAT RAMP	POYNERS ROAD, TULL'S CREEK ACCESS	252-426-2255
4	CAMPGROUND	BELL'S ISLAND CAMPGROUND	252-232-2590
5	CAMPGROUND	HAMPTON LODGE CAMPING RESORT	252-453-2732
6	CAMPGROUND	NORTH RIVER CAMPGROUND RV PARK	252-336-4414
7	FERRY	CURRITUCK FERRY TERMINAL	
K FERRY TERMINAL		252-232-2683	
8	MARINA	COINJACK MARINA	252-453-3271
9	MARINA	MIDWAY MARINA AND MOTEL	252-453-3625

ALSO PRESENT IN MAPPED AREA (POLYGONS)			
Type	Name	Contact	Phone
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT; COASTAL MIG. PELAGICS	DAVID DALE, SOUTHEAST REGION	727-824-5317
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT; SHRIMP	DAVID DALE, SOUTHEAST REGION	727-824-5317
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT; SNAPPER GROUPER	DAVID DALE, SOUTHEAST REGION	727-824-5317
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT; SPINY LOBSTER	DAVID DALE, SOUTHEAST REGION	727-824-5317
STATE PROTECTED AREA	BLACK BEAR SANCTUARY	NC WILDLIFE RESOURCES COMMISSION	
STATE PROTECTED AREA	GAME LAND	NC WILDLIFE RESOURCES COMMISSION	
STATE PROTECTED AREA	WATERFOWL IMPOUNDMENT	NC WILDLIFE RESOURCES COMMISSION	

JURISDICTIONS

COUNTY:	CAMDEN, CURRITUCK	FEMA:	REGION I
COAST GUARD:	DISTRICT 5, SECTOR NORTH CAROLINA	EPA:	REGION 4
USACE:	NORTH ATLANTIC DIVISION, SOUTH ATLANTIC DIVISION, NORFOLK DISTRICT, WILMINGTON 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	4,343.60	6.79
10B	Freshwater Marshes	582.04	0.91
10C	Swamps	27,779.88	43.41
10D	Scrub and Shrub Wetlands	4,398.50	6.87
9A	Sheltered Tidal Flats	48.98	0.08
7	Exposed Tidal Flats	177.10	0.28



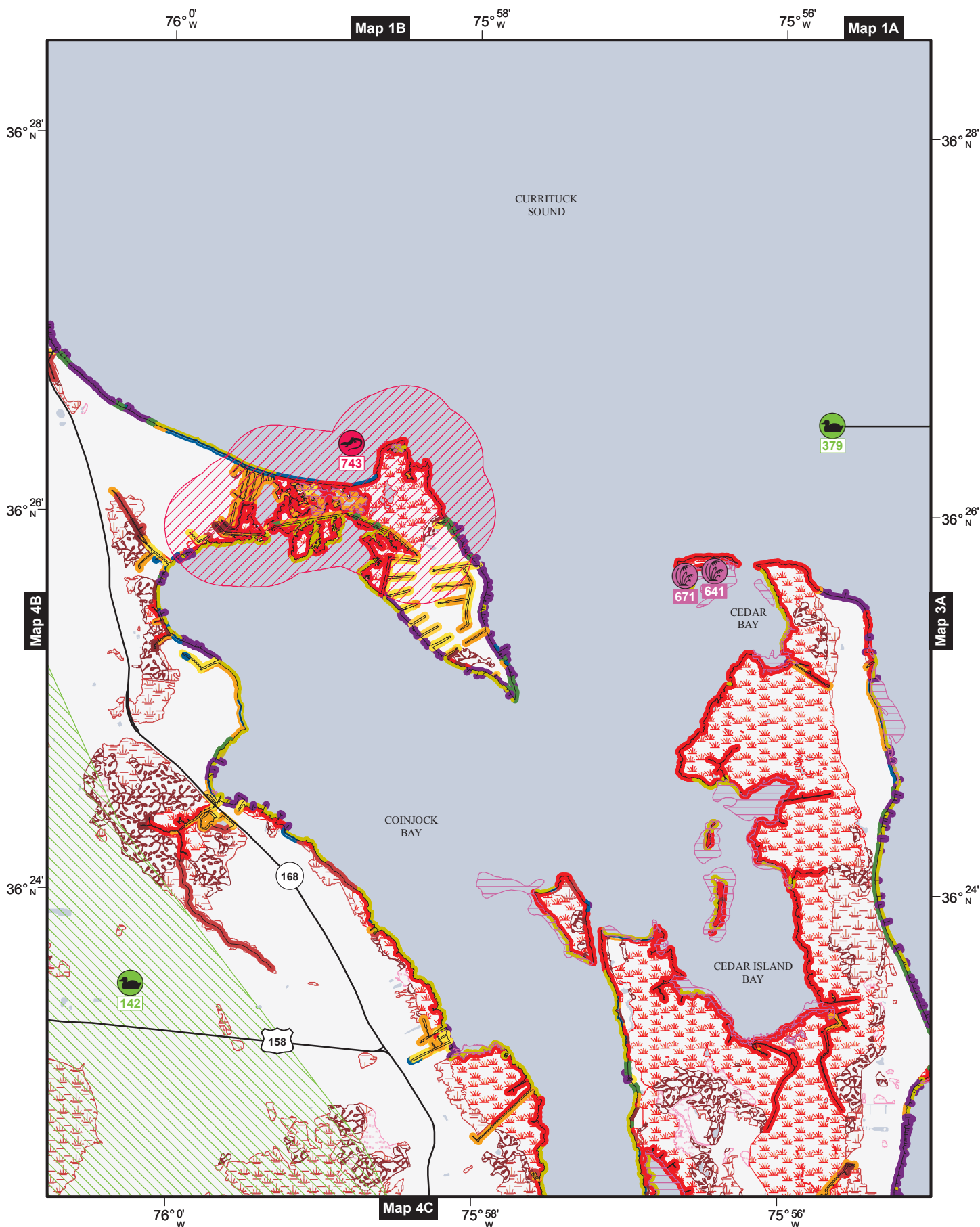
ESI SHORELINE HABITAT TYPES

<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	232,230.40	144.30	39%
10B	Freshwater marshes	325.84	0.20	< 1%
10C	Swamps	135,732.13	84.34	23%
10D	Scrub-shrub wetlands	26,286.86	16.33	4%
9A	Sheltered tidal flats	34,487.47	21.43	6%
9B	Sheltered, vegetated low banks	38,810.34	24.12	7%
8B	Sheltered, solid man-made structures	11,963.93	7.43	2%
8C	Sheltered riprap	2,551.90	1.59	< 1%
7	Exposed tidal flats	77,152.66	47.94	13%
6B	Exposed riprap	6,502.92	4.04	1%
3A	Fine- to medium-grained sand beaches	5,308.90	3.30	1%
3B	Scarps and steep slopes in sand	2,172.34	1.35	< 1%
1B	Exposed, solid man-made structures	17,014.13	10.57	3%
Total ESI Shoreline:		590,539.81	366.94	
Total Shoreline:		470,737.69	292.50	

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

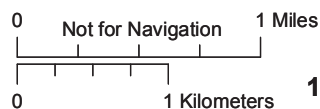




Map 4A North Carolina



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



1:50,000



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	J	F	M	A	M	J	J	A	S	O	N	D
SAV	Submerged aquatic veg	High Ecological Value			Present												

BIRDS

Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N	D	Nest	Mig.(S)	Mig.(F)	Molt
142	Waterfowl	American wigeon	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Waterfowl	Canada goose	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Waterfowl	Snow goose	Wintering			1500													-	Feb-Mar	Oct-Nov	-
	Waterfowl	Tundra swan	Wintering			5000													-	Feb-Mar	Oct-Nov	-
379	Waterfowl	Canada goose	Wintering			1000S													-	Feb-Mar	Oct-Nov	-
	Waterfowl	Canvasback	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	Waterfowl	Green-winged teal	Wintering			1000S													-	Feb-Mar	Oct-Nov	-


HABITATS & RARE PLANTS

Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N	D
641	Wetland	Carolina grasswort	Vulnerable Occurrence			Current												
671	Plant	Winged primrose-willow	Vulnerable Occurrence			Current												




REPTILES & AMPHIBIANS

Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N	D	Nest	Hatch	Intersect	Juveniles	Adults
743	Snake	Rainbow snake	Vulnerable Occurrence			-													May-Sep	Aug-Nov	-	Jan-Dec	Jan-Dec

BIRDS

Subelement	Species	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				
	American black duck	Wintering	-	-	-													-	Feb-Mar	Oct-Nov	-
	American black duck	Wintering	1000S	-	-													-	Feb-Mar	Oct-Nov	-
	American coot	Wintering	100S	-	-													-	Feb-Mar	Oct-Nov	-
	American coot	Wintering	1000S	-	-													-	Feb-Mar	Oct-Nov	-
	American wigeon	Wintering	100S	-	-													-	Feb-Mar	Oct-Nov	-
	Blue-winged teal	Wintering	-	-	-													-	Feb-Mar	Oct-Nov	-
	Bufflehead	Wintering	100S	-	-													-	Feb-Mar	Oct-Nov	-
	Bufflehead	Wintering	-	-	-													-	Feb-Mar	Oct-Nov	-
	Canada goose	Wintering	2000	-	-													-	Feb-Mar	Oct-Nov	-
	Canada goose	Wintering	100S	-	-													-	Feb-Mar	Oct-Nov	-
	Canvasback	Wintering	-	-	-													-	Feb-Mar	Oct-Nov	-
	Gadwall	Wintering	1000S	-	-													-	Feb-Mar	Oct-Nov	-
	Gadwall	Wintering	100S	-	-													-	Feb-Mar	Oct-Nov	-
	Gadwall	Wintering	-	-	-													-	Feb-Mar	Oct-Nov	-
	Greater scaup	Wintering	-	-	-													-	Feb-Mar	Oct-Nov	-
	Green-winged teal	Wintering	-	-	-													-	Feb-Mar	Oct-Nov	-
	Green-winged teal	Wintering	100S	-	-													-	Feb-Mar	Oct-Nov	-
	Hooded merganser	Wintering	100S	-	-													-	Feb-Mar	Oct-Nov	-
	Lesser scaup	Wintering	-	-	-													-	Feb-Mar	Oct-Nov	-
	Mallard	Wintering	100S	-	-													-	Feb-Mar	Oct-Nov	-
	Mallard	Wintering	-	-	-													-	Feb-Mar	Oct-Nov	-
	Mallard	Wintering	1000S	-	-													-	Feb-Mar	Oct-Nov	-
	Northern pintail	Wintering	-	-	-													-	Feb-Mar	Oct-Nov	-
	Northern pintail	Wintering	1000S	-	-													-	Feb-Mar	Oct-Nov	-
	Northern shoveler	Wintering	-	-	-													-	Feb-Mar	Oct-Nov	-
	Redhead	Wintering	100S	-	-													-	Feb-Mar	Oct-Nov	-
	Redhead	Wintering	-	-	-													-	Feb-Mar	Oct-Nov	-
	Ring-necked duck	Wintering	100S	-	-													-	Feb-Mar	Oct-Nov	-
	Ring-necked duck	Wintering	-	-	-													-	Feb-Mar	Oct-Nov	-
	Ruddy duck	Wintering	100S	-	-													-	Feb-Mar	Oct-Nov	-
	Scaup	Wintering	1000S	-	-													-	Feb-Mar	Oct-Nov	-
	Scaup	Wintering	100S	-	-													-	Feb-Mar	Oct-Nov	-
	Snow goose	Wintering	1000S	-	-													-	Feb-Mar	Oct-Nov	-
	Tundra swan	Wintering	100S	-	-													-	Feb-Mar	Oct-Nov	-
	Tundra swan	Wintering	1000S	-	-													-	Feb-Mar	Oct-Nov	-
	Waterfowl	Wintering	100S	-	-													-	Feb-Mar	Oct-Nov	-
	Wood duck	Wintering	-	-	-													-	Feb-Mar	Oct-Nov	-
	Wood duck	Wintering	-	-	-													-	Feb-Mar	Oct-Nov	-

FISH

Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
						J	F	M	A	M	J	J	A	S	O	N	D					
	Diadromous	Alewife			Present													-	-	May-Aug	Jul-Mar	-
		Alewife			Present													-	-	May-Aug	Jul-Oct	-
	American shad	Spawning Area			Present													Apr-Jun	Apr-Jun	May-Jul	Feb-May	-
	Atlantic sturgeon	General Distribution	C		-													-	-	-	Jan-Dec	Jan-Dec
	Blueback herring	Migration			Present													-	-	May-Jul	Aug-Oct	-
	Blueback herring	Nursery Area			Present													-	-	May-Jul	Jul-Oct	-
	Gizzard shad	Spawning Area			Present													Mar-May	Mar-May	Apr-Jun	May-Sep	-
	Striped bass	Concentration Area			Medium													Apr-Jun	Apr-Jun	Apr-Jun	Jan-Dec	Jan-Dec
	Summer flounder	Concentration Area			Highly Abundant													-	-	Oct-May	Jan-Dec	May-Oct

INVERTEBRATES

Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
						J	F	M	A	M	J	J	A	S	O	N	D					
	Shrimp	Nursery Area			Abundant													-	-	Feb-Apr	Mar-Aug	-

MARINE MAMMALS

Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Mating	Calving	Pupping	Molt
						J	F	M	A	M	J	J	A	S	O	N	D				
	Manatee	General Distribution	E		-													-	-	-	-

ALSO PRESENT IN MAPPED AREA (GENERAL DISTRIBUTION)



BENTHIC

Subelement	Species	Monthly Presence											
		J	F	M	A	M	J	J	A	S	O	N	D
	SAV												
	Submerged aquatic veg												




BIRDS

Subelement	Species	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt
		J	F	M	A	M	J	J	A	S	O	N	D				
	Waterfowl													Apr-May	-	-	-
	Wood duck													Mar-Jun	-	-	-

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	Sep-Dec
	American eel													-	-	Mar-Jul	May-Nov	-
	American shad													Apr-Jun	-	-	-	Jan-Apr
	Hickory shad													Apr-Jun	Apr-Jun	Apr-Jun	Jan-Dec	Jan-Dec
	Striped bass													-	-	Sep-Mar	Jan-Dec	Jan-Dec
	Atlantic croaker													-	-	-	-	Sep-May
	Atlantic menhaden													Apr-Nov	Apr-Nov	Jun-Nov	Jun-Nov	-
	Bay anchovy													-	-	-	-	-
	Bluefish													-	-	-	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					
	Red drum													-	-	-	Jan-Dec	Jan-Dec
	Southern flounder													-	-	Dec-Mar	Jan-Dec	Jan-Dec
	Spot													-	-	Jan-Mar	Jan-Dec	May-Oct
	Spotted seatrout													May-Aug	May-Aug	Jun-Aug	Jun-Oct	-
	Striped mullet													-	-	-	Jan-Dec	-
	Summer flounder													-	-	Oct-May	Jan-Dec	-
	Weakfish													Mar-Oct	Mar-Oct	-	Jan-Dec	Jan-Dec
	White mullet													-	-	-	Jan-Dec	Jan-Dec
	White perch													Mar-Jun	Mar-Jun	May-Aug	Jan-Dec	Jul-Feb
	Inland silverside													Mar-Aug	Mar-Aug	Jun-Sep	-	-
	Bluegill													Apr-Oct	Apr-Oct	-	Jan-Dec	Jan-Dec
	Bowfin													Mar-Jun	Mar-Jun	-	Jan-Dec	Jan-Dec
	Largemouth bass													May-Jun	May-Jun	May-Jun	-	Jan-Dec
	Yellow perch													Jan-Mar	Jan-Mar	Jan-Mar	Apr-Dec	Apr-Dec
	Yellow perch													-	-	-	Apr-Dec	Apr-Dec
	Atlantic needlefish													May-Jul	May-Jul	Jun-Aug	Jun-Oct	-

INVERTEBRATES

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	Blue crab													-	-	-	Jan-Dec	Jan-Dec
	Brown shrimp													-	-	Feb-Apr	Mar-Aug	-

MARINE MAMMALS

Subelement	Species	Monthly Presence												Mating	Calving	Pupping	Molt
		J	F	M	A	M	J	J	A	S	O	N	D				
	Bottlenose dolphin													Sep-Oct	Sep-Oct	-	-

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	1,993.17	3.11
10B	Freshwater Marshes	98.46	0.15
10C	Swamps	759.63	1.19
10D	Scrub and Shrub Wetlands	536.08	0.84
9A	Sheltered Tidal Flats	27.43	0.04
7	Exposed Tidal Flats	91.57	0.14

ESI SHORELINE HABITAT TYPES

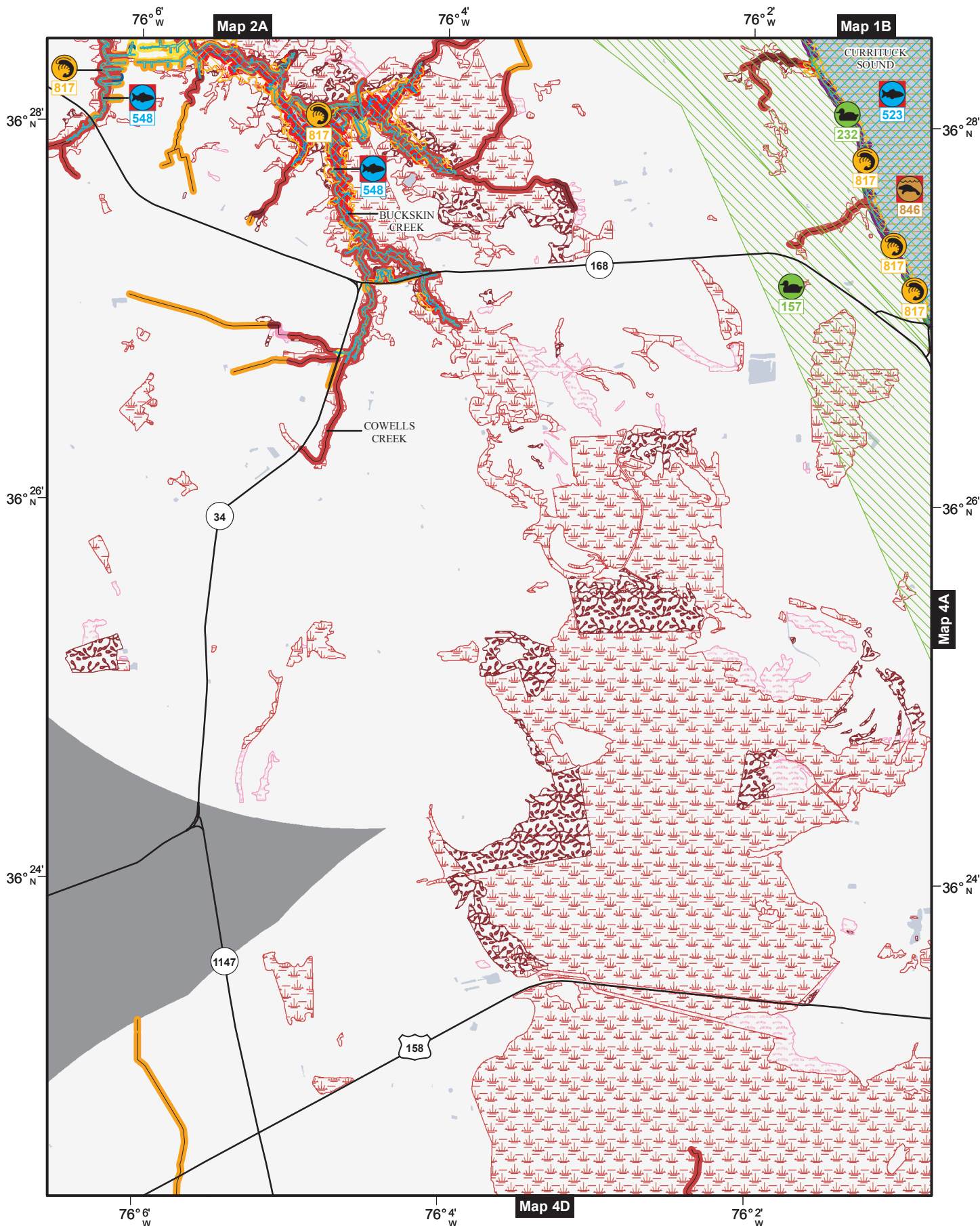
<i>ESI Rank</i>	<i>Shoreline Habitat Classification</i>	<i>Length (Meters)</i>	<i>Length (Miles)</i>	<i>% of ESI Shoreline</i>
10A	Salt- and brackish-water marshes	72,474.24	45.03	39%
10C	Swamps	6,073.48	3.77	3%
10D	Scrub-shrub wetlands	4,031.33	2.50	2%
9A	Sheltered tidal flats	16,673.30	10.36	9%
9B	Sheltered, vegetated low banks	16,981.82	10.55	9%
8B	Sheltered, solid man-made structures	7,553.82	4.69	4%
8C	Sheltered riprap	1,393.57	0.87	1%
7	Exposed tidal flats	36,824.98	22.88	20%
6B	Exposed riprap	5,145.52	3.20	3%
3A	Fine- to medium-grained sand beaches	4,743.17	2.95	3%
3B	Scarps and steep slopes in sand	1,897.81	1.18	1%
1B	Exposed, solid man-made structures	12,416.24	7.72	7%

Total ESI Shoreline: 186,209.28 Total ESI Shoreline: 115.71
 Total Shoreline: 127,046.62 Total Shoreline: 78.94

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

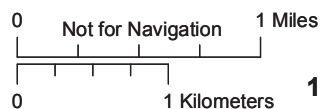




Map 4B
North Carolina



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 4B
North Carolina

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	S	F	Concentration	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt
							J	F	M	A	M	J	J	A	S	O	N	D				
157	Waterfowl	Blue-winged teal	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Waterfowl	Canada goose	Wintering			2000													-	Feb-Mar	Oct-Nov	-
	Waterfowl	Canvasback	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Waterfowl	Northern pintail	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Waterfowl	Redhead	Wintering			-													-	Feb-Mar	Oct-Nov	-
232	Waterfowl	American black duck	Wintering			1000S													-	Feb-Mar	Oct-Nov	-
	Waterfowl	American coot	Wintering			1000S													-	Feb-Mar	Oct-Nov	-
	Waterfowl	American wigeon	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	Waterfowl	Bufflehead	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	Waterfowl	Gadwall	Wintering			1000S													-	Feb-Mar	Oct-Nov	-
	Waterfowl	Green-winged teal	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	Waterfowl	Hooded merganser	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	Waterfowl	Mallard	Wintering			1000S													-	Feb-Mar	Oct-Nov	-
	Waterfowl	Northern pintail	Wintering			1000S													-	Feb-Mar	Oct-Nov	-
	Waterfowl	Redhead	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	Waterfowl	Ring-necked duck	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	Waterfowl	Scaup	Wintering			1000S													-	Feb-Mar	Oct-Nov	-
	Waterfowl	Waterfowl	Wintering			100S													-	Feb-Mar	Oct-Nov	-

FISH

Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
							J	F	M	A	M	J	J	A	S	O	N	D					
523	Diadromous	Alewife	Nursery Area			Present													-	-	May-Aug	Jul-Oct	-
	Diadromous	American shad	Spawning Area			Present													Apr-Jun	Apr-Jun	May-Jul	Feb-May	-
	Diadromous	Atlantic sturgeon	General Distribution	C		-													-	-	-	Jan-Dec	Jan-Dec
	Diadromous	Blueback herring	Nursery Area			Present													-	-	May-Jul	Jul-Oct	-
	Diadromous	Gizzard shad	Spawning Area			Present													Mar-May	Mar-May	Apr-Jun	May-Sep	-
548	Diadromous	Alewife	Spawning Area			Present													Mar-Jul	Mar-Jul	May-Aug	-	-
	Diadromous	American shad	Spawning Area			Present													Apr-Jun	Apr-Jun	May-Jul	Feb-May	-
	Diadromous	Atlantic sturgeon	General Distribution	C		-													-	-	-	Jan-Dec	Jan-Dec
	Diadromous	Blueback herring	Spawning Area			Present													Mar-Jul	Mar-Jul	May-Jul	-	-
	Diadromous	Gizzard shad	Spawning Area			Present													Mar-May	Mar-May	Apr-Jun	May-Sep	-
	Diadromous	Striped bass	Nursery Area			Low													Apr-Jun	Apr-Jun	Apr-Jun	Jan-Dec	Jan-Dec

INVERTEBRATES


Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
817	Shrimp	Brown shrimp	Nursery Area			Abundant	J	F	M	A	M	J	J	A	S	O	N	D	-	-	Feb-Apr	Mar-Aug	-

MARINE MAMMALS

Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Mating	Calving	Pupping	Molt
846	Manatee	West Indian manatee	General Distribution	E	E	-	J	F	M	A	M	J	J	A	S	O	N	D	-	-	-	-


WIDESPREAD IN MAPPED AREA (> 10 SQUARE KILOMETERS)

BIRDS





Subelement	Species	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					
 Waterfowl	American black duck	Wintering			-													-	Feb-Mar	Oct-Nov	-	
	American wigeon	Wintering			-													-	Feb-Mar	Oct-Nov	-	
	Bufflehead	Wintering			-													-	Feb-Mar	Oct-Nov	-	
	Canada goose	Wintering			-													-	Feb-Mar	Oct-Nov	-	
	Canada goose	Wintering			100S													-	Feb-Mar	Oct-Nov	-	
	Gadwall	Wintering			-													-	Feb-Mar	Oct-Nov	-	
	Greater scaup	Wintering			-													-	Feb-Mar	Oct-Nov	-	
	Green-winged teal	Wintering			-													-	Feb-Mar	Oct-Nov	-	
	Lesser scaup	Wintering			-													-	Feb-Mar	Oct-Nov	-	
	Mallard	Wintering			100S													-	Feb-Mar	Oct-Nov	-	
	Mallard	Wintering			-													-	Feb-Mar	Oct-Nov	-	
	Northern shoveler	Wintering			-													-	Feb-Mar	Oct-Nov	-	
	Ring-necked duck	Wintering			-													-	Feb-Mar	Oct-Nov	-	
	Ruddy duck	Wintering			100S													-	Feb-Mar	Oct-Nov	-	
	Scaup	Wintering			100S													-	Feb-Mar	Oct-Nov	-	
	Snow goose	Wintering			1500													-	Feb-Mar	Oct-Nov	-	
	Snow goose	Wintering			1000S													-	Feb-Mar	Oct-Nov	-	
	Tundra swan	Wintering			1000S													-	Feb-Mar	Oct-Nov	-	
	Tundra swan	Wintering			5000													-	Feb-Mar	Oct-Nov	-	
	Wood duck	Wintering			-													-	Feb-Mar	Oct-Nov	-	

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					
 Waterfowl	American black duck														Apr-May	-	-	-
	Wood duck															Mar-Jun	-	-

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	Sep-Dec
	American eel													-	-	Mar-Jul	May-Nov	-
	Hickory shad													Apr-Jun	-	-	-	Jan-Apr
	Striped bass													Apr-Jun	Apr-Jun	Apr-Jun	Jan-Dec	Jan-Dec
	Atlantic croaker													-	-	Sep-Mar	Jan-Dec	Jan-Dec
	Atlantic menhaden													-	-	-	-	Sep-May
	Bay anchovy													Apr-Nov	Apr-Nov	Jun-Nov	Jun-Nov	-
	Bluefish													-	-	-	May-Nov	-
	Red drum													-	-	-	Jan-Dec	Jan-Dec
	Southern flounder													-	-	Dec-Mar	Jan-Dec	Jan-Dec
	Spot													-	-	Jan-Mar	Jan-Dec	May-Oct
	Spotted seatrout													May-Aug	May-Aug	Jun-Aug	Jun-Oct	-
	Striped mullet													-	-	-	Jan-Dec	-
	Summer flounder													-	-	Oct-May	Jan-Dec	-
	Weakfish													Mar-Oct	Mar-Oct	-	Jan-Dec	Jan-Dec
	White mullet													-	-	-	Jan-Dec	Jan-Dec
	White perch													Mar-Jun	Mar-Jun	May-Aug	Jan-Dec	Jul-Feb
	Estuarine Resident													Mar-Aug	Mar-Aug	Jun-Sep	-	-
	Freshwater													Apr-Oct	Apr-Oct	-	Jan-Dec	Jan-Dec
	Bluegill													Mar-Jun	Mar-Jun	-	Jan-Dec	Jan-Dec
	Bowfin													May-Jun	May-Jun	May-Jun	-	Jan-Dec
	Largemouth bass													Jan-Mar	Jan-Mar	Jan-Mar	Apr-Dec	Apr-Dec
	Yellow perch													May-Jul	May-Jul	Jun-Aug	Jun-Oct	-
	Marine Pelagic																	

INVERTEBRATES

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	Crab													-	-	-	Jan-Dec	Jan-Dec
	Blue crab													-	-	-	Jan-Dec	Jan-Dec
	Shrimp													-	-	Feb-Apr	Mar-Aug	-

MARINE MAMMALS

Subelement	Species	Monthly Presence												Mating	Calving	Pupping	Molt
		J	F	M	A	M	J	J	A	S	O	N	D				
	Dolphin													Sep-Oct	Sep-Oct	-	-
	Bottlenose dolphin													Sep-Oct	Sep-Oct	-	-

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	149.89	0.23
10B	Freshwater Marshes	316.63	0.49
10C	Swamps	5,970.63	9.33
10D	Scrub and Shrub Wetlands	744.20	1.16
9A	Sheltered Tidal Flats	2.16	0.00
7	Exposed Tidal Flats	0.41	0.00

ESI SHORELINE HABITAT TYPES

ESI Rank	Shoreline Habitat Classification	Length (Meters)	Length (Miles)	% of ESI Shoreline
10A	Salt- and brackish-water marshes	10,851.14	6.74	17%
10B	Freshwater marshes	215.24	0.13	< 1%
10C	Swamps	31,250.74	19.42	48%
10D	Scrub-shrub wetlands	2,850.13	1.77	4%
9A	Sheltered tidal flats	1,076.91	0.67	2%
9B	Sheltered, vegetated low banks	10,700.79	6.65	17%
8B	Sheltered, solid man-made structures	1,890.36	1.17	3%
8C	Sheltered riprap	609.04	0.38	1%
7	Exposed tidal flats	183.07	0.11	< 1%
6B	Exposed riprap	1,186.59	0.74	2%
3A	Fine- to medium-grained sand beaches	288.40	0.18	< 1%
3B	Scarps and steep slopes in sand	212.00	0.13	< 1%
1B	Exposed, solid man-made structures	3,128.53	1.94	5%

Total ESI Shoreline: 64,442.94 Total ESI Shoreline: 40.04
 Total Shoreline: 62,676.64 Total Shoreline: 38.95

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 4C
North Carolina

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											
SAV	Submerged aquatic veg	High Ecological Value			Present	J	F	M	A	M	J	J	A	S	O	N	D

BIRDS

Map ID	Subelement	Species	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						
84	Passerine	Red-cockaded woodpecker	Vulnerable Occurrence	E	E	-													Apr-Jul	-	-	-	Jun-Nov	-
	Waterfowl	American wigeon	Wintering			-														Feb-Mar	Oct-Nov	-	-	-
	Waterfowl	Canada goose	Wintering			-														Feb-Mar	Oct-Nov	-	-	-
	Waterfowl	Snow goose	Wintering			1500														Feb-Mar	Oct-Nov	-	-	-
234	Waterfowl	Tundra swan	Wintering			5000														Feb-Mar	Oct-Nov	-	-	-
	Waterfowl	American black duck	Wintering			1000S														Feb-Mar	Oct-Nov	-	-	-
	Waterfowl	American coot	Wintering			1000S														Feb-Mar	Oct-Nov	-	-	-
	Waterfowl	Canada goose	Wintering			1000S														Feb-Mar	Oct-Nov	-	-	-
	Waterfowl	Canvasback	Wintering			100S														Feb-Mar	Oct-Nov	-	-	-
	Waterfowl	Gadwall	Wintering			1000S														Feb-Mar	Oct-Nov	-	-	-
	Waterfowl	Redhead	Wintering			100S														Feb-Mar	Oct-Nov	-	-	-
	Waterfowl	Snow goose	Wintering			1000S														Feb-Mar	Oct-Nov	-	-	-
304	Waterfowl	Canada goose	Wintering			100S														Feb-Mar	Oct-Nov	-	-	-
	Waterfowl	Green-winged teal	Wintering			100S														Feb-Mar	Oct-Nov	-	-	-
	Waterfowl	Scaup	Wintering			100S														Feb-Mar	Oct-Nov	-	-	-
	Waterfowl	Tundra swan	Wintering			100S														Feb-Mar	Oct-Nov	-	-	-
312	Waterfowl	Ruddy duck	Wintering			100S														Feb-Mar	Oct-Nov	-	-	-

FISH

Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
							J	F	M	A	M	J	J	A	S	O	N	D					
533	Diadromous	Alewife	Nursery Area			Present													-	-	May-Aug	Jul-Oct	-
	Diadromous	Blueback herring	Nursery Area			Present													-	-	May-Jul	Jul-Oct	-
535	Diadromous	Alewife	Nursery Area			Present													-	-	May-Aug	Jul-Oct	-
	Diadromous	Blueback herring	Nursery Area			Present													-	-	May-Jul	Jul-Oct	-
	Diadromous	Gizzard shad	Spawning Area			Present													Mar-May	Mar-May	Apr-Jun	May-Sep	-
	Estuarine Nursery	Summer flounder	Concentration Area			Highly Abundant													-	-	Oct-May	Jan-Dec	May-Oct
585	Diadromous	Striped bass	Nursery Area			Medium													Apr-Jun	Apr-Jun	Apr-Jun	Jan-Dec	Jan-Dec
591	Diadromous	Alewife	Migration			Present													-	-	May-Aug	Jul-Mar	-
	Diadromous	Blueback herring	Migration			Present													-	-	May-Jul	Aug-Oct	-
602	Diadromous	Gizzard shad	Spawning Area			Present													Mar-May	Mar-May	Apr-Jun	May-Sep	-
	Estuarine Nursery	Summer flounder	Concentration Area			Highly Abundant													-	-	Oct-May	Jan-Dec	May-Oct

HABITATS & RARE PLANTS

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

641	Wetland	Carolina grasswort	Vulnerable Occurrence			Current												
671	Plant	Winged primrose-willow	Vulnerable Occurrence			Current												

REPTILES & AMPHIBIANS

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

742	Alligator	American alligator	Vulnerable Occurrence			-												
743	Snake	Rainbow snake	Vulnerable Occurrence			-												

INVERTEBRATES


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

817	Shrimp	Brown shrimp	Nursery Area			Abundant												
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WIDESPREAD IN MAPPED AREA (> 10 SQUARE KILOMETERS)

BIRDS

<div><div></div><div>Subelement</div></div>	Species	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				
<div><div></div><div>Waterfowl</div></div>	American black duck	Wintering			100S											Feb-Mar	Oct-Nov	-			
	American black duck	Wintering			-											Feb-Mar	Oct-Nov	-			
	American coot	Wintering			100S											Feb-Mar	Oct-Nov	-			
	American wigeon	Wintering			100S											Feb-Mar	Oct-Nov	-			
	Blue-winged teal	Wintering			-											Feb-Mar	Oct-Nov	-			
	Bufflehead	Wintering			100S											Feb-Mar	Oct-Nov	-			
	Bufflehead	Wintering			-											Feb-Mar	Oct-Nov	-			
	Canada goose	Wintering			2000											Feb-Mar	Oct-Nov	-			
	Canvasback	Wintering			-											Feb-Mar	Oct-Nov	-			
	Gadwall	Wintering			100S											Feb-Mar	Oct-Nov	-			
	Gadwall	Wintering			-											Feb-Mar	Oct-Nov	-			
	Greater scaup	Wintering			-											Feb-Mar	Oct-Nov	-			
	Green-winged teal	Wintering			1000S											Feb-Mar	Oct-Nov	-			
	Green-winged teal	Wintering			-											Feb-Mar	Oct-Nov	-			
	Lesser scaup	Wintering			-											Feb-Mar	Oct-Nov	-			
	Mallard	Wintering			100S											Feb-Mar	Oct-Nov	-			
Mallard	Wintering			-											Feb-Mar	Oct-Nov	-				
Northern pintail	Wintering			-											Feb-Mar	Oct-Nov	-				
Northern shoveler	Wintering			-											Feb-Mar	Oct-Nov	-				
Redhead	Wintering			-											Feb-Mar	Oct-Nov	-				
Ring-necked duck	Wintering			-											Feb-Mar	Oct-Nov	-				
Ruddy duck	Wintering			1000S											Feb-Mar	Oct-Nov	-				
Scaup	Wintering			1000S											Feb-Mar	Oct-Nov	-				
Tundra swan	Wintering			1000S											Feb-Mar	Oct-Nov	-				
Wood duck	Wintering			-											Feb-Mar	Oct-Nov	-				

	Waterfowl	American black duck	Wintering			100S													-	Feb-Mar	Oct-Nov	-
		American black duck	Wintering			-													-	Feb-Mar	Oct-Nov	-
		American coot	Wintering			100S													-	Feb-Mar	Oct-Nov	-
		American wigeon	Wintering			100S													-	Feb-Mar	Oct-Nov	-
		Blue-winged teal	Wintering			-													-	Feb-Mar	Oct-Nov	-
		Bufflehead	Wintering			100S													-	Feb-Mar	Oct-Nov	-
		Bufflehead	Wintering			-													-	Feb-Mar	Oct-Nov	-
		Canada goose	Wintering			2000													-	Feb-Mar	Oct-Nov	-
		Canvasback	Wintering			-													-	Feb-Mar	Oct-Nov	-
		Gadwall	Wintering			100S													-	Feb-Mar	Oct-Nov	-
		Gadwall	Wintering			-													-	Feb-Mar	Oct-Nov	-
		Greater scaup	Wintering			-													-	Feb-Mar	Oct-Nov	-
		Green-winged teal	Wintering			1000S													-	Feb-Mar	Oct-Nov	-
		Green-winged teal	Wintering			-													-	Feb-Mar	Oct-Nov	-
		Lesser scaup	Wintering			-													-	Feb-Mar	Oct-Nov	-
		Mallard	Wintering			100S													-	Feb-Mar	Oct-Nov	-
		Mallard	Wintering			-													-	Feb-Mar	Oct-Nov	-
		Northern pintail	Wintering			-													-	Feb-Mar	Oct-Nov	-
		Northern shoveler	Wintering			-													-	Feb-Mar	Oct-Nov	-
		Redhead	Wintering			-													-	Feb-Mar	Oct-Nov	-
		Ring-necked duck	Wintering			-													-	Feb-Mar	Oct-Nov	-
		Ruddy duck	Wintering			1000S													-	Feb-Mar	Oct-Nov	-
		Scaup	Wintering			1000S													-	Feb-Mar	Oct-Nov	-
		Tundra swan	Wintering			1000S													-	Feb-Mar	Oct-Nov	-
		Wood duck	Wintering			-													-	Feb-Mar	Oct-Nov	-

FISH

Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Eggs	Larvae	Juveniles	Adults
						J	F	M	A	M	J	J	A	S	O	N	D				
	Diadromous	Alewife			Present													Mar-Jul	May-Aug	-	-
	American shad	Spawning Area			Present													Apr-Jun	May-Jul	Feb-May	-
	Atlantic sturgeon	General Distribution	C		-													-	-	Jan-Dec	Jan-Dec
	Blueback herring	Spawning Area			Present													Mar-Jul	May-Jul	-	-

INVERTEBRATES


Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Eggs	Larvae	Juveniles	Adults
						J	F	M	A	M	J	J	A	S	O	N	D				
	Shrimp	Nursery Area			-													-	Feb-Apr	Mar-Aug	-

MARINE MAMMALS


Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Calving	Pupping	Molt
						J	F	M	A	M	J	J	A	S	O	N	D			
	Manatee	General Distribution	E		-													-	-	-

ALSO PRESENT IN MAPPED AREA (GENERAL DISTRIBUTION)



BENTHIC

Subelement	Species	Monthly Presence											
		J	F	M	A	M	J	J	A	S	O	N	D
	SAV												
	Submerged aquatic veg												

BIRDS

Subelement	Species	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt
		J	F	M	A	M	J	J	A	S	O	N	D				
	Waterfowl													Apr-May	-	-	-
	Wood duck													Mar-Jun	-	-	-

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	Sep-Dec
	American eel													-	-	Mar-Jul	May-Nov	-
	American shad													Apr-Jun	-	-	-	Jan-Apr
	Hickory shad													Apr-Jun	Apr-Jun	Apr-Jun	Jan-Dec	Jan-Dec
	Striped bass													-	-	-	-	Jan-Dec
	Atlantic croaker													-	-	Sep-Mar	Jan-Dec	Jan-Dec
	Atlantic menhaden													-	-	-	-	Sep-May
	Bay anchovy													Apr-Sep	Apr-Sep	Apr-Oct	Jan-Dec	Jan-Dec
	Bay anchovy													Apr-Nov	Apr-Nov	Jun-Nov	May-Nov	-
	Bluefish													-	-	-	-	-
	Ladyfish													-	-	-	-	Sep-Oct
	Red drum													-	-	-	-	Jan-Dec
	Southern flounder													-	-	Dec-Mar	Jan-Dec	Jan-Dec
	Spot													-	-	Jan-Mar	Jan-Dec	May-Oct

FISH (continued)

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	Spotted seatrout													May-Aug	May-Aug	Jun-Aug	Jun-Oct	-
	Striped mullet													-	-	-	Jan-Dec	-
	Striped mullet													-	-	-	May-Sep	-
	Summer flounder													-	-	Oct-May	Jan-Dec	-
	Weakfish													Mar-Oct	Mar-Oct	-	Jan-Dec	Jan-Dec
	White mullet													-	-	-	Jan-Dec	Jan-Dec
	White perch													Mar-Jun	Mar-Jun	May-Aug	Jan-Dec	Jan-Dec
	White perch													Apr-Jul	Apr-Jul	Apr-Aug	Jan-Dec	Jul-Feb
	Inland silverside													Mar-Aug	Mar-Aug	Jun-Sep	-	-
	Bluegill													Apr-Oct	Apr-Oct	-	Jan-Dec	Jan-Dec
	Bowfin													Mar-Jun	Mar-Jun	-	Jan-Dec	Jan-Dec
	Largemouth bass													May-Jun	May-Jun	May-Jun	-	Jan-Dec
	Yellow perch													-	-	-	Apr-Dec	Apr-Dec
	Yellow perch													Jan-Mar	Jan-Mar	Jan-Mar	Apr-Dec	Apr-Dec
	Atlantic needlefish													May-Jul	May-Jul	Jun-Aug	Jun-Oct	-

INVERTEBRATES

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
Crab	Blue crab													-	-	-	Jan-Dec	Jan-Dec
Shrimp	Brown shrimp													-	-	Feb-Apr	Mar-Aug	-

MARINE MAMMALS

Subelement	Species	Monthly Presence												Mating	Calving	Pupping	Molt
		J	F	M	A	M	J	J	A	S	O	N	D				
Dolphin	Bottlenose dolphin													Sep-Oct	Sep-Oct	-	-

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	2,200.15	3.44
10B	Freshwater Marshes	90.10	0.14
10C	Swamps	12,046.56	18.82
10D	Scrub and Shrub Wetlands	2,927.97	4.57
9A	Sheltered Tidal Flats	19.38	0.03
7	Exposed Tidal Flats	84.81	0.13

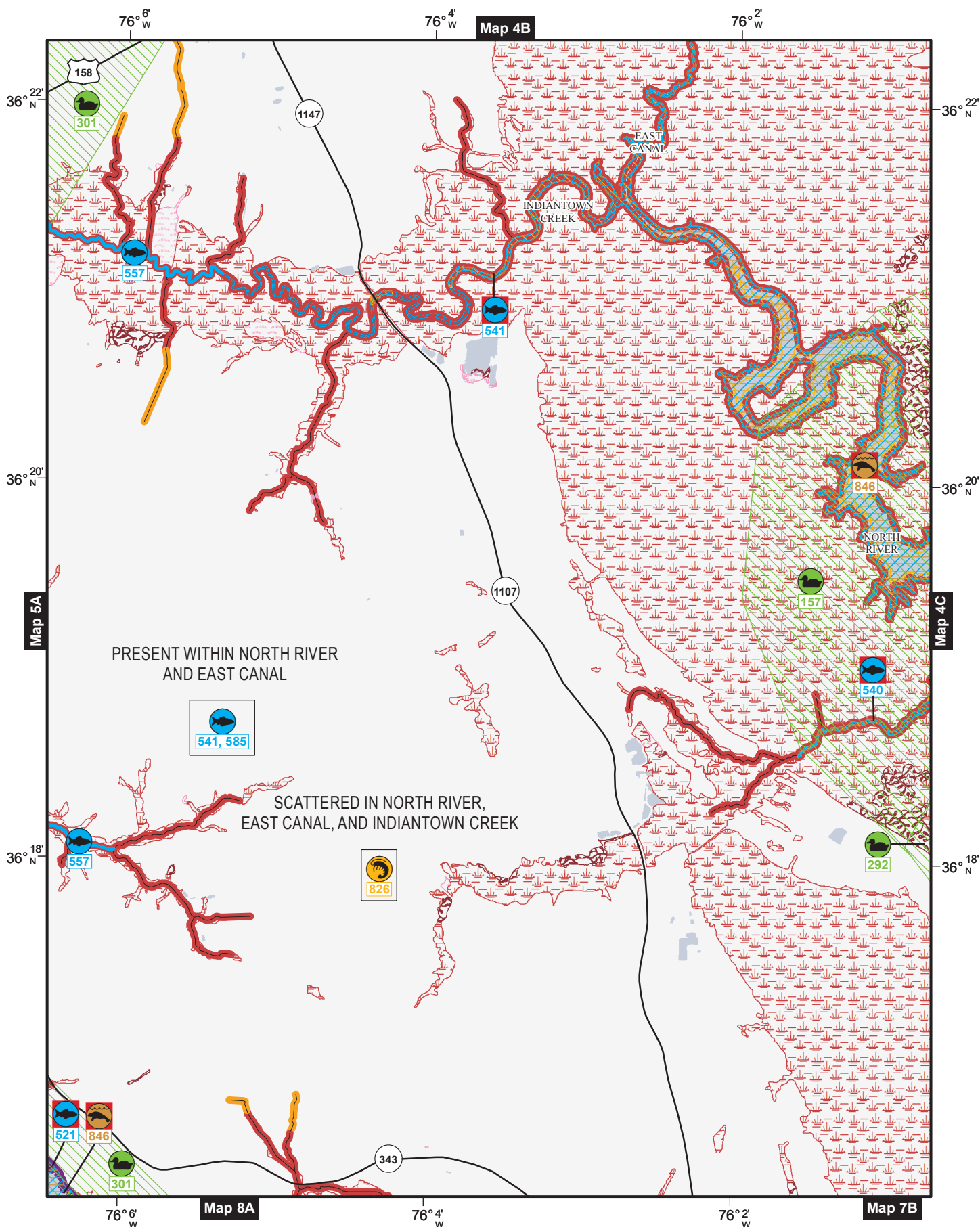
ESI SHORELINE HABITAT TYPES

<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	148,823.42	92.47	57%
10C	Swamps	23,847.36	14.82	9%
10D	Scrub-shrub wetlands	19,405.40	12.06	7%
9A	Sheltered tidal flats	16,737.26	10.40	6%
9B	Sheltered, vegetated low banks	8,400.22	5.22	3%
8B	Sheltered, solid man-made structures	2,519.75	1.57	1%
8C	Sheltered riprap	549.29	0.34	< 1%
7	Exposed tidal flats	40,059.60	24.89	15%
6B	Exposed riprap	171.91	0.11	< 1%
3A	Fine- to medium-grained sand beaches	277.33	0.17	< 1%
3B	Scarps and steep slopes in sand	62.53	0.04	< 1%
1B	Exposed, solid man-made structures	809.68	0.50	< 1%
Total ESI Shoreline:		261,663.76	Total ESI Shoreline:	162.59
		202,894.17	Total Shoreline:	126.07

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

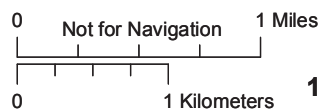




Map 4D North Carolina



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 4D
North Carolina

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	S	F	Concentration	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt
							J	F	M	A	M	J	J	A	S	O	N	D				
157	Waterfowl	Blue-winged teal	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Waterfowl	Canada goose	Wintering			2000													-	Feb-Mar	Oct-Nov	-
	Waterfowl	Canvasback	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Waterfowl	Northern pintail	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Waterfowl	Redhead	Wintering			-													-	Feb-Mar	Oct-Nov	-
292	Waterfowl	American black duck	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	Waterfowl	American coot	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	Waterfowl	American wigeon	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	Waterfowl	Bufflehead	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	Waterfowl	Gadwall	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	Waterfowl	Green-winged teal	Wintering			1000S													-	Feb-Mar	Oct-Nov	-
	Waterfowl	Mallard	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	Waterfowl	Ruddy duck	Wintering			1000S													-	Feb-Mar	Oct-Nov	-
	Waterfowl	Scaup	Wintering			1000S													-	Feb-Mar	Oct-Nov	-
	Waterfowl	Tundra swan	Wintering			1000S													-	Feb-Mar	Oct-Nov	-
301	Waterfowl	Canada goose	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	Waterfowl	Mallard	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	Waterfowl	Ruddy duck	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	Waterfowl	Scaup	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	Waterfowl	Snow goose	Wintering			1000S													-	Feb-Mar	Oct-Nov	-
	Waterfowl	Tundra swan	Wintering			1000S													-	Feb-Mar	Oct-Nov	-

FISH

Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
							J	F	M	A	M	J	J	A	S	O	N	D					
521	Diadromous	Alewife	Nursery Area			Present													-	-	May-Aug	Jul-Oct	-
	Diadromous	American shad	Spawning Area			Present													Apr-Jun	Apr-Jun	May-Jul	Feb-May	-
	Diadromous	Atlantic sturgeon	General Distribution			-													-	-	-	Jan-Dec	Jan-Dec
540	Diadromous	Blueback herring	Nursery Area	C		Present													-	-	May-Jul	Jul-Oct	-
	Diadromous	Alewife	Spawning Area			Present													Mar-Jul	Mar-Jul	May-Aug	Feb-May	-
	Diadromous	American shad	Spawning Area			Present													Apr-Jun	Apr-Jun	May-Jul	Feb-May	-
	Diadromous	Atlantic sturgeon	General Distribution	C		-													-	-	-	Jan-Dec	Jan-Dec
	Diadromous	Blueback herring	Spawning Area			Present													Mar-Jul	Mar-Jul	May-Jul	-	-
	Diadromous	Striped bass	Nursery Area			Medium													Apr-Jun	Apr-Jun	Apr-Jun	Jan-Dec	Jan-Dec
541	Diadromous	Alewife	Spawning Area			Present													Mar-Jul	Mar-Jul	May-Aug	-	-
	Diadromous	American shad	Spawning Area			Present													Apr-Jun	Apr-Jun	May-Jul	Feb-May	-
	Diadromous	Atlantic sturgeon	General Distribution	C		-													-	-	-	Jan-Dec	Jan-Dec

FISH (continued)

Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Eggs	Larvae	Juveniles	Adults
							J	F	M	A	M	J	J	A	S	O	N	D				
557	Diadromous	Blueback herring	Spawning Area			Present													Mar-Jul	May-Jul	-	-
	Diadromous	Alewife	Spawning Area			Present													Mar-Jul	May-Aug	-	-
	Diadromous	American shad	Spawning Area			Present													Apr-Jun	May-Jul	Feb-May	-
585	Diadromous	Blueback herring	Spawning Area			Present													Mar-Jul	May-Jul	-	-
	Diadromous	Striped bass	Nursery Area			Medium													Apr-Jun	Apr-Jun	Jan-Dec	Jan-Dec

INVERTEBRATES


Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Eggs	Larvae	Juveniles	Adults
							J	F	M	A	M	J	J	A	S	O	N	D				
826	Shrimp	Brown shrimp	Nursery Area			-													-	Feb-Apr	Mar-Aug	-

MARINE MAMMALS

Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Calving	Pupping	Molt																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
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WIDESPREAD IN MAPPED AREA (> 10 SQUARE KILOMETERS)

BIRDS





Subelement	Species	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				
	Waterfowl	American black duck	Wintering			-												-	Feb-Mar	Oct-Nov	-
		American wigeon	Wintering			-												-	Feb-Mar	Oct-Nov	-
		Bufflehead	Wintering			-												-	Feb-Mar	Oct-Nov	-
		Canada goose	Wintering			-												-	Feb-Mar	Oct-Nov	-
		Gadwall	Wintering			-												-	Feb-Mar	Oct-Nov	-
		Greater scaup	Wintering			-												-	Feb-Mar	Oct-Nov	-
		Green-winged teal	Wintering			-												-	Feb-Mar	Oct-Nov	-
		Lesser scaup	Wintering			-												-	Feb-Mar	Oct-Nov	-
		Mallard	Wintering			-												-	Feb-Mar	Oct-Nov	-
		Northern shoveler	Wintering			-												-	Feb-Mar	Oct-Nov	-
		Ring-necked duck	Wintering			-												-	Feb-Mar	Oct-Nov	-
		Snow goose	Wintering			1500												-	Feb-Mar	Oct-Nov	-
		Tundra swan	Wintering			5000												-	Feb-Mar	Oct-Nov	-
		Wood duck	Wintering			-												-	Feb-Mar	Oct-Nov	-

ALSO PRESENT IN MAPPED AREA (GENERAL DISTRIBUTION)

BIRDS

Subelement	Species	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				
	Waterfowl	American black duck	Wintering			-												Apr-May	-	-	-
		Wood duck	Wintering			-												Mar-Jun	-	-	-

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	Sep-Dec
	Striped bass													Apr-Jun	Apr-Jun	Apr-Jun	Jan-Dec	Jan-Dec
	Estuarine Nursery													-	-	Sep-Mar	Jan-Dec	Jan-Dec
	Bay anchovy													Apr-Sep	Apr-Sep	Apr-Oct	Jan-Dec	Jan-Dec
	Ladyfish													-	-	-	Apr-Oct	Sep-Oct
	Red drum													-	-	-	Jan-Dec	Jan-Dec
	Southern flounder													-	-	Dec-Mar	Jan-Dec	Jan-Dec
	Striped mullet													-	-	-	Dec-Sep	-
	Striped mullet													-	-	-	May-Sep	-
	Summer flounder													-	-	Oct-May	Jan-Dec	-
	White mullet													-	-	-	Jan-Dec	Jan-Dec
	White perch													Mar-Jun	Mar-Jun	May-Aug	Jun-Oct	-
	White perch													Apr-Jul	Apr-Jul	Apr-Aug	Jan-Dec	Jan-Dec
	Estuarine Resident													Mar-Aug	Mar-Aug	Jun-Sep	-	-
	Freshwater													Apr-Oct	Apr-Oct	-	Jan-Dec	Jan-Dec
	Bluegill													May-Jun	May-Jun	May-Jun	-	Jan-Dec
	Largemouth bass													Jan-Mar	Jan-Mar	Jan-Mar	Apr-Dec	Apr-Dec
	Yellow perch													May-Jul	May-Jul	Jun-Aug	Jun-Oct	-
	Marine Pelagic																	

INVERTEBRATES

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	Crab													-	-	-	Jan-Dec	Jan-Dec
	Shrimp													-	-	Feb-Apr	Mar-Aug	-

MARINE MAMMALS

Subelement	Species	Monthly Presence												Mating	Calving	Pupping	Molt
		J	F	M	A	M	J	J	A	S	O	N	D				
	Dolphin													Sep-Oct	Sep-Oct	-	-

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	0.16	0.00
10B	Freshwater Marshes	76.85	0.12
10C	Swamps	9,001.66	14.07
10D	Scrub and Shrub Wetlands	190.22	0.30
7	Exposed Tidal Flats	0.31	0.00

ESI SHORELINE HABITAT TYPES

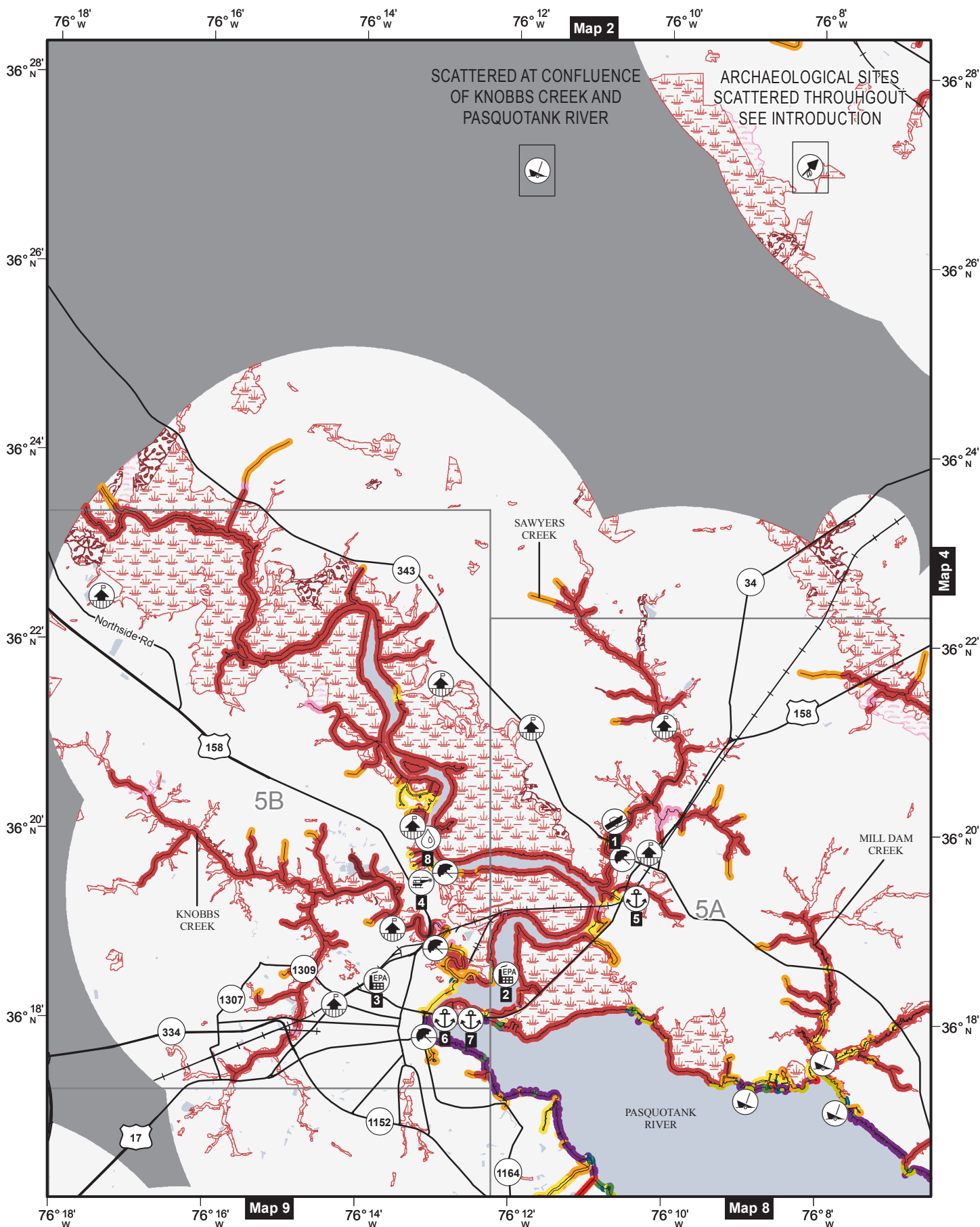
<i>ESI Rank</i>	<i>Shoreline Habitat Classification</i>	<i>Length (Meters)</i>	<i>Length (Miles)</i>	<i>% of ESI Shoreline</i>
10A	Salt- and brackish-water marshes	69.84	0.04	< 1%
10B	Freshwater marshes	110.59	0.07	< 1%
10C	Swamps	74,558.89	46.33	95%
9B	Sheltered, vegetated low banks	2,727.51	1.69	3%
7	Exposed tidal flats	84.08	0.05	< 1%
1B	Exposed, solid man-made structures	660.17	0.41	1%

Total ESI Shoreline: 78,211.09 Total ESI Shoreline: 48.60
 Total Shoreline: 78,108.45 Total Shoreline: 48.53

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 5
North Carolina



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 5
North Carolina

HUMAN USE RESOURCES

DISPLAYED ON MAP (POINTS)				
Map ID	Type	Name	Contact	Phone
1	BOAT RAMP	SAWYERS CREEK	HERTFORD DEPOT	252-426-2255
2	EPA FACILITY	ROGERSON WASTEWATER TREATMENT FACILITY	MOURICE BROTHERS, WASTE TREAT. PLANT MGR	252-337-6811
3	EPA FACILITY	ELIZABETH CITY WATER TREATMENT FACILITY	AVA GOODWIN, CHIEF WATER PLANT OPERATOR	252-337-6647
4	HELIPORT	ALBEMARLE HOSPITAL	COLEEN SANTA ANA, MANAGER	252-335-0531
5	MARINA	LAMBS MARINA		252-338-1957
6	MARINA	MARINER'S WARF CITY DOCKS		252-335-5330
7	MARINA	PELICAN MARINA		252-335-5108
8	WATER INTAKE			

ALSO PRESENT IN MAPPED AREA (POLYGONS)

Type	Name	Contact	Phone
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT; SHRIMP	DAVID DALE, SOUTHEAST REGION	727-824-5317
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT; SNAPPER GROUPE	DAVID DALE, SOUTHEAST REGION	727-824-5317
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT; SPINY LOBSTER	DAVID DALE, SOUTHEAST REGION	727-824-5317
STATE PROTECTED AREA	BLACK BEAR SANCTUARY	NC WILDLIFE RESOURCES COMMISSION	

JURISDICTIONS

COUNTY:	CAMDEN, CURRITUCK, PASQUOTANK	FEMA:	REGION 1
COAST GUARD:	DISTRICT 5, SECTOR NORTH CAROLINA	EPA:	REGION 4
USACE:	NORTH ATLANTIC DIVISION, SOUTH ATLANTIC DIVISION, NORFOLK DISTRICT, WILMINGTON 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	3.29	0.01
10B	Freshwater Marshes	441.40	0.69
10C	Swamps	11,791.20	18.42
10D	Scrub and Shrub Wetlands	506.91	0.79
9A	Sheltered Tidal Flats	0.37	0.00
7	Exposed Tidal Flats	25.74	0.04

ESI SHORELINE HABITAT TYPES

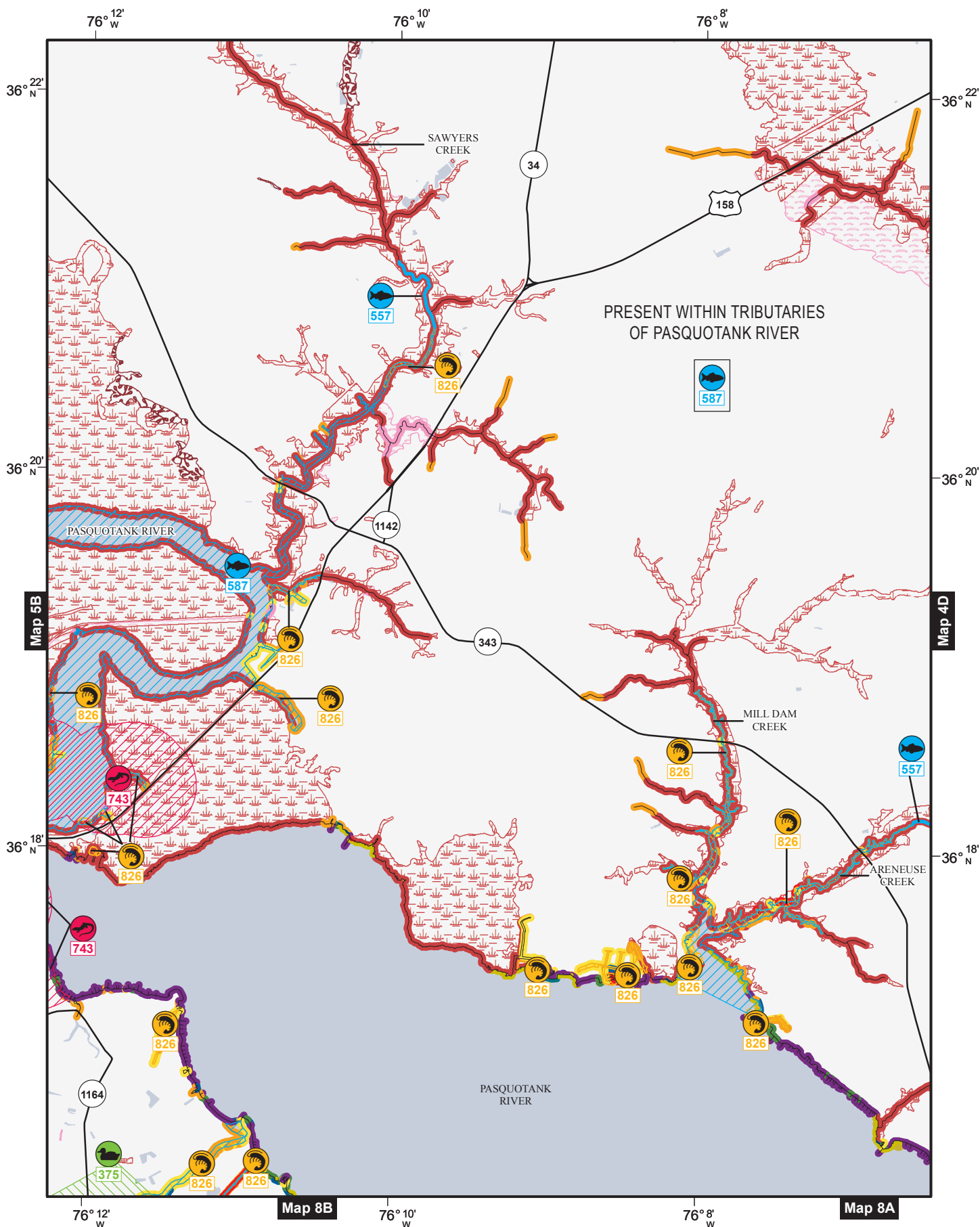
<i>ESI Rank</i>	<i>Shoreline Habitat Classification</i>	<i>Length (Meters)</i>	<i>Length (Miles)</i>	<i>% of ESI Shoreline</i>
10A	Salt- and brackish-water marshes	2,307.77	1.43	1%
10B	Freshwater marshes	3,851.10	2.39	2%
10C	Swamps	163,826.64	101.80	70%
10D	Scrub-shrub wetlands	836.83	0.52	< 1%
9A	Sheltered tidal flats	182.97	0.11	< 1%
9B	Sheltered, vegetated low banks	23,609.72	14.67	10%
8B	Sheltered, solid man-made structures	15,025.98	9.34	6%
8C	Sheltered riprap	1,230.42	0.76	1%
7	Exposed tidal flats	5,136.78	3.19	2%
6B	Exposed riprap	2,385.20	1.48	1%
4	Coarse-grained sand beaches	101.63	0.06	< 1%
3A	Fine- to medium-grained sand beaches	675.75	0.42	< 1%
3B	Scarps and steep slopes in sand	820.33	0.51	< 1%
1B	Exposed, solid man-made structures	14,786.17	9.19	6%

Total ESI Shoreline: 234,777.30 Total ESI Shoreline: 145.88
Total Shoreline: 226,691.17 Total Shoreline: 140.86

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

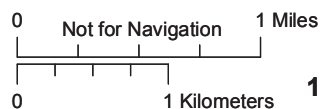




Map 5A
North Carolina



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 5A
North Carolina

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	S	F	Concentration	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Juveniles	Adults	Molt
							J	F	M	A	M	J	J	A	S	O	N	D						
375	Waterfowl	Scaup	Wintering			1000S													-	Feb-Mar	Oct-Nov	-	-	-

FISH

Map ID	Subelement	Species	Mapping Qualifier	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			Present													Mar-Jul	Mar-Jul	May-Aug	-	-
	Diadromous	American shad	Spawning Area			Present													Apr-Jun	Apr-Jun	May-Jul	Feb-May	-
	Diadromous	Blueback herring	Spawning Area			Present													Mar-Jul	Mar-Jul	May-Jul	-	-
587	Diadromous	Alewife	Spawning Area			Present													Mar-Jul	Mar-Jul	May-Aug	-	-
	Diadromous	Blueback herring	Spawning Area			Present													Mar-Jul	Mar-Jul	May-Jul	-	-

REPTILES & AMPHIBIANS


Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Nest	Hatch	Internest	Juveniles	Adults
							J	F	M	A	M	J	J	A	S	O	N	D					
743	Snake	Rainbow snake	Vulnerable Occurrence			-													May-Sep	Aug-Nov	-	Jan-Dec	Jan-Dec

INVERTEBRATES

Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
							J	F	M	A	M	J	J	A	S	O	N	D					
826	Shrimp	Brown shrimp	Nursery Area			-													-	-	Feb-Apr	Mar-Aug	-

WIDESPREAD IN MAPPED AREA (> 10 SQUARE KILOMETERS)

BIRDS

Subelement	Species	Mapping Qualifier	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt			
			S	F	Concentration	J	F	M	A	M	J	J	A	S					O	N	D
 Waterfowl	American black duck	Wintering			-													-	Feb-Mar	Oct-Nov	-
	American wigeon	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Bufflehead	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Canada goose	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	Canada goose	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Gadwall	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Greater scaup	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Green-winged teal	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Lesser scaup	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Mallard	Wintering			-													-	Feb-Mar	Oct-Nov	-
Mallard	Wintering			100S														-	Feb-Mar	Oct-Nov	-

BIRDS (continued)

Subelement	Species	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				
	Northern shoveler	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Ring-necked duck	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Ruddy duck	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	Scaup	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	Snow goose	Wintering			1000S													-	Feb-Mar	Oct-Nov	-
	Snow goose	Wintering			1500													-	Feb-Mar	Oct-Nov	-
	Tundra swan	Wintering			5000													-	Feb-Mar	Oct-Nov	-
	Tundra swan	Wintering			1000S													-	Feb-Mar	Oct-Nov	-
	Wood duck	Wintering			-													-	Feb-Mar	Oct-Nov	-

FISH

Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
						J	F	M	A	M	J	J	A	S	O	N	D					
	Alewife	Nursery Area			Present													-	-	May-Aug	Jul-Oct	-
	American shad	Spawning Area			Present													Apr-Jun	Apr-Jun	May-Jul	Feb-May	-
	Atlantic sturgeon	General Distribution		C	-													-	-	-	Jan-Dec	Jan-Dec
	Blueback herring	Nursery Area			Present													-	-	May-Jul	Jul-Oct	-

MARINE MAMMALS

Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Mating	Calving	Pupping	Molt
						J	F	M	A	M	J	J	A	S	O	N	D				
	West Indian manatee	General Distribution		E	-													-	-	-	-

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				
	Wood duck													Mar-Jun	-	-	-


FISH

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	American eel													-	-	Jan-Dec	Jan-Dec	Sep-Dec
	Striped bass													Apr-Jun	Apr-Jun	Apr-Jun	Jan-Dec	Jan-Dec
	Atlantic croaker													-	-	Sep-Mar	Jan-Dec	Jan-Dec
	Bay anchovy													Apr-Sep	Apr-Sep	Apr-Oct	Jan-Dec	Jan-Dec
	Ladyfish													-	-	-	Apr-Oct	Sep-Oct
	Red drum													-	-	-	Jan-Dec	Jan-Dec
	Southern flounder													-	-	Dec-Mar	Jan-Dec	Jan-Dec
	Striped mullet													-	-	-	Dec-Sep	-
	Summer flounder													-	-	Oct-May	Jan-Dec	-
	White mullet													-	-	-	Jan-Dec	Jan-Dec
	White perch													Mar-Jun	Mar-Jun	May-Aug	Jun-Oct	-

FISH (continued)

Subelement	Species	Monthly Presence												Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D				
 Estuarine Resident	Inland silverside													Mar-Aug	Jun-Sep	-	-
	Black crappie													Mar-May	Mar-May	Jan-Dec	Jan-Dec
 Freshwater	Bluegill													Apr-Oct	-	Jan-Dec	Jan-Dec
	Largemouth bass													May-Jun	May-Jun	-	Jan-Dec
 Marine Pelagic	Yellow perch													Jan-Mar	Jan-Mar	Apr-Dec	Apr-Dec
	Atlantic needlefish													May-Jul	Jun-Aug	Jun-Oct	-

INVERTEBRATES

Subelement	Species	Monthly Presence												Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D				
 Crab	Blue crab													-	-	Jan-Dec	Jan-Dec
	Brown shrimp													-	Feb-Apr	Mar-Aug	-

MARINE MAMMALS

Subelement	Species	Monthly Presence												Mating	Calving	Pupping	Molt
		J	F	M	A	M	J	J	A	S	O	N	D				
 Dolphin	Bottlenose dolphin													Sep-Oct	Sep-Oct	-	-

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	3.29	0.01
10B	Freshwater Marshes	208.51	0.33
10C	Swamps	3,652.99	5.71
10D	Scrub and Shrub Wetlands	63.65	0.10
9A	Sheltered Tidal Flats	0.37	0.00
7	Exposed Tidal Flats	25.74	0.04

ESI SHORELINE HABITAT TYPES

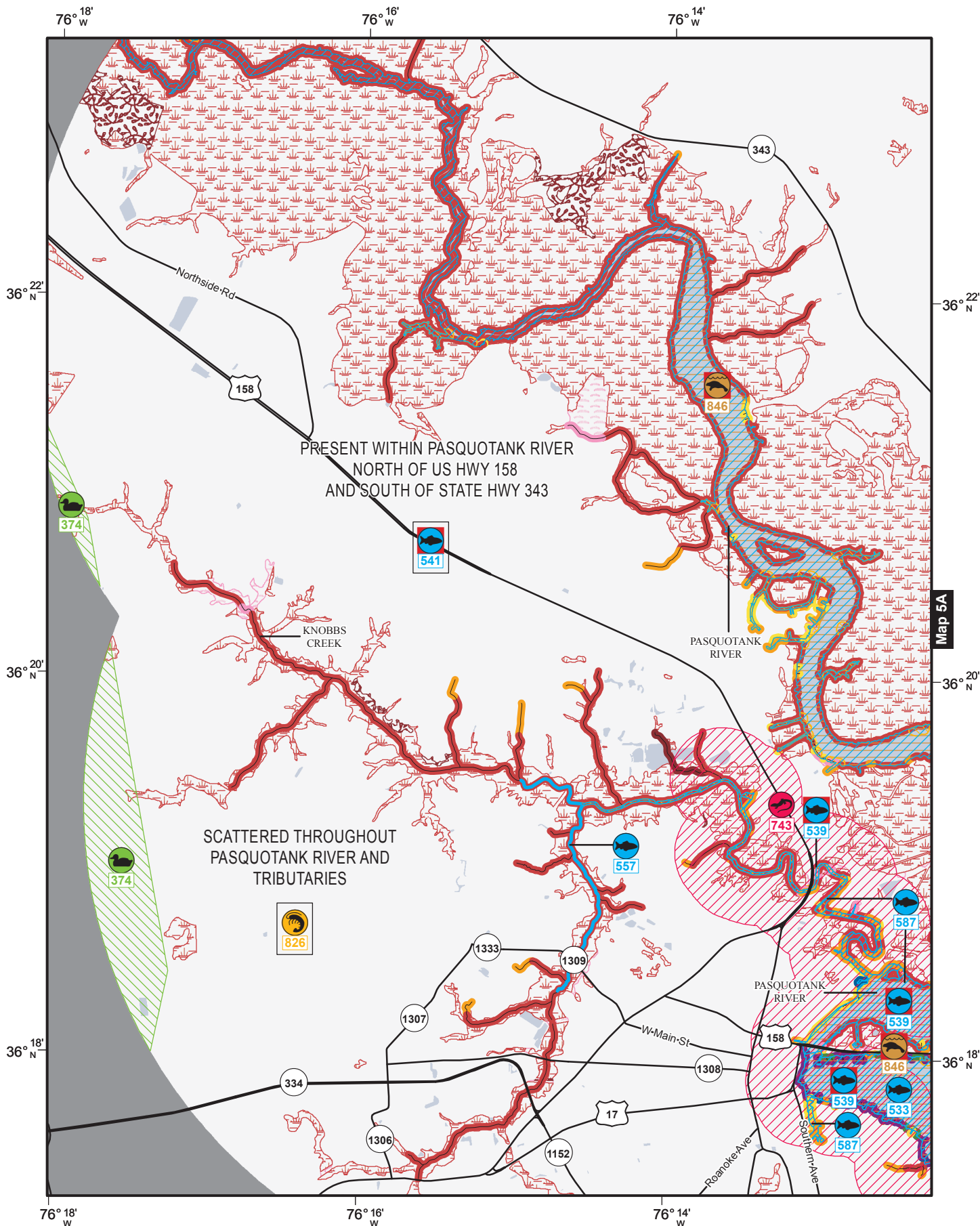
<i>ESI Rank</i>	<i>Shoreline Habitat Classification</i>	<i>Length (Meters)</i>	<i>Length (Miles)</i>	<i>% of ESI Shoreline</i>
10A	Salt- and brackish-water marshes	2,024.22	1.26	2%
10B	Freshwater marshes	1,930.52	1.20	2%
10C	Swamps	73,054.10	45.39	62%
9A	Sheltered tidal flats	182.97	0.11	< 1%
9B	Sheltered, vegetated low banks	11,545.81	7.17	10%
8B	Sheltered, solid man-made structures	9,751.81	6.06	8%
8C	Sheltered riprap	649.21	0.40	1%
7	Exposed tidal flats	5,135.34	3.19	4%
6B	Exposed riprap	1,908.09	1.19	2%
4	Coarse-grained sand beaches	101.63	0.06	< 1%
3A	Fine- to medium-grained sand beaches	664.04	0.41	1%
3B	Scarps and steep slopes in sand	574.03	0.36	< 1%
1B	Exposed, solid man-made structures	10,064.56	6.25	9%

Total ESI Shoreline: 117,586.35 Total ESI Shoreline: 73.06
 Total Shoreline: 109,920.16 Total Shoreline: 68.30

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 5B
North Carolina

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	S	F	Concentration	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Juveniles	Adults
							J	F	M	A	M	J	J	A	S	O	N	D					
374	Waterfowl	Canada goose	Wintering			1000S													-	Feb-Mar	Oct-Nov	-	-
	Waterfowl	Ring-necked duck	Wintering			100S													-	Feb-Mar	Oct-Nov	-	-
	Waterfowl	Tundra swan	Wintering			10000S													-	Feb-Mar	Oct-Nov	-	-

FISH

Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
							J	F	M	A	M	J	J	A	S	O	N	D					
533	Diadromous	Alewife	Nursery Area			Present													-	-	May-Aug	Jul-Oct	-
	Diadromous	Blueback herring	Nursery Area			Present													-	-	May-Jul	Jul-Oct	-
539	Diadromous	American shad	Spawning Area			Present													Apr-Jun	Apr-Jun	May-Jul	Feb-May	-
	Diadromous	Atlantic sturgeon	General Distribution	C		-													-	-	-	Jan-Dec	Jan-Dec
541	Diadromous	Alewife	Spawning Area			Present													Mar-Jul	Mar-Jul	May-Aug	-	-
	Diadromous	American shad	Spawning Area			Present													Apr-Jun	Apr-Jun	May-Jul	Feb-May	-
	Diadromous	Atlantic sturgeon	General Distribution	C		-													-	-	-	Jan-Dec	Jan-Dec
	Diadromous	Blueback herring	Spawning Area			Present													Mar-Jul	Mar-Jul	May-Aug	-	-
557	Diadromous	Alewife	Spawning Area			Present													Mar-Jul	Mar-Jul	May-Aug	-	-
	Diadromous	American shad	Spawning Area			Present													Apr-Jun	Apr-Jun	May-Jul	Feb-May	-
	Diadromous	Blueback herring	Spawning Area			Present													Mar-Jul	Mar-Jul	May-Jul	-	-
587	Diadromous	Alewife	Spawning Area			Present													Mar-Jul	Mar-Jul	May-Aug	-	-
	Diadromous	Blueback herring	Spawning Area			Present													Mar-Jul	Mar-Jul	May-Jul	-	-

REPTILES & AMPHIBIANS

Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Nest	Hatch	Intersect	Juveniles	Adults
							J	F	M	A	M	J	J	A	S	O	N	D					
743	Snake	Rainbow snake	Vulnerable Occurrence			-													May-Sep	Aug-Nov	-	Jan-Dec	Jan-Dec


INVERTEBRATES

Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
							J	F	M	A	M	J	J	A	S	O	N	D					
826	Shrimp	Brown shrimp	Nursery Area			-													-	-	Feb-Apr	Mar-Aug	-

MARINE MAMMALS

Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Mating	Calving	Pupping	Molt
							J	F	M	A	M	J	J	A	S	O	N	D				
846	Manatee	West Indian manatee	General Distribution	E	E	-													-	-	-	-

BIRDS






Subelement	Species	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				
	American black duck	Wintering	-	-	-													-	Feb-Mar	Oct-Nov	-
	American wigeon	Wintering	-	-	-													-	Feb-Mar	Oct-Nov	-
	Bufflehead	Wintering	-	-	-													-	Feb-Mar	Oct-Nov	-
	Canada goose	Wintering	-	-	-													-	Feb-Mar	Oct-Nov	-
	Canada goose	Wintering	100S	-	-													-	Feb-Mar	Oct-Nov	-
	Gadwall	Wintering	-	-	-													-	Feb-Mar	Oct-Nov	-
	Greater scaup	Wintering	-	-	-													-	Feb-Mar	Oct-Nov	-
	Green-winged teal	Wintering	-	-	-													-	Feb-Mar	Oct-Nov	-
	Lesser scaup	Wintering	-	-	-													-	Feb-Mar	Oct-Nov	-
	Mallard	Wintering	100S	-	-													-	Feb-Mar	Oct-Nov	-
	Mallard	Wintering	-	-	-													-	Feb-Mar	Oct-Nov	-
	Northern shoveler	Wintering	-	-	-													-	Feb-Mar	Oct-Nov	-
	Ring-necked duck	Wintering	-	-	-													-	Feb-Mar	Oct-Nov	-
	Ruddy duck	Wintering	100S	-	-													-	Feb-Mar	Oct-Nov	-
	Scaup	Wintering	100S	-	-													-	Feb-Mar	Oct-Nov	-
	Snow goose	Wintering	1500	-	-													-	Feb-Mar	Oct-Nov	-
	Snow goose	Wintering	1000S	-	-													-	Feb-Mar	Oct-Nov	-
	Tundra swan	Wintering	1000S	-	-													-	Feb-Mar	Oct-Nov	-
	Tundra swan	Wintering	5000	-	-													-	Feb-Mar	Oct-Nov	-
	Wood duck	Wintering	-	-	-													-	Feb-Mar	Oct-Nov	-

ALSO PRESENT IN MAPPED AREA (GENERAL DISTRIBUTION)

BIRDS

 Subelement	Species	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
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Waterfowl	Wood duck																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							

FISH

	Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
			J	F	M	A	M	J	J	A	S	O	N	D					
	Diadromous	American eel													-	-	Jan-Dec	Jan-Dec	Sep-Dec
		Striped bass													Apr-Jun	Apr-Jun	Apr-Jun	Jan-Dec	Jan-Dec
	Estuarine Nursery	Atlantic croaker													-	-	Sep-Mar	Jan-Dec	Jan-Dec
		Bay anchovy													Apr-Sep	Apr-Sep	Apr-Oct	Jan-Dec	Jan-Dec
		Ladyfish													-	-	-	Apr-Oct	Sep-Oct
		Red drum													-	-	-	Jan-Dec	Jan-Dec
		Southern flounder													-	-	Dec-Mar	Jan-Dec	Jan-Dec
		Striped mullet													-	-	-	Dec-Sep	-
		Summer flounder													-	-	Oct-May	Jan-Dec	-
	Estuarine Resident	White perch													Mar-Jun	Mar-Jun	May-Aug	Jun-Oct	-
		Inland silverside													Mar-Aug	Mar-Aug	Jun-Sep	-	-
	Freshwater	Black crappie													Mar-May	Mar-May	Mar-May	Jan-Dec	Jan-Dec
		Bluegill													Apr-Oct	Apr-Oct	-	Jan-Dec	Jan-Dec
		Largemouth bass													May-Jun	May-Jun	May-Jun	-	Jan-Dec
		Yellow perch													Jan-Mar	Jan-Mar	Jan-Mar	Apr-Dec	Apr-Dec
	Marine Pelagic	Atlantic needlefish													May-Jul	May-Jul	Jun-Aug	Jun-Oct	-

INVERTEBRATES

		Monthly Presence																	
		J	F	M	A	M	J	J	A	S	O	N	D	Spawn	Eggs	Larvae	Juveniles	Adults	
	Subelement Crab													-	-	-	Jan-Dec	Jan-Dec	
	Shrimp													-	-	Feb-Apr	Mar-Aug	-	

MARINE MAMMALS

Subelement	Species	Monthly Presence												Mating	Calving	Pupping	Molt
		J	F	M	A	M	J	J	A	S	O	N	D	Sep-Oct	Sep-Oct	-	-
 Dolphin	Bottlenose dolphin															-	-

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>
10B	Freshwater Marshes	89.55	0.14
10C	Swamps	5,877.86	9.18
10D	Scrub and Shrub Wetlands	185.12	0.29



ESI SHORELINE HABITAT TYPES

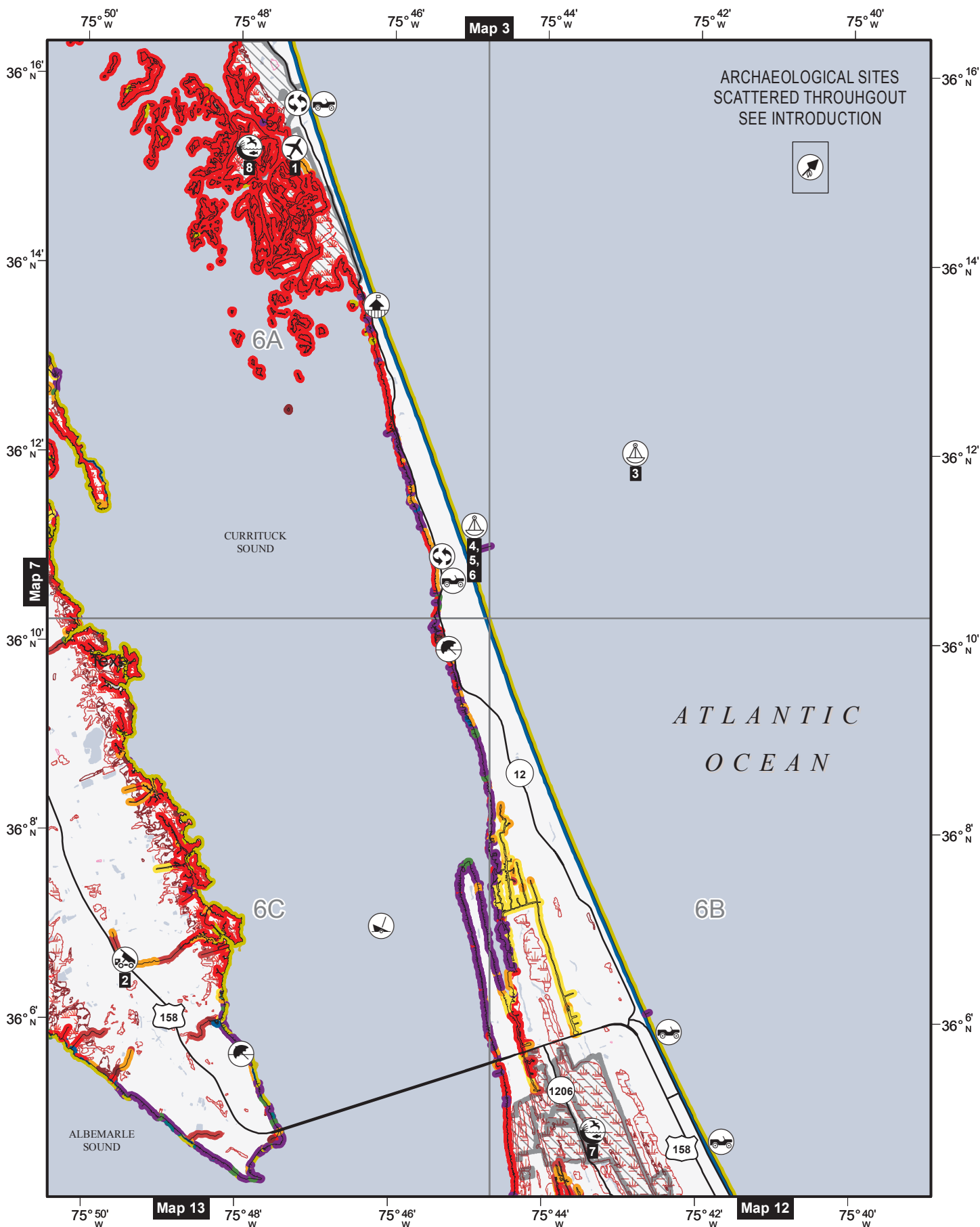
<i>ESI Rank</i>	<i>Shoreline Habitat Classification</i>	<i>Length (Meters)</i>	<i>Length (Miles)</i>	<i>% of ESI Shoreline</i>
10A	Salt- and brackish-water marshes	280.72	0.17	< 1%
10B	Freshwater marshes	1,656.98	1.03	2%
10C	Swamps	87,622.43	54.45	79%
10D	Scrub-shrub wetlands	836.83	0.52	1%
9B	Sheltered, vegetated low banks	8,578.61	5.33	8%
8B	Sheltered, solid man-made structures	5,271.94	3.28	5%
8C	Sheltered riprap	581.21	0.36	1%
6B	Exposed riprap	475.67	0.30	< 1%
3A	Fine- to medium-grained sand beaches	11.71	0.01	< 1%
3B	Scarps and steep slopes in sand	245.15	0.15	< 1%
1B	Exposed, solid man-made structures	4,721.68	2.93	4%

Total ESI Shoreline: 110,282.92 Total ESI Shoreline: 68.53
 Total Shoreline: 109,867.25 Total Shoreline: 68.27

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 6
North Carolina

Map 6
North Carolina

HUMAN USE RESOURCES

DISPLAYED ON MAP (POINTS)				
Map ID	Type	Name	Contact	Phone
1	AIRPORT	PINE ISLAND	FLIGHTGUEST INC., MANAGER	919-840-4444
2	LANDFILL	BAY DISPOSAL INC. TRANSFER/RECOVERY FACILITY	ED HOLMES	252-256-2732
3	REPEATED MEASUREMENT SITE	44056, WAVERIDER BUOY	AC	
4	REPEATED MEASUREMENT SITE	DUCN7, C-MAN STATION	NDBC	
5	REPEATED MEASUREMENT SITE	DUKN7, WATER LEVEL OBSERVATION NETWORK	NOS	
6	REPEATED MEASUREMENT SITE	DUCK, NC	CO-OPS WATER LEVEL AND METEOROLOGICAL STN.	

DISPLAYED ON MAP (POLYGONS)				
Map ID	Type	Name	Contact	Phone
7	MANAGEMENT AREA	KITTY HAWK WOODS COASTAL RESERVE	NC DEQ, DIVISION OF COASTAL MANAGEMENT	252-261-8891
8	MANAGEMENT AREA	PINE ISLAND AUDUBON SANCTUARY	NATIONAL AUDUBON SOCIETY	252-453-0603

ALSO PRESENT IN MAPPED AREA (POLYGONS)			
Type	Name	Contact	Phone
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT; COASTAL MIG. PELAGICS	DAVID DALE; SOUTHEAST REGION	727-824-5317
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT; SHRIMP	DAVID DALE; SOUTHEAST REGION	727-824-5317
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT; SNAPPER GROUPER	DAVID DALE; SOUTHEAST REGION	727-824-5317
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT; SPINY LOBSTER	DAVID DALE; SOUTHEAST REGION	727-824-5317
ESSENTIAL HABITAT	HAPC; SHRIMP	DAVID DALE; SOUTHEAST REGION	727-824-5317
ESSENTIAL HABITAT	HAPC; SNAPPER GROUPER	DAVID DALE; SOUTHEAST REGION	727-824-5317
STATE PROTECTED AREA	GAME LAND	NC WILDLIFE RESOURCES COMMISSION	

JURISDICTIONS

COUNTY:	CURRITUCK, DARE	FEMA:	REGION 1
COAST GUARD:	DISTRICT 5, SECTOR NORTH CAROLINA	EPA:	REGION 4
USACE:	SOUTH ATLANTIC DIVISION, WILMINGTON DISTRICT		

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	2,236.35	3.49
10B	Freshwater Marshes	19.89	0.03
10C	Swamps	1,776.11	2.78
10D	Scrub and Shrub Wetlands	368.45	0.58
9A	Sheltered Tidal Flats	14.45	0.02
7	Exposed Tidal Flats	298.93	0.47

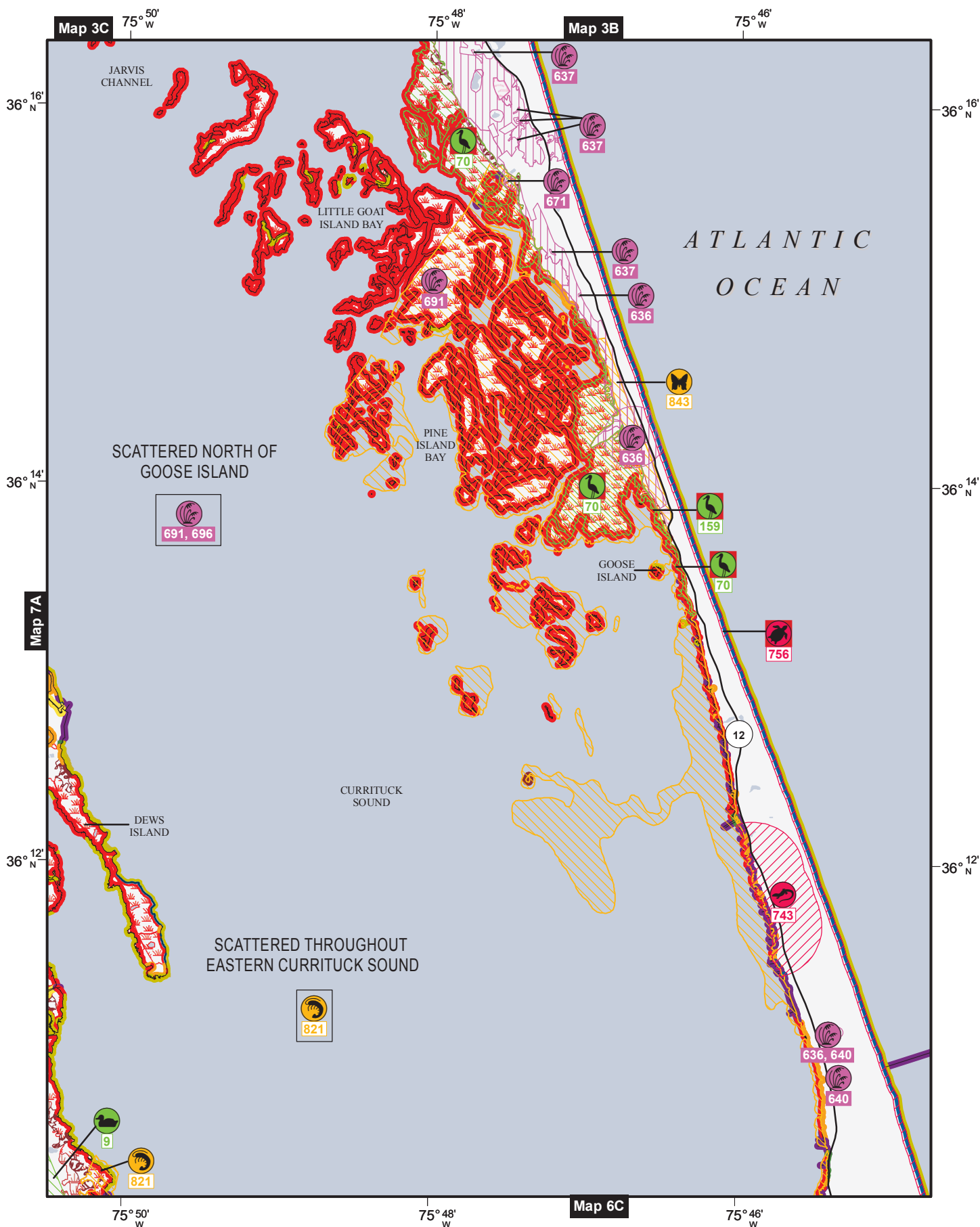
ESI SHORELINE HABITAT TYPES

<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	226,850.64	140.96	51%
10C	Swamps	7,986.38	4.96	2%
10D	Scrub-shrub wetlands	3,708.31	2.30	1%
9A	Sheltered tidal flats	11,387.94	7.08	3%
9B	Sheltered, vegetated low banks	17,733.14	11.02	4%
8B	Sheltered, solid man-made structures	20,814.08	12.93	5%
8C	Sheltered riprap	222.63	0.14	< 1%
7	Exposed tidal flats	83,032.03	51.59	19%
6B	Exposed riprap	4,137.37	2.57	1%
3A	Fine- to medium-grained sand beaches	28,200.61	17.52	6%
3B	Scarps and steep slopes in sand	189.94	0.12	< 1%
1B	Exposed, solid man-made structures	37,761.41	23.46	9%
Total ESI Shoreline:		442,024.48	274.66	
Total Shoreline:		329,281.56	204.61	

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

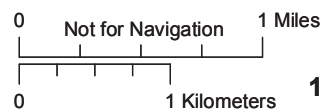




Map 6A
North Carolina



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 6A
North Carolina

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	S	F	Concentration	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Juveniles	Molt
							J	F	M	A	M	J	J	A	S	O	N	D					
9	Waterfowl	American black duck	Wintering			-													-	Feb-Mar	Oct-Nov	-	-
	Waterfowl	Blue-winged teal	Wintering			-													-	Feb-Mar	Oct-Nov	-	-
	Waterfowl	Bufflehead	Wintering			-													-	Feb-Mar	Oct-Nov	-	-
	Waterfowl	Canada goose	Wintering			2000													-	Feb-Mar	Oct-Nov	-	-
	Waterfowl	Canvasback	Wintering			-													-	Feb-Mar	Oct-Nov	-	-
	Waterfowl	Gadwall	Wintering			-													-	Feb-Mar	Oct-Nov	-	-
	Waterfowl	Greater scaup	Wintering			-													-	Feb-Mar	Oct-Nov	-	-
	Waterfowl	Green-winged teal	Wintering			-													-	Feb-Mar	Oct-Nov	-	-
	Waterfowl	Lesser scaup	Wintering			-													-	Feb-Mar	Oct-Nov	-	-
	Waterfowl	Mallard	Wintering			-													-	Feb-Mar	Oct-Nov	-	-
	Waterfowl	Northern pintail	Wintering			-													-	Feb-Mar	Oct-Nov	-	-
	Waterfowl	Northern shoveler	Wintering			-													-	Feb-Mar	Oct-Nov	-	-
	Waterfowl	Redhead	Wintering			-													-	Feb-Mar	Oct-Nov	-	-
	Waterfowl	Ring-necked duck	Wintering			-													-	Feb-Mar	Oct-Nov	-	-
	Waterfowl	Wood duck	Wintering			-													-	Feb-Mar	Oct-Nov	-	-
70	Wading	Black rail	Nesting	C		-												May-Aug	-	-	-	-	-
159	Wading	Least bittern	Vulnerable Occurrence	C		-													-	-	-	-	-

HABITATS & RARE PLANTS

Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Nest	Hatch	Internest	Juveniles	Adults
							J	F	M	A	M	J	J	A	S	O	N	D					
636	Plant	Woolly beachheather	Vulnerable Occurrence			Current																	
637	Plant	Virginia pinweed	Vulnerable Occurrence			Current																	
	Plant	Woolly beachheather	Vulnerable Occurrence			Current																	
640	Plant	Virginia pinweed	Vulnerable Occurrence			Current																	
671	Plant	Winged primrose-willow	Vulnerable Occurrence			Current																	
691	Upland	Rare upland community	Vulnerable Occurrence			Current																	
696	Wetland	Rare wetland community	Vulnerable Occurrence			Current																	

REPTILES & AMPHIBIANS

Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Nest	Hatch	Internest	Juveniles	Adults
							J	F	M	A	M	J	J	A	S	O	N	D					
743	Snake	Rainbow snake	Vulnerable Occurrence			-													May-Sep	Aug-Nov	-	Jan-Dec	Jan-Dec
756	Turtle	Green sea turtle	Nesting	T	T	1 Nest													May-Aug	Jun-Sep	-	-	-
	Turtle	K. ridley sea turtle	Nesting	E	E	1 Nest													May-Aug	Jun-Sep	-	-	-
	Turtle	Leatherback sea turtle	Nesting	E	E	1 Nest													May-Aug	Jun-Sep	-	-	-
	Turtle	Loggerhead sea turtle	Nesting	T	T	0.3 Nests/Km													May-Aug	Jun-Sep	-	-	-

INVERTEBRATES

Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Eggs	Larvae	Juveniles	Adults
							J	F	M	A	M	J	J	A	S	O	N	D				
821	Shrimp	White shrimp	Nursery Area			Common													-	Jun-Dec	Jul-Feb	-
843	Insect	Giant swallowtail	Spawning Area			-													May-Sep	May-Mar	Jan-Dec	Jan-Dec
WIDESPREAD IN MAPPED AREA (> 10 SQUARE KILOMETERS)																						





BENTHIC

Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence											
						J	F	M	A	M	J	J	A	S	O	N	D
	SAV	Submerged aquatic veg			Present												


BIRDS

Subelement	Species	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				
Diving	Brown pelican	Wintering			1000S													-	-	-	-
	D. crested cormorant	Wintering			1000S													-	-	-	-
	Red-throated loon	Wintering			1000S													-	-	-	-
	Bonaparte's gull	Wintering			1000S													-	-	-	-
	G. black-backed gull	Wintering			1000S													-	-	-	-
Pelagic	Gulls	Concentration Area			High - Foraging													-	-	-	-
	Herring gull	Wintering			1000S													-	-	-	-
	Ring-billed gull	Wintering			4000S													-	-	-	-
	Terns	Vulnerable Occurrence			Foraging													-	-	-	-
	Northern gannet	Wintering			10000S													-	-	-	-
Waterfowl	American black duck	Wintering			1000S													-	Feb-Mar	Oct-Nov	-
	American coot	Wintering			1000S													-	Feb-Mar	Oct-Nov	-
	Black scoter	Wintering			1000S													-	Feb-Mar	Oct-Nov	-
	Bufflehead	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	Canada goose	Wintering			1000S													-	Feb-Mar	Oct-Nov	-
	Canvasback	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	Gadwall	Wintering			1000S													-	Feb-Mar	Oct-Nov	-
	Green-winged teal	Wintering			1000S													-	Feb-Mar	Oct-Nov	-
	Mallard	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	Red-breasted merganser	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	Redhead	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	Ruddy duck	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	Scaup	Wintering			1000S													-	Feb-Mar	Oct-Nov	-
	Snow goose	Wintering			1000S													-	Feb-Mar	Oct-Nov	-
	Surf scoter	Wintering			1000S													-	Feb-Mar	Oct-Nov	-
	Tundra swan	Wintering			1000S													-	Feb-Mar	Oct-Nov	-


FISH

Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
						J	F	M	A	M	J	J	A	S	O	N	D					
	Diadromous	Migration			Present													-	-	May-Aug	Jul-Mar	-
	Atlantic sturgeon	General Distribution	C		-													-	-	-	-	Oct-Mar
	Atlantic sturgeon	General Distribution	C		-													-	-	-	Jan-Dec	Jan-Dec
	Blueback herring	Migration			Present													-	-	May-Jul	Aug-Oct	-
	Bluefish	Spawning Area			Abundant													Jun-Aug	Jun-Aug	Jul-Sep	Jan-Dec	Jan-Dec
	Southern flounder	Spawning Area			Highly Abundant													Nov-Jan	Nov-Feb	Nov-Apr	-	Jan-Dec
	Summer flounder	Concentration Area			Highly Abundant													-	-	Oct-May	Jan-Dec	May-Oct
	Hammerhead shark	Migration		T	-													-	-	-	-	Sep-Dec
	Cobia	Spawning Area			-													May-Jul	-	-	-	-
	Greater amberjack	Spawning Area			Common													Mar-Jul	-	-	-	-


REPTILES & AMPHIBIANS

Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Nest	Hatch	Internest	Juveniles	Adults
						J	F	M	A	M	J	J	A	S	O	N	D					
	Green sea turtle	General Distribution	T	T	Rare In Winter													-	-	-	Jan-Dec	Jan-Dec
	Hawksbill sea turtle	General Distribution	E	E	Rare In Winter													-	-	-	Jan-Dec	Jan-Dec
	K. ridley sea turtle	General Distribution	E	E	Rare In Winter													-	-	-	Jan-Dec	Jan-Dec
	K. ridley sea turtle	Vulnerable Occurrence	E	E	Interesting - Rare													-	-	Apr-Sep	Jun-Sep	Apr-Sep
	Leatherback sea turtle	General Distribution	E	E	-													-	-	-	Jan-Dec	Jan-Dec
	Loggerhead sea turtle	General Distribution	T	T	Rare In Winter													-	-	-	Jan-Dec	Jan-Dec
	Loggerhead sea turtle	Vulnerable Occurrence	T	T	Interesting													-	-	Apr-Sep	Jun-Sep	Apr-Sep

INVERTEBRATES

Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
						J	F	M	A	M	J	J	A	S	O	N	D					
	Brown shrimp	Nursery Area			Abundant													-	-	Feb-Apr	Mar-Aug	-
	Brown shrimp	Spawning Area			Common													Oct-Nov	-	-	-	-
	Pink shrimp	Spawning Area			-													Apr-Jul	Apr-Jul	May-Nov	-	-
	White shrimp	Spawning Area			Abundant													Mar-Nov	Mar-Nov	Jun-Dec	-	-

MARINE MAMMALS

Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Mating	Calving	Pupping	Molt
						J	F	M	A	M	J	J	A	S	O	N	D				
	Manatee	General Distribution	E	E	-													-	-	-	-
	Humpback whale	General Distribution	E	E	Low													-	-	-	-
	N.A. right whale	Migration	E	E	Low													-	-	-	-

ALSO PRESENT IN MAPPED AREA (GENERAL DISTRIBUTION)

BENTHIC

Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence											
						J	F	M	A	M	J	J	A	S	O	N	D
	SAV																
	Submerged aquatic veg																



BIRDS

Monthly Presence

Subelement	Species	J	F	M	A	M	J	J	A	S	O	N	D	Nest	Eggs	Larvae	Juveniles	Adults
	American black duck													Apr-May	-	-	Jan-Dec	Dec-Sep
	Wood duck													Mar-Jun	-	-	Jan-Dec	Dec-Sep

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	Dec-Sep
	American eel													-	-	Jan-Dec	Jan-Dec	Sep-Dec
	American eel													-	-	Jan-Dec	-	Sep-Dec
	American shad													-	-	-	Jan-Dec	Dec-Sep
	American shad													-	-	Mar-Jul	May-Nov	-
	Blueback herring													-	-	-	Jan-Dec	Dec-Sep
	Gizzard shad													-	-	-	Oct-Mar	-
	Hickory shad													-	-	-	Jan-Dec	Jan-Aug*
	Hickory shad													-	-	-	-	Jan-Apr
	Striped bass													-	-	-	-	Jan-Dec
	Striped bass													Apr-Jun	Apr-Jun	Apr-Jun	Jan-Dec	Jan-Dec
	Atlantic croaker													-	-	Sep-Mar	Jan-Dec	Jan-Dec
	Atlantic croaker													Sep-Mar	Sep-Mar	Sep-Mar	-	Jan-Dec
	Atlantic croaker													-	-	-	-	May-Oct
	Atlantic cutlassfish													-	-	-	-	Jan-Dec
	Atlantic menhaden													-	-	-	-	Jan-Dec
	Atlantic menhaden													-	-	-	-	Sep-May
	Bay anchovy													Apr-Nov	Apr-Nov	Jun-Nov	Jun-Nov	-
	Bay anchovy													Apr-Nov	Apr-Nov	Apr-Nov	Apr-Nov	Apr-Nov
	Black drum													-	-	-	Dec-Mar	Jan-Dec
	Black sea bass													-	-	May-Nov	Dec-Apr	Dec-Apr
	Bluefish													-	-	-	May-Nov	-
	Hogchoker													-	-	-	-	May-Oct
	Ladyfish													-	-	-	-	-
	Northern kingfish													-	-	-	Mar-Dec*	Sep-Dec
	Northern puffer													Apr-Nov	Apr-Nov	-	-	Mar-Dec
	Pinfish													Oct-Mar	Oct-Mar	-	Oct-May	Mar-Dec
	Red drum													-	-	-	Jan-Dec	Jan-Dec
	Red drum													Aug-Oct	Aug-Oct	Aug-Oct	-	Nov-Jul
	Scup													-	-	-	Nov-Apr	Jan-Dec
	Sheepshead													-	-	-	-	May-Dec
	Southern flounder													-	-	Dec-Mar	Jan-Dec	Jan-Dec
	Southern kingfish													Apr-Oct	Apr-Oct	-	-	Mar-Dec
	Spot													-	-	-	Mar-Jun	Mar-Dec
	Spot													-	-	Jan-Mar	Jan-Dec	May-Oct
	Spotted seatrout													-	-	-	Nov-Apr	Jan-Dec
	Spotted seatrout													May-Aug	May-Aug	Jun-Aug	Jun-Oct	-
	Striped mullet													-	-	-	Jan-Dec	-
	Striped mullet													-	-	-	Mar-Oct*	Mar-Oct*


FISH (continued)

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	Summer flounder													Oct-Mar	Oct-Apr	Oct-May	Sep-Mar	Jan-Dec
	Tarpon													-	-	-	-	Jul-Aug
	Weakfish													Mar-Oct	Mar-Oct	-	Jan-Dec	Jan-Dec
	Weakfish													-	-	-	Mar-Dec	Jan-Dec
	White mullet													-	-	Mar-Jul	Sep-Jan	-
	White mullet													-	-	-	Jan-Dec	Jan-Dec
	White perch													Mar-Jun	Mar-Jun	May-Aug	Jan-Dec	Jul-Feb
	Windowpane													Mar-Nov	Mar-Nov	Mar-Nov	Jan-Dec	Dec-Feb
	Inland silverside													-	-	-	-	-
	Inland silverside													Mar-Aug	Mar-Aug	Jun-Sep	-	-
	Silver perch													Apr-Aug	Apr-Aug	-	Mar-Jun	Mar-Dec
	Triggerfish													-	-	-	-	May-Oct
	Bluegill													Apr-Oct	Apr-Oct	-	Jan-Dec	Jan-Dec
	Bowfin													Mar-Jun	Mar-Jun	-	Jan-Dec	Jan-Dec
	Largemouth bass													May-Jun	May-Jun	May-Jun	-	Jan-Dec
	Yellow perch													-	-	-	Apr-Dec	Apr-Dec
	Atlantic spadefish													May-Oct	May-Oct	May-Oct	Sep-Dec	May-Dec
	Florida pompano													-	-	Jun-Aug	-	May-Dec
	Goosefish													Mar-Jun	Mar-Jun	Mar-Jun	-	Jan-Dec
	Little tunny													-	-	-	-	May-Feb
	Spotted hake													Feb-Apr	Feb-Apr	Mar-May	Jan-Dec	Jan-Dec
	Tautog													May-Aug	May-Aug	Jun-Aug	-	Sep-Apr
	Atlantic bonito													-	-	-	-	May-Oct
	Atlantic needlefish													-	-	-	Nov-May*	Mar-Oct
	Atlantic needlefish													May-Jul	May-Jul	Jun-Aug	Jun-Oct	-
	Bluefin tuna													-	-	-	-	Jan-Dec
	Butterfish													May-Jul	May-Jul	Jun-Aug	Jan-Dec	Jan-Dec
	Cobia													-	-	-	-	May-Oct
	Dolphinfish													Jan-Dec	-	-	-	Jan-Dec
	Greater amberjack													-	-	-	-	Jan-Dec
	Harvestfish													-	-	-	-	Jan-Dec
	King mackerel													-	-	-	-	Jan-Dec
	Sharks													-	-	-	-	Jan-Dec
	Spanish mackerel													May-Sep	May-Sep	-	-	May-Oct
	Thresher shark													-	-	-	-	Jun-Feb

INVERTEBRATES

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
Crab	Blue crab													-	-	-	Jan-Dec	Jan-Dec
	Blue crab													-	Apr-Sep	May-Oct	-	Oct-Mar
Shrimp	Brown shrimp													-	-	Feb-Apr	Mar-Aug	-
	White shrimp													-	-	Jun-Dec	Dec-Feb	-

MARINE MAMMALS

Subelement	Species	Monthly Presence												Calving	Pupping	Molt
		J	F	M	A	M	J	J	A	S	O	N	D			
	Bottlenose dolphin													Apr-Oct*	-	-
	Bottlenose dolphin													Sep-Oct	-	-
	Harbor porpoise													-	-	-

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	1,353.36	2.11
10B	Freshwater Marshes	6.91	0.01
10C	Swamps	13.30	0.02
10D	Scrub and Shrub Wetlands	41.27	0.06
9A	Sheltered Tidal Flats	1.61	0.00
7	Exposed Tidal Flats	92.12	0.14

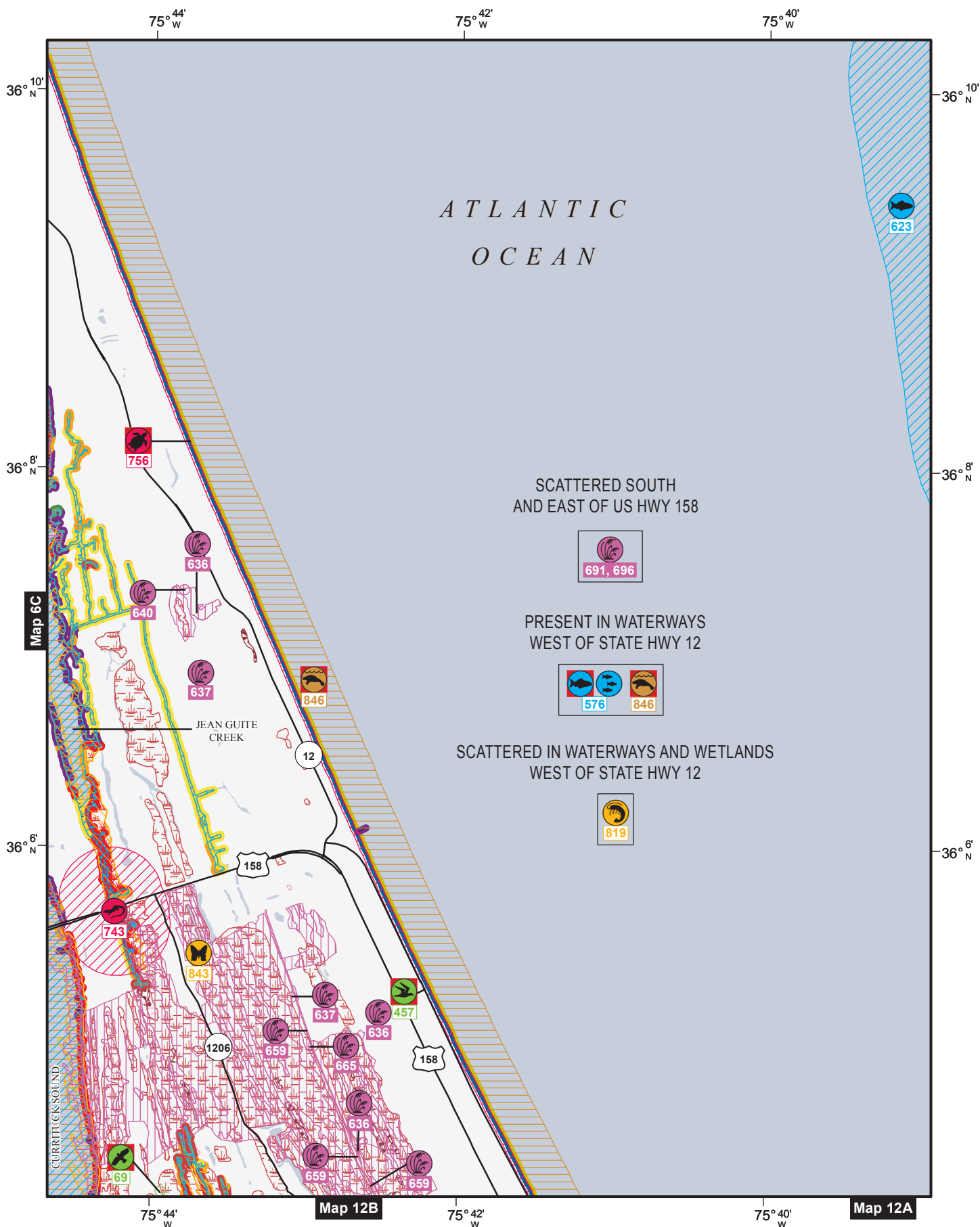
ESI SHORELINE HABITAT TYPES

ESI Rank	Shoreline Habitat Classification	Length (Meters)	Length (Miles)	% of ESI Shoreline
10A	Salt- and brackish-water marshes	155,771.41	96.79	74%
10D	Scrub-shrub wetlands	528.79	0.33	< 1%
9A	Sheltered tidal flats	583.76	0.36	< 1%
9B	Sheltered, vegetated low banks	4,748.93	2.95	2%
8B	Sheltered, solid man-made structures	528.07	0.33	< 1%
7	Exposed tidal flats	29,518.28	18.34	14%
6B	Exposed riprap	354.33	0.22	< 1%
3A	Fine- to medium-grained sand beaches	13,288.29	8.26	6%
3B	Scarps and steep slopes in sand	11.09	0.01	< 1%
1B	Exposed, solid man-made structures	6,207.48	3.86	3%
Total ESI Shoreline:		211,540.43	Total ESI Shoreline:	131.45
		175,927.17	Total Shoreline:	109.32

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 6B
North Carolina

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
SAV	Submerged aquatic veg	High Ecological Value			Present	J F M A M J J A S O N D

BIRDS

Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	Nest	Mig.(S)	Mig.(F)	Juveniles	Adults
69	Raptor	Bald eagle	Nesting	T		1 Pair	Jan-Jun	-	-	-	-
457	Gull/Tern	Least tern	Nesting	C	E	43 Pairs	May-Aug	-	-	-	-

FISH

Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	Spawn	Eggs	Larvae	Juveniles	Adults
576	Diadromous	Alewife	Migration			Present	-	-	May-Aug	Jul-Mar	-
	Diadromous	Atlantic sturgeon	General Distribution	C		-	-	-	-	Jan-Dec	Jan-Dec
	Diadromous	Blueback herring	Migration			Present	-	-	May-Jul	Aug-Oct	-
	Estuarine Nursery	Summer flounder	Concentration Area			Highly Abundant	-	-	Oct-May	Jan-Dec	May-Oct
623	Marine Benthic	Little tunny	Spawning Area			-	Apr-Nov	-	-	-	-

HABITATS & RARE PLANTS

Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence
636	Plant	Woolly beachheather	Vulnerable Occurrence			Current	J F M A M J J A S O N D
637	Plant	Virginia pinweed	Vulnerable Occurrence			Current	
	Plant	Woolly beachheather	Vulnerable Occurrence			Current	
640	Plant	Virginia pinweed	Vulnerable Occurrence			Current	
659	Plant	Hairy-seed goldenrod	Vulnerable Occurrence			Current	
665	Plant	Chapman's tridens	Vulnerable Occurrence			Current	
691	Upland	Rare upland community	Vulnerable Occurrence			Current	
696	Wetland	Rare wetland community	Vulnerable Occurrence			Current	

REPTILES & AMPHIBIANS

Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	Nest	Hatch	Internest	Juveniles	Adults
743	Snake	Rainbow snake	Vulnerable Occurrence			-	May-Sep	Aug-Nov	-	Jan-Dec	Jan-Dec
756	Turtle	Green sea turtle	Nesting	T	T	1 Nest	May-Aug	Jun-Sep	-	-	-
	Turtle	K. ridley sea turtle	Nesting	E	E	1 Nest	May-Aug	Jun-Sep	-	-	-
	Turtle	Leatherback sea turtle	Nesting	E	E	1 Nest	May-Aug	Jun-Sep	-	-	-
	Turtle	Loggerhead sea turtle	Nesting	T	T	0.3 Nests/km	May-Aug	Jun-Sep	-	-	-

INVERTEBRATES





Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Eggs	Larvae	Juveniles	Adults
							J	F	M	A	M	J	J	A	S	O	N	D				
819	Shrimp	Brown shrimp	Nursery Area			Abundant													-	Feb-Apr	Mar-Aug	-
	Shrimp	White shrimp	Nursery Area			Common													-	Jun-Dec	Jul-Feb	-
843	Insect	Giant swallowtail	Spawning Area			-													May-Sep	May-Mar	Jan-Dec	Jan-Dec

MARINE MAMMALS




Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Mating	Calving	Pupping	Molt
							J	F	M	A	M	J	J	A	S	O	N	D				
846	Manatee	West Indian manatee	General Distribution			-													-	-	-	-

WIDESPREAD IN MAPPED AREA (> 10 SQUARE KILOMETERS)


BIRDS

Subelement	Species	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				
	Brown pelican	Wintering			1000S													-	-	-	
	D. crested cormorant	Wintering			10000S													-	-	-	
	Red-throated loon	Wintering			1000S													-	-	-	
	Bonaparte's gull	Wintering			1000S													-	-	-	
	G. black-backed gull	Wintering			1000S													-	-	-	
	Gulls	Concentration Area			High - Foraging													-	-	-	
	Herring gull	Wintering			1000S													-	-	-	
	Ring-billed gull	Wintering			4000S													-	-	-	
	Terns	Vulnerable Occurrence			Foraging													-	-	-	
	Northern gannet	Wintering			10000S													-	-	-	
	American black duck	Wintering			1000S													-	-	-	
	American coot	Wintering			1000S													-	-	-	
	Black scoter	Wintering			1000S													-	-	-	
	Bufflehead	Wintering			100S													-	-	-	
	Canada goose	Wintering			1000S													-	-	-	
	Canvasback	Wintering			100S													-	-	-	
	Gadwall	Wintering			1000S													-	-	-	
	Green-winged teal	Wintering			1000S													-	-	-	
	Mallard	Wintering			100S													-	-	-	
	Red-breasted merganser	Wintering			100S													-	-	-	
	Redhead	Wintering			100S													-	-	-	
	Ruddy duck	Wintering			100S													-	-	-	
Scaup	Wintering			1000S													-	-	-		
Snow goose	Wintering			1000S													-	-	-		
Surf scoter	Wintering			1000S													-	-	-		
Tundra swan	Wintering			1000S													-	-	-		


FISH

Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Eggs	Larvae	Juveniles	Adults
						J	F	M	A	M	J	J	A	S	O	N	D				
	Diadromous	Atlantic sturgeon	C		-													-	-	-	Oct-Mar
	Estuarine Nursery	Bluefish			Abundant													Jun-Aug	Jul-Sep	Jan-Dec	Jan-Dec
	Fish	Southern flounder	T		Highly Abundant													Nov-Jan	Nov-Apr	-	Jan-Dec
		Hammerhead shark																-	-	-	Sep-Dec
		Cobia			-													May-Jul	-	-	-
	Marine Pelagic	Spawning Area			Common													Mar-Jul	-	-	-
		Greater amberjack																			


REPTILES & AMPHIBIANS

Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Hatch	Internest	Juveniles	Adults
						J	F	M	A	M	J	J	A	S	O	N	D				
	Turtle	Green sea turtle	T	T	Rare In Winter													-	-	Jan-Dec	Jan-Dec
		Hawksbill sea turtle	E	E	Rare In Winter													-	-	Jan-Dec	Jan-Dec
		K. ridley sea turtle	E	E	Rare In Winter													-	-	Jan-Dec	Jan-Dec
		K. ridley sea turtle	E	E	Interesting - Rare													-	Apr-Sep	Jun-Sep	Apr-Sep
		Leatherback sea turtle	E	E	-													-	-	Jan-Dec	Jan-Dec
		Loggerhead sea turtle	T	T	Rare In Winter													-	-	Jan-Dec	Jan-Dec
		Loggerhead sea turtle	T	T	Interesting													-	Apr-Sep	Jun-Sep	Apr-Sep

INVERTEBRATES


Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Eggs	Larvae	Juveniles	Adults
						J	F	M	A	M	J	J	A	S	O	N	D				
	Shrimp	Brown shrimp			Common													-	-	-	-
		Pink shrimp			-													Apr-Jul	May-Nov	-	-
		White shrimp			Abundant													Mar-Nov	Jun-Dec	-	-

MARINE MAMMALS

Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Calving	Pupping	Molt
						J	F	M	A	M	J	J	A	S	O	N	D			
	Whale	Humpback whale			High													-	-	-
		Humpback whale			Low													-	-	-
		N.A. right whale			Low													-	-	-

ALSO PRESENT IN MAPPED AREA (GENERAL DISTRIBUTION)

BENTHIC



Subelement	Species	Monthly Presence											
		J	F	M	A	M	J	J	A	S	O	N	D
	Submerged aquatic veg												

BIRDS

Subelement	Species	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt
		J	F	M	A	M	J	J	A	S	O	N	D				
	Waterfowl													Apr-May	-	-	-

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	Dec-Sep
	American eel													-	-	Jan-Jun	Jan-Dec	Aug-Dec
	American eel													-	-	Jan-Dec	Jan-Dec	Sep-Dec
	American eel													-	-	Jan-Dec	-	Sep-Dec
	American shad													-	-	-	Jan-Dec	Dec-Sep
	American shad													-	-	Mar-Jul	May-Nov	-
	Blueback herring													-	-	-	Jan-Dec	Dec-Sep
	Gizzard shad													-	-	-	Oct-Mar	-
	Hickory shad													-	-	-	-	Jan-Apr
	Hickory shad													-	-	-	Jan-Dec	Jan-Apr
	Hickory shad													-	-	-	-	Nov-Apr
	Hickory shad													-	-	-	Jan-Dec	Jan-Aug*
	Striped bass													-	-	-	-	Jan-Dec
	Striped bass													Apr-Jun	Apr-Jun	Apr-Jun	Jan-Dec	Jan-Dec
	Atlantic croaker													-	-	Sep-Mar	Jan-Dec	Jan-Dec
	Atlantic croaker													Sep-Mar	Sep-Mar	Sep-Mar	-	Jan-Dec
	Atlantic cutlassfish													-	-	-	-	May-Oct
	Atlantic cutlassfish													-	-	-	-	Jul-Aug
	Atlantic menhaden													-	-	-	-	Jan-Dec
	Atlantic menhaden													-	-	Jan-Jun	Jan-Dec	-
	Atlantic menhaden													-	-	-	-	Sep-May
	Bay anchovy													Apr-Nov	Apr-Nov	Jun-Nov	Jun-Nov	-
	Bay anchovy													Apr-Nov	Apr-Nov	Jun-Nov	Apr-Nov	Apr-Nov
	Bay anchovy													Apr-Sep	Apr-Sep	Apr-Oct	Jan-Dec	Jan-Dec
	Black drum													-	-	-	Dec-Mar	Jan-Dec
	Black drum													-	-	-	Dec-Mar	Sep-Dec
	Black drum													-	-	-	Jan-Dec	Jun-Nov
	Black sea bass													-	-	May-Nov	Dec-Apr	Dec-Apr
	Black sea bass													May-Oct	May-Oct	May-Nov	Jan-Dec	Jan-Dec
	Bluefish													-	-	-	May-Oct	Jun-Oct
	Bluefish													-	-	-	May-Nov	-
	Hogchoker													-	-	-	-	May-Oct
	Hogchoker													-	-	-	Jan-Dec	Jan-Dec
	Ladyfish													-	-	-	Apr-Oct	Sep-Oct
	Ladyfish													-	-	-	-	-
	Northern kingfish													-	-	-	Mar-Dec*	Sep-Dec
	Northern puffer													Apr-Nov	Apr-Nov	-	-	Mar-Dec
	Pinfish													Oct-Mar	Oct-Mar	-	Oct-May	May-Aug
	Pinfish													-	-	Dec-Mar	Jan-Dec	May-Oct
	Pinfish													Oct-Mar	Oct-Mar	-	Oct-May	Mar-Dec
	Red drum													-	-	-	Jan-Dec	Jan-Dec
	Red drum													Aug-Oct	Aug-Oct	Aug-Oct	-	Nov-Jul
	Red drum													Aug-Oct	Aug-Oct	Sep-Apr	Jan-Dec	Jan-Dec
	Red drum													-	-	-	-	Mar-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													-	-	-	Nov-Apr	Jan-Dec
	Sheepshead													-	-	-	-	May-Dec
	Sheepshead													-	-	-	Jun-Sep	Jan-Dec
	Southern flounder													-	-	Dec-Mar	Jan-Dec	Jan-Dec
	Southern kingfish													Apr-Oct	Apr-Oct	-	-	Mar-Dec
	Southern kingfish													-	-	-	May-Dec	Jul-Oct
	Spot													-	-	-	Mar-Jun	May-Oct
	Spot													-	-	-	Mar-Jun	May-Oct
	Spot													-	-	-	Mar-Jun	Mar-Dec
	Spotted seatrout													-	-	Jan-Mar	Jan-Dec	May-Oct
	Spotted seatrout													-	-	-	Jan-Dec	Jan-Dec
	Spotted seatrout													-	-	-	Nov-Apr	Jan-Dec
	Spotted seatrout													-	-	-	Nov-Apr	May-Oct*
	Striped mullet													May-Aug	May-Aug	Jun-Aug	Jun-Oct	-
	Striped mullet													-	-	-	Jan-Dec	Mar-Oct*
	Striped mullet													-	-	-	Jan-Dec	-
	Summer flounder													Oct-Mar	Oct-Apr	Oct-May	Sep-Mar	Jan-Dec
	Tarpon													-	-	-	-	Jul-Aug
	Weakfish													Mar-Oct	Mar-Oct	-	Jan-Dec	Jan-Dec
	Weakfish													Mar-Oct	Mar-Oct	-	Jan-Dec	Mar-Oct
	Weakfish													-	-	-	Mar-Dec	Jan-Dec
	White mullet													-	-	Mar-Jul	Sep-Jan	-
	White mullet													-	-	-	Jan-Dec	Jan-Dec
	White perch													Apr-Jul	Apr-Jul	Apr-Aug	Jan-Dec	Jan-Dec
	White perch													Mar-Jun	Mar-Jun	May-Aug	Jan-Dec	Jul-Feb
	Windowpane													Mar-Nov	Mar-Nov	Mar-Nov	Jan-Dec	Dec-Feb
	Inland silverside													Mar-Aug	Mar-Aug	Jun-Sep	-	-
	Inland silverside													-	-	-	-	-
	Silver perch													Apr-Aug	Apr-Aug	-	Mar-Jun	Mar-Dec
	Triggerfish													-	-	-	-	Jan-Dec
	Triggerfish													-	-	-	-	May-Oct
	Bluegill													Apr-Oct	Apr-Oct	-	Jan-Dec	Jan-Dec
	Bowfin													Mar-Jun	Mar-Jun	-	Jan-Dec	Jan-Dec
	Largemouth bass													May-Jun	May-Jun	May-Jun	-	Jan-Dec
	Longnose gar													Mar-Sep	Mar-Sep	-	Jan-Dec	Jan-Dec
	Yellow perch													-	-	-	Apr-Dec	Apr-Dec
	Atlantic spadefish													-	-	-	Jun-Aug	-
	Atlantic spadefish													May-Oct	May-Oct	May-Oct	-	May-Dec
	Atlantic spadefish													May-Oct	May-Oct	May-Oct	Sep-Dec	May-Dec
	Florida pompano													-	-	Jun-Aug	-	May-Dec
	Goosefish													Mar-Jun	Mar-Jun	Mar-Jun	-	Jan-Dec
	Little tunny													-	-	-	-	May-Feb
	Little tunny													-	-	-	-	Jan-Dec
	Spotted hake													Feb-Apr	Feb-Apr	Mar-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					
	Spotted hake													Aug-Apr*	Aug-Apr*	-	Jan-Jul*	Jan-Jul*
	Tautog													May-Aug	May-Aug	Jun-Aug	-	Sep-Apr
	Atlantic bonito													-	-	-	-	Mar-Dec
	Atlantic bonito													-	-	-	-	May-Oct
	Atlantic needlefish													-	-	-	Nov-May*	Mar-Oct
	Atlantic needlefish													May-Jul	May-Jul	Jun-Aug	Jun-Oct	-
	Bluefin tuna													-	-	-	-	Jan-Dec
	Butterfish													May-Jul	May-Jul	Jun-Aug	Jan-Dec	Jan-Dec
	Cobia													-	-	-	-	May-Oct
	Dolphinfish													Jan-Dec	-	-	-	Jan-Dec
	Greater amberjack													-	-	-	-	May-Oct
	Greater amberjack													-	-	-	-	Jan-Dec
	Harvestfish													-	-	-	-	Jan-Dec
	King mackerel													-	-	-	-	Jan-Dec
	Sailfish													-	-	-	-	May-Oct
	Sharks													-	-	-	-	Jan-Dec
	Spanish mackerel													-	-	-	Jul-Nov	Jul-Oct
	Spanish mackerel													May-Sep	May-Sep	-	-	Mar-Dec
	Spanish mackerel													May-Sep	May-Sep	-	-	May-Oct
	Thresher shark													-	-	-	-	Jun-Feb

INVERTEBRATES

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	Blue crab													-	Apr-Sep	May-Oct	-	Oct-Mar
	Blue crab													-	-	-	Jan-Dec	Jan-Dec
	Brown shrimp													-	-	Feb-Apr	Mar-Aug	-
	Pink shrimp													-	-	May-Nov	Jan-Dec	-
	White shrimp													-	-	Jun-Dec	Dec-Feb	-

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													-	-	-	-
	Bottlenose dolphin													Sep-Oct	Sep-Oct	-	-
	Bottlenose dolphin													Apr-Oct*	Apr-Oct*	-	-
	Harbor porpoise													-	-	-	-
	Short-beaked common dolphin													-	-	-	-
	Fin 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

<i>ESI Rank</i>	<i>Habitat Classification</i>	<i>Area (Acres)</i>	<i>Area (Sq. Miles)</i>
10A	Salt and Brackish Water Marshes	82.47	0.13
10B	Freshwater Marshes	11.01	0.02
10C	Swamps	1,255.00	1.96
10D	Scrub and Shrub Wetlands	25.66	0.04
7	Exposed Tidal Flats	40.37	0.06



ESI SHORELINE HABITAT TYPES

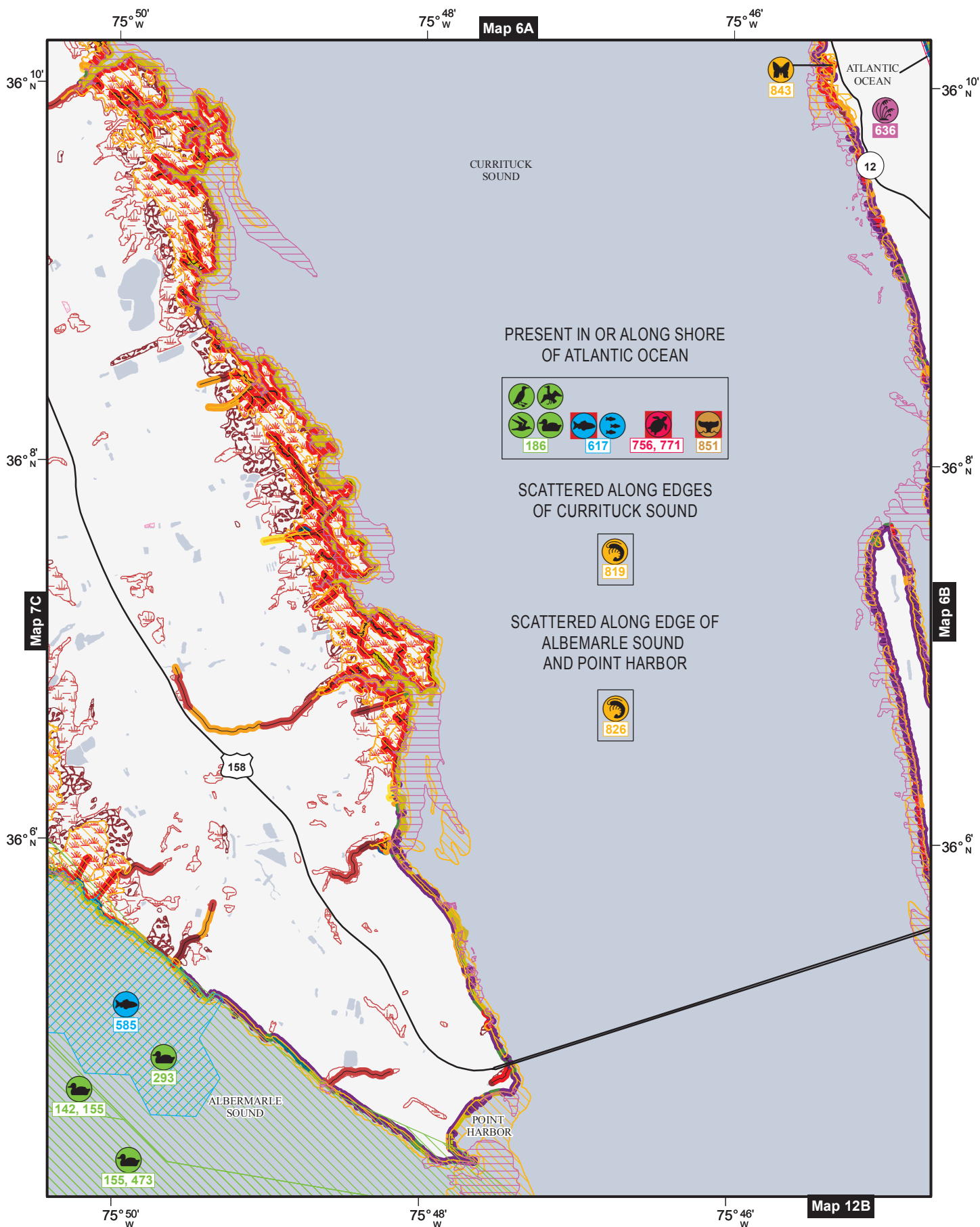
<i>ESI Rank</i>	<i>Shoreline Habitat Classification</i>	<i>Length (Meters)</i>	<i>Length (Miles)</i>	<i>% of ESI Shoreline</i>
10A	Salt- and brackish-water marshes	10,748.35	6.68	15%
10C	Swamps	3,840.51	2.39	5%
9B	Sheltered, vegetated low banks	6,443.54	4.00	9%
8B	Sheltered, solid man-made structures	19,234.93	11.95	26%
8C	Sheltered riprap	69.85	0.04	< 1%
7	Exposed tidal flats	12,267.81	7.62	17%
6B	Exposed riprap	154.75	0.10	< 1%
3A	Fine- to medium-grained sand beaches	12,179.77	7.57	17%
1B	Exposed, solid man-made structures	8,413.50	5.23	11%

Total ESI Shoreline: 73,353.01 Total ESI Shoreline: 45.58
 Total Shoreline: 59,578.28 Total Shoreline: 37.02

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

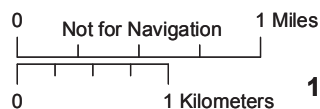




Map 6C
North Carolina



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 6C
North Carolina

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											
SAV	Submerged aquatic veg	High Ecological Value			Present	J	F	M	A	M	J	J	A	S	O	N	D

BIRDS

Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N	D	Nest	Mig.(S)	Mig.(F)	Molt
142	Waterfowl	American wigeon	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Waterfowl	Canada goose	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Waterfowl	Snow goose	Wintering			1500													-	Feb-Mar	Oct-Nov	-
	Waterfowl	Tundra swan	Wintering			5000													-	Feb-Mar	Oct-Nov	-
155	Waterfowl	Black scoter	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Waterfowl	Long-tailed duck	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Waterfowl	Red-breasted merganser	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Waterfowl	Surf scoter	Wintering			-													-	Feb-Mar	Oct-Nov	-
186	Waterfowl	White-winged scoter	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Diving	Brown pelican	Wintering			1000S													-	-	-	-
	Diving	D. crested cormorant	Wintering			10000S													-	-	-	-
	Diving	Red-throated loon	Wintering			1000S													-	-	-	-
	Gull/Tern	Bonaparte's gull	Wintering			1000S													-	-	-	-
	Gull/Tern	G. black-backed gull	Wintering			1000S													-	-	-	-
	Gull/Tern	Gulls	Concentration Area			High - Foraging													-	-	-	-
	Gull/Tern	Herring gull	Wintering			1000S													-	-	-	-
	Gull/Tern	Ring-billed gull	Wintering			4000S													-	-	-	-
	Gull/Tern	Terns	Vulnerable Occurrence			Foraging													-	-	-	-
	Pelagic	Northern gannet	Wintering			10000S													-	-	-	-
	Waterfowl	Black scoter	Wintering			1000S													-	Feb-Mar	Oct-Nov	-
	Waterfowl	Red-breasted merganser	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	Waterfowl	Surf scoter	Wintering			1000S													-	Feb-Mar	Oct-Nov	-
	Waterfowl	American black duck	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	Waterfowl	American coot	Wintering			100S													-	Feb-Mar	Oct-Nov	-
293	Waterfowl	American wigeon	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	Waterfowl	Gadwall	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	Waterfowl	Ruddy duck	Wintering			1000S													-	Feb-Mar	Oct-Nov	-
	Waterfowl	Scaup	Wintering			-													-	Feb-Mar	Oct-Nov	-

FISH

Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Larvae	Juveniles	Adults
							J	F	M	A	M	J	J	A	S	O	N	D			
585	Diadromous	Striped bass	Nursery Area			Medium													Apr-Jun	Apr-Jun	Jan-Dec
617	Diadromous	Atlantic sturgeon	General Distribution	C		-													-	-	Oct-Mar
	Estuarine Nursery	Bluefish	Spawning Area			Abundant													Jul-Sep	Jan-Dec	Jan-Dec
	Estuarine Nursery	Southern flounder	Spawning Area			Highly Abundant													Nov-Feb	-	Jan-Dec
	Fish	Hammerhead shark	Migration		T	-													-	-	Sep-Dec
	Marine Pelagic	Cobia	Spawning Area			-													May-Jul	-	-
	Marine Pelagic	Greater amberjack	Spawning Area			Common													Mar-Jul	-	-

HABITATS & RARE PLANTS

Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Larvae	Juveniles	Adults
							J	F	M	A	M	J	J	A	S	O	N	D			
636	Plant	Woolly beachheather	Vulnerable Occurrence			Current															

REPTILES & AMPHIBIANS

Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Hatch	Internest	Juveniles	Adults
							J	F	M	A	M	J	J	A	S	O	N	D				
756	Turtle	Green sea turtle	Nesting	T	T	1 Nest													May-Aug	Jun-Sep	-	-
	Turtle	K. ridley sea turtle	Nesting	E	E	1 Nest													May-Aug	Jun-Sep	-	-
	Turtle	Leatherback sea turtle	Nesting	E	E	1 Nest													May-Aug	Jun-Sep	-	-
	Turtle	Loggerhead sea turtle	Nesting	T	T	0.3 Nests/Km													May-Aug	Jun-Sep	-	-
771	Turtle	Green sea turtle	General Distribution	T	T	Rare In Winter													-	-	Jan-Dec	Jan-Dec
	Turtle	Hawksbill sea turtle	General Distribution	E	E	Rare In Winter													-	-	Jan-Dec	Jan-Dec
	Turtle	K. ridley sea turtle	General Distribution	E	E	Rare In Winter													-	-	Jan-Dec	Jan-Dec
	Turtle	K. ridley sea turtle	Vulnerable Occurrence	E	E	Interneesting - Rare													-	Apr-Sep	Jun-Sep	Apr-Sep
	Turtle	Leatherback sea turtle	General Distribution	E	E	-													-	-	Jan-Dec	Jan-Dec
	Turtle	Loggerhead sea turtle	General Distribution	T	T	Rare In Winter													-	-	Jan-Dec	Jan-Dec
	Turtle	Loggerhead sea turtle	Vulnerable Occurrence	T	T	Interneesting													-	Apr-Sep	Jun-Sep	Apr-Sep


INVERTEBRATES

Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Eggs	Larvae	Juveniles	Adults
							J	F	M	A	M	J	J	A	S	O	N	D				
816	Shrimp	Brown shrimp	Spawning Area			Common													Oct-Nov	-	-	-
	Shrimp	Pink shrimp	Spawning Area			-													Apr-Jul	May-Nov	-	-
	Shrimp	White shrimp	Spawning Area			Abundant													Mar-Nov	Jun-Dec	-	-
819	Shrimp	Brown shrimp	Nursery Area			Abundant													-	Feb-Apr	Mar-Aug	-
	Shrimp	White shrimp	Nursery Area			Common													-	Jun-Dec	Jul-Feb	-
826	Shrimp	Brown shrimp	Nursery Area			-													-	Feb-Apr	Mar-Aug	-
843	Insect	Giant swallowtail	Spawning Area			-													May-Sep	May-Mar	Jan-Dec	Jan-Dec



MARINE MAMMALS

Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Calving	Pupping	Molt																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
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851	Whale	Humpback whale	General Distribution	E	E	Low																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							</

BIRDS

Subelement	Species	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				
	American black duck	Wintering			1000S													-	Feb-Mar	Oct-Nov	-
	American black duck	Wintering			-													-	Feb-Mar	Oct-Nov	-
	American coot	Wintering			1000S													-	Feb-Mar	Oct-Nov	-
	Blue-winged teal	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Bufflehead	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Bufflehead	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	Canada goose	Wintering			2000													-	Feb-Mar	Oct-Nov	-
	Canada goose	Wintering			1000S													-	Feb-Mar	Oct-Nov	-
	Canvasback	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	Canvasback	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Gadwall	Wintering			1000S													-	Feb-Mar	Oct-Nov	-
	Gadwall	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Greater scaup	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Green-winged teal	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Green-winged teal	Wintering			1000S													-	Feb-Mar	Oct-Nov	-
	Lesser scaup	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Mallard	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Mallard	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	Northern pintail	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Northern shoveler	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Redhead	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	Redhead	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Ring-necked duck	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Ruddy duck	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	Scaup	Wintering			1000S													-	Feb-Mar	Oct-Nov	-
	Snow goose	Wintering			1000S													-	Feb-Mar	Oct-Nov	-
	Tundra swan	Wintering			1000S													-	Feb-Mar	Oct-Nov	-
	Wood duck	Wintering			-													-	Feb-Mar	Oct-Nov	-

FISH

Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
						J	F	M	A	M	J	J	A	S	O	N	D					
	Alewife	Migration			Present													-	-	May-Aug	Jul-Mar	-
	Atlantic sturgeon	General Distribution		C	-													-	-	-	Jan-Dec	Jan-Dec
	Blueback herring	Migration			Present													-	-	May-Jul	Aug-Oct	-
	Summer flounder	Concentration Area			Highly Abundant													-	-	Oct-May	Jan-Dec	May-Oct

MARINE MAMMALS

Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Mating	Calving	Pupping	Molt
						J	F	M	A	M	J	J	A	S	O	N	D				
	West Indian manatee	General Distribution		E	-													-	-	-	-

BENTHIC

Subelement
SAV

Species
Submerged aquatic veg



BIRDS

Subelement
Waterfowl




Species
American black duck
Wood duck




FISH

Subelement	Species	J	F	M	A	M	J	J	A	S	O	N	D	Spawn	Eggs	Larvae	Juveniles	Adults
Estuarine Nursery	Alewife													-	-	-	Jan-Dec	Dec-Sep
	American eel													-	-	Jan-Jun	Jan-Dec	Aug-Dec
	American eel													-	-	Jan-Dec	-	Sep-Dec
	American eel													-	-	Jan-Dec	Jan-Dec	Sep-Dec
	American shad													-	-	-	Jan-Dec	Dec-Sep
	American shad													-	-	Mar-Jul	May-Nov	-
	Blueback herring													-	-	-	Jan-Dec	Dec-Sep
	Gizzard shad													-	-	-	Oct-Mar	-
	Hickory shad													-	-	-	-	Nov-Apr
	Hickory shad													-	-	-	-	Jan-Apr
	Hickory shad													-	-	-	Jan-Dec	Jan-Aug*
	Striped bass													-	-	-	-	Jan-Dec
	Striped bass													Apr-Jun	Apr-Jun	Apr-Jun	Jan-Dec	Jan-Dec
	Atlantic croaker													-	-	Sep-Mar	Jan-Dec	Jan-Dec
	Atlantic croaker													Sep-Mar	Sep-Mar	Sep-Mar	-	Jan-Dec
	Atlantic cutlassfish													-	-	-	-	May-Oct
	Atlantic menhaden													-	-	-	-	Jan-Dec
	Atlantic menhaden													-	-	Jan-Jun	Jan-Dec	-
	Bay anchovy													Apr-Sep	Apr-Sep	Apr-Oct	Jan-Dec	Sep-May
	Bay anchovy													Apr-Nov	Apr-Nov	Jun-Nov	Jan-Dec	Jan-Dec
	Bay anchovy													Apr-Nov	Apr-Nov	Jun-Nov	Apr-Nov	-
	Black drum													-	-	-	Jan-Dec	Jun-Nov
	Black drum													-	-	-	Dec-Mar	Jan-Dec
	Black sea bass													-	-	May-Nov	Dec-Apr	Dec-Apr
	Bluefish													-	-	-	May-Nov	-
	Bluefish													-	-	-	May-Oct	Jun-Oct
	Hogchoker													-	-	-	Jan-Dec	Jan-Dec
	Hogchoker													-	-	-	-	May-Oct
	Ladyfish													-	-	-	-	-
	Ladyfish													-	-	-	-	-
	Ladyfish													-	-	-	Apr-Oct	Sep-Oct



FISH (continued)

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	Northern kingfish													-	-	-	Mar-Dec*	Sep-Dec
	Northern puffer													Apr-Nov	Apr-Nov	-	-	Mar-Dec
	Pinfish													-	-	Dec-Mar	Jan-Dec	May-Oct
	Pinfish													Oct-Mar	Oct-Mar	-	Oct-May	Mar-Dec
	Red drum													Aug-Oct	Aug-Oct	Sep-Apr	Jan-Dec	Jan-Dec
	Red drum													-	-	-	Jan-Dec	Jan-Dec
	Red drum													Aug-Oct	Aug-Oct	Aug-Oct	-	Nov-Jul
	Red drum													-	-	-	Jan-Dec	-
	Scup													-	-	-	Nov-Apr	Jan-Dec
	Sheepshead													-	-	-	Jun-Sep	Jun-Sep
	Sheepshead													-	-	-	-	May-Dec
	Southern flounder													-	-	Dec-Mar	Jan-Dec	Jan-Dec
	Southern kingfish													-	-	-	May-Dec	Jul-Oct
	Southern kingfish													Apr-Oct	Apr-Oct	-	-	Mar-Dec
	Spot													-	-	Jan-Mar	Jan-Dec	May-Oct
	Spot													-	-	-	Mar-Jun	Mar-Oct
	Spotted seatrout													-	-	-	Nov-Apr	Jan-Dec
	Spotted seatrout													-	-	-	Jun-Oct	-
	Spotted seatrout													May-Aug	May-Aug	Jun-Aug	Jan-Dec	Jan-Dec
	Spotted seatrout													-	-	-	Jan-Dec	Jan-Dec
	Striped mullet													-	-	-	Mar-Oct*	Mar-Oct*
	Striped mullet													-	-	-	Jan-Dec	-
	Striped mullet													-	-	-	Jan-Dec	Jan-Dec
	Striped mullet													Oct-Mar	Oct-Apr	Oct-May	Sep-Mar	Jan-Dec
	Summer flounder													-	-	Oct-May	Jan-Dec	-
	Summer flounder													-	-	-	-	Jul-Aug
	Tarpon													-	-	-	-	Jan-Dec
	Weakfish													-	-	-	Mar-Dec	Jan-Dec
	Weakfish													Mar-Oct	Mar-Oct	-	Jan-Dec	Jan-Dec
	Weakfish													Mar-Oct	Mar-Oct	-	Jan-Dec	Mar-Oct
	White mullet													-	-	-	Jan-Dec	Jan-Dec
	White mullet													-	-	Mar-Jul	Sep-Jan	-
	White perch													Apr-Jul	Apr-Jul	Apr-Aug	Jan-Dec	Jan-Dec
	White perch													Mar-Jun	Mar-Jun	May-Aug	Jan-Dec	Jul-Feb
	White perch													Mar-Nov	Mar-Nov	Mar-Nov	Jan-Dec	Dec-Feb
	Windowpane													Mar-Aug	Mar-Aug	Jun-Sep	-	-
	Inland silverside													-	-	-	-	-
	Inland silverside													Apr-Aug	Apr-Aug	-	Mar-Jun	Mar-Dec
	Silver perch													-	-	-	-	May-Oct
	Triggerfish													Apr-Oct	Apr-Oct	-	Jan-Dec	Jan-Dec
	Bluegill													Mar-Jun	Mar-Jun	-	Jan-Dec	Jan-Dec
	Bowfin													May-Jun	May-Jun	May-Jun	-	Jan-Dec
	Largemouth bass													Mar-Sep	Mar-Sep	-	Jan-Dec	Jan-Dec
	Longnose gar													-	-	-	Apr-Dec	Apr-Dec
	Yellow perch													May-Oct	May-Oct	May-Oct	Sep-Dec	May-Dec
	Atlantic spadefish													-	-	-	Jun-Aug	-
	Atlantic spadefish													-	-	-	-	-


FISH (continued)

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	Florida pompano													-	-	Jun-Aug	-	May-Dec
	Goosefish													Mar-Jun	Mar-Jun	Mar-Jun	-	Jan-Dec
	Little tunny													-	-	-	-	May-Feb
	Spotted hake													Feb-Apr	Feb-Apr	Mar-May	Jan-Dec	Jan-Dec
	Tautog													May-Aug	May-Aug	Jun-Aug	-	Sep-Apr
	Atlantic bonito													-	-	-	-	May-Oct
	Atlantic needlefish													May-Jul	May-Jul	Jun-Aug	Jun-Oct	-
	Atlantic needlefish													-	-	-	Nov-May*	Mar-Oct
	Bluefin tuna													-	-	-	-	Jan-Dec
	Butterfish													May-Jul	May-Jul	Jun-Aug	Jan-Dec	Jan-Dec
	Cobia													-	-	-	-	May-Oct
	Dolphinfish													Jan-Dec	-	-	-	Jan-Dec
	Greater amberjack													-	-	-	-	Jan-Dec
	Harvestfish													-	-	-	-	Jan-Dec
	King mackerel													-	-	-	-	Jan-Dec
	Sharks													-	-	-	-	Jan-Dec
	Spanish mackerel													-	-	-	-	Jan-Dec
	Spanish mackerel													May-Sep	May-Sep	-	-	May-Oct
	Thresher shark													-	-	-	-	Jun-Feb

INVERTEBRATES

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	Blue crab													-	-	-	Jan-Dec	Jan-Dec
	Blue crab													-	Apr-Sep	May-Oct	-	Oct-Mar
	Brown shrimp													-	-	Feb-Apr	Mar-Aug	-
	Pink shrimp													-	-	-	Jan-Dec	Sep-Nov
	Pink shrimp													-	-	May-Nov	Jan-Dec	-
	White shrimp													-	-	Jun-Dec	Dec-Feb	-

MARINE MAMMALS

Subelement	Species	Monthly Presence												Mating	Calving	Pupping	Molt
		J	F	M	A	M	J	J	A	S	O	N	D				
	Bottlenose dolphin													Sep-Oct	Sep-Oct	-	-
	Bottlenose dolphin													Apr-Oct*	Apr-Oct*	-	-
	Harbor porpoise													-	-	-	-

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	800.37	1.25
10B	Freshwater Marshes	1.97	0.00
10C	Swamps	507.47	0.79
10D	Scrub and Shrub Wetlands	301.47	0.47
9A	Sheltered Tidal Flats	12.84	0.02
7	Exposed Tidal Flats	166.43	0.26

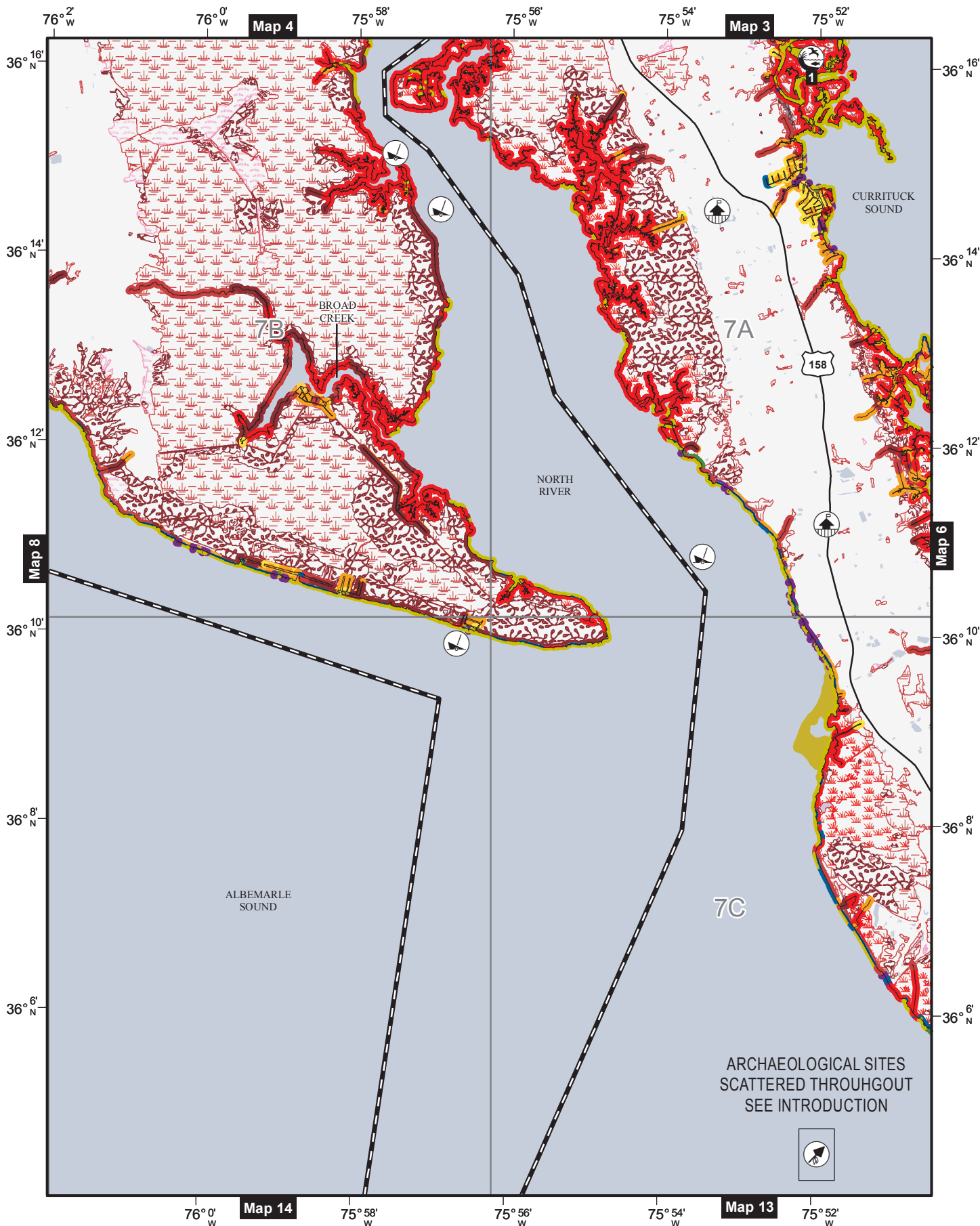
ESI SHORELINE HABITAT TYPES

<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	60,323.33	37.48	38%
10C	Swamps	4,143.13	2.57	3%
10D	Scrub-shrub wetlands	3,179.30	1.98	2%
9A	Sheltered tidal flats	10,803.06	6.71	7%
9B	Sheltered, vegetated low banks	6,538.88	4.06	4%
8B	Sheltered, solid man-made structures	1,049.48	0.65	1%
8C	Sheltered riprap	152.78	0.09	< 1%
7	Exposed tidal flats	41,240.72	25.63	26%
6B	Exposed riprap	3,628.21	2.25	2%
3A	Fine- to medium-grained sand beaches	2,732.56	1.70	2%
3B	Scarps and steep slopes in sand	178.85	0.11	< 1%
1B	Exposed, solid man-made structures	23,118.48	14.37	15%
Total ESI Shoreline:		157,088.78	97.61	
Total Shoreline:		93,741.15	58.25	

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 7
North Carolina

HUMAN USE RESOURCES

DISPLAYED ON MAP (POLYGONS)				
Map ID	Type	Name	Contact	Phone
1	MANAGEMENT AREA	PINE ISLAND AUDUBON SANCTUARY	NATIONAL AUDUBON SOCIETY	252-453-0603
ALSO PRESENT IN MAPPED AREA (POLYGONS)				
Type	Name	Contact	Phone	
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT; CORAL	DAVID DALE, SOUTHEAST REGION	727-824-5317	
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT; SHRIMP	DAVID DALE, SOUTHEAST REGION	727-824-5317	
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT; SNAPPER GROUPER	DAVID DALE, SOUTHEAST REGION	727-824-5317	
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT; SPINY LOBSTER	DAVID DALE, SOUTHEAST REGION	727-824-5317	
ESSENTIAL HABITAT	HAPC; SHRIMP	DAVID DALE, SOUTHEAST REGION	727-824-5317	
ESSENTIAL HABITAT	HAPC; SNAPPER GROUPER	DAVID DALE, SOUTHEAST REGION	727-824-5317	
STATE PROTECTED AREA	BLACK BEAR SANCTUARY	NC WILDLIFE RESOURCES COMMISSION		

JURISDICTIONS

COUNTY:	CAMDEN, CURRITUCK, PASQUOTANK, TYRRELL	FEMA:	REGION I
COAST GUARD:	DISTRICT 5, SECTOR NORTH CAROLINA	EPA:	REGION 4
USACE:	NORTH ATLANTIC DIVISION, SOUTH ATLANTIC DIVISION, NORFOLK DISTRICT, WILMINGTON DISTRICT		

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	4,169.53	6.51
10B	Freshwater Marshes	676.31	1.06
10C	Swamps	11,771.94	18.39
10D	Scrub and Shrub Wetlands	5,855.49	9.15
9A	Sheltered Tidal Flats	47.98	0.07
7	Exposed Tidal Flats	622.02	0.97

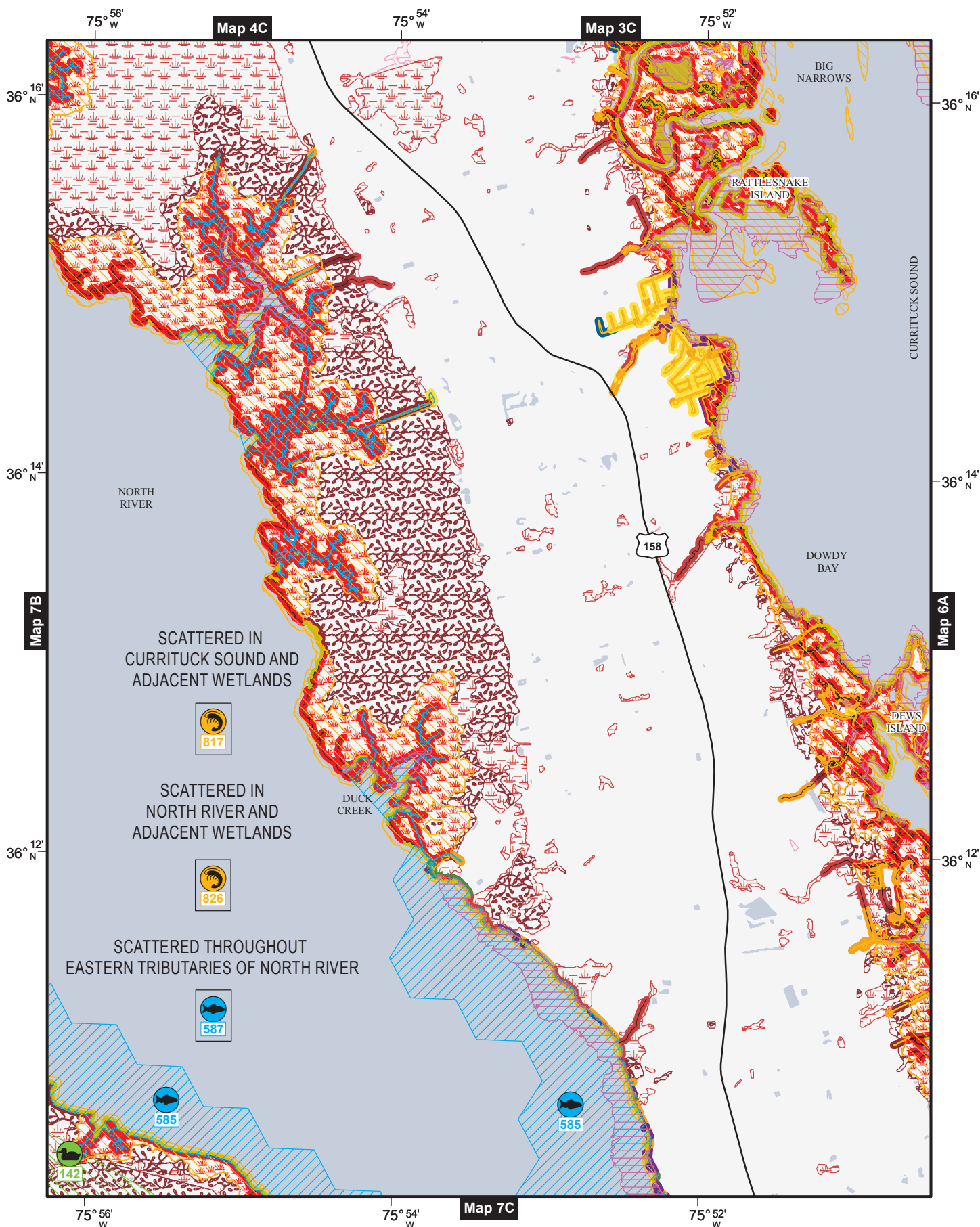
ESI SHORELINE HABITAT TYPES

<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	258,583.46	160.68	49%
10C	Swamps	23,252.24	14.45	4%
10D	Scrub-shrub wetlands	36,578.68	22.73	7%
9A	Sheltered tidal flats	38,513.59	23.93	7%
9B	Sheltered, vegetated low banks	23,558.16	14.64	4%
8B	Sheltered, solid man-made structures	14,753.43	9.17	3%
8C	Sheltered riprap	523.98	0.33	< 1%
7	Exposed tidal flats	104,721.62	65.07	20%
6B	Exposed riprap	1,831.07	1.14	< 1%
3A	Fine- to medium-grained sand beaches	14,197.44	8.82	3%
3B	Scarps and steep slopes in sand	719.36	0.45	< 1%
1B	Exposed, solid man-made structures	6,476.12	4.02	1%
Total ESI Shoreline:		523,709.15	325.42	
Total Shoreline:		363,430.92	225.83	

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 7A
North Carolina

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
SAV	Submerged aquatic veg	High Ecological Value			Present	J F M A M J J A S O N D

BIRDS

Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence	Nest	Mig.(S)	Mig.(F)	Juveniles	Adults	Molt
142	Waterfowl	American wigeon	Wintering			-			Feb-Mar	Oct-Nov	-	-	-
	Waterfowl	Canada goose	Wintering			-			Feb-Mar	Oct-Nov	-	-	-
	Waterfowl	Snow goose	Wintering			1500			Feb-Mar	Oct-Nov	-	-	-
	Waterfowl	Tundra swan	Wintering			5000			Feb-Mar	Oct-Nov	-	-	-

FISH

Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence	Spawn	Eggs	Larvae	Juveniles	Adults
585	Diadromous	Striped bass	Nursery Area			Medium		Apr-Jun	Apr-Jun	Apr-Jun	Jan-Dec	Jan-Dec
587	Diadromous	Alewife	Spawning Area			Present		Mar-Jul	Mar-Jul	May-Aug	-	-
	Diadromous	Blueback herring	Spawning Area			Present		Mar-Jul	Mar-Jul	May-Jul	-	-

INVERTEBRATES

Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence	Spawn	Eggs	Larvae	Juveniles	Adults
817	Shrimp	Brown shrimp	Nursery Area			Abundant		-	-	Feb-Apr	Mar-Aug	-
826	Shrimp	Brown shrimp	Nursery Area			-		-	-	Feb-Apr	Mar-Aug	-

WIDESPREAD IN MAPPED AREA (> 10 SQUARE KILOMETERS)



BIRDS

Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence	Nest	Mig.(S)	Mig.(F)	Juveniles	Adults	Molt
Waterfowl	American black duck	Wintering			-			Feb-Mar	Oct-Nov	-	-	-
	American black duck	Wintering			1000S			Feb-Mar	Oct-Nov	-	-	-
	American black duck	Wintering			100S			Feb-Mar	Oct-Nov	-	-	-
	American coot	Wintering			100S			Feb-Mar	Oct-Nov	-	-	-
	American coot	Wintering			1000S			Feb-Mar	Oct-Nov	-	-	-
	American wigeon	Wintering			100S			Feb-Mar	Oct-Nov	-	-	-
	Blue-winged teal	Wintering			-			Feb-Mar	Oct-Nov	-	-	-
	Bufflehead	Wintering			-			Feb-Mar	Oct-Nov	-	-	-
	Bufflehead	Wintering			100S			Feb-Mar	Oct-Nov	-	-	-

BIRDS (continued)

Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Molt
						J	F	M	A	M	J	J	A	S	O	N	D	
	Canada goose	Wintering			1000S													-
	Canada goose	Wintering			2000													-
	Canvasback	Wintering			-													-
	Canvasback	Wintering			100S													-
	Gadwall	Wintering			100S													-
	Gadwall	Wintering			-													-
	Gadwall	Wintering			1000S													-
	Greater scaup	Wintering			-													-
	Green-winged teal	Wintering			-													-
	Green-winged teal	Wintering			1000S													-
	Lesser scaup	Wintering			-													-
	Mallard	Wintering			100S													-
	Mallard	Wintering			-													-
	Northern pintail	Wintering			-													-
	Northern shoveler	Wintering			-													-
	Redhead	Wintering			-													-
	Redhead	Wintering			100S													-
	Ring-necked duck	Wintering			-													-
	Ruddy duck	Wintering			100S													-
	Ruddy duck	Wintering			1000S													-
	Scaup	Wintering			1000S													-
	Snow goose	Wintering			1000S													-
	Tundra swan	Wintering			1000S													-
	Wood duck	Wintering			-													-

FISH

Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Larvae	Juveniles	Adults
						J	F	M	A	M	J	J	A	S	O	N	D			
	Diadromous	Migration			Present													May-Aug	Jul-Mar	-
	Alewife	Nursery Area			Present													May-Aug	Jul-Oct	-
	American shad	Spawning Area			Present													May-Jul	Feb-May	-
	Atlantic sturgeon	General Distribution	C		-													-	Jan-Dec	Jan-Dec
	Blueback herring	Migration			Present													May-Jul	Aug-Oct	-
	Blueback herring	Nursery Area			Present													May-Jul	Jul-Oct	-
	Summer flounder	Concentration Area			Highly Abundant													Oct-May	Jan-Dec	May-Oct

MARINE MAMMALS

Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Calving	Pupping	Molt
						J	F	M	A	M	J	J	A	S	O	N	D			
	Manatee	General Distribution	E		-													-	-	-

BENTHIC

Monthly Presence

J F M A M J J A S O N D

Species

Submerged aquatic veg

BIRDS

Monthly Presence

J F M A M J J A S O N D

Species

American black duck
Wood duck

FISH

Monthly Presence

J F M A M J J A S O N D

Species

American eel
American shad
Gizzard shad

Species

Hickory shad

Species

Striped bass

Species

Atlantic croaker

Atlantic menhaden

Bay anchovy

Bay anchovy

Species

Bluefish

Species

Ladyfish

Species

Red drum

Southern flounder

Species

Spot

Spotted seatrout

Striped mullet

Striped mullet

Summer flounder

Species

Weakfish

White mullet

White perch

White perch

Inland silverside

Bluegill

Bowfin

Largemouth bass

Yellow perch

Yellow perch

Atlantic needlefish

INVERTEBRATES

Subelement	Species	Monthly Presence											
		J	F	M	A	M	J	J	A	S	O	N	D
Crab	Blue crab												
Shrimp	Brown shrimp												

MARINE MAMMALS

Subelement	Species	Monthly Presence											
		J	F	M	A	M	J	J	A	S	O	N	D
Dolphin	Bottlenose dolphin												

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	3.65
10B	Freshwater Marshes	0.04
10C	Swamps	2.41
10D	Scrub and Shrub Wetlands	2.91
9A	Sheltered Tidal Flats	0.06
7	Exposed Tidal Flats	0.35

ESI SHORELINE HABITAT TYPES		
ESI Rank	Shoreline Habitat Classification	Length (Meters)
10A	Salt- and brackish-water marshes	161,823.09
10C	Swamps	8,873.95
10D	Scrub-shrub wetlands	6,380.94
9A	Sheltered tidal flats	30,376.05
9B	Sheltered, vegetated low banks	11,766.47
8B	Sheltered, solid man-made structures	12,764.38
8C	Sheltered riprap	327.40
7	Exposed tidal flats	68,850.85
6B	Exposed riprap	1,157.94
3A	Fine- to medium-grained sand beaches	4,005.62
3B	Scarps and steep slopes in sand	647.84
1B	Exposed, solid man-made structures	3,988.56

Total ESI Shoreline: 310,963.09
Total ESI Shoreline: 193.22
Total Shoreline: 205,927.37
Total Shoreline: 127.96

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 7B
North Carolina

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											
SAV	Submerged aquatic veg	High Ecological Value			Present	J	F	M	A	M	J	J	A	S	O	N	D

BIRDS

Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Juveniles	Adults	Molt
84	Passerine	Red-cockaded woodpecker	Vulnerable Occurrence	E	E	-	J	F	M	A	M	J	J	A	S	O	N	D	Apr-Jul	-	-	-	Jun-Nov	-

FISH

Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
585	Diadromous	Striped bass	Nursery Area			Medium	J	F	M	A	M	J	J	A	S	O	N	D	Apr-Jun	Apr-Jun	Apr-Jun	Jan-Dec	Jan-Dec
586	Diadromous	Alewife	Migration			Present													-	-	May-Aug	Jul-Mar	-
	Diadromous	Blueback herring	Migration			Present													-	-	May-Jul	Aug-Oct	-
587	Diadromous	Striped bass	Nursery Area			Medium	J	F	M	A	M	J	J	A	S	O	N	D	Apr-Jun	Apr-Jun	Apr-Jun	Jan-Dec	Jan-Dec
	Diadromous	Alewife	Spawning Area			Present													Mar-Jul	Mar-Jul	May-Aug	-	-
	Diadromous	Blueback herring	Spawning Area			Present													Mar-Jul	Mar-Jul	May-Jul	-	-
591	Diadromous	Alewife	Migration			Present													-	-	May-Aug	Jul-Mar	-
	Diadromous	Blueback herring	Migration			Present													-	-	May-Jul	Aug-Oct	-

HABITATS & RARE PLANTS

Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence											
641	Wetland	Carolina grasswort	Vulnerable Occurrence			Current	J	F	M	A	M	J	J	A	S	O	N	D

INVERTEBRATES

Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
826	Shrimp	Brown shrimp	Nursery Area			-	J	F	M	A	M	J	J	A	S	O	N	D	-	-	Feb-Apr	Mar-Aug	-

WIDESPREAD IN MAPPED AREA (> 10 SQUARE KILOMETERS)


BIRDS

Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Juveniles	Adults	Molt
Waterfowl	American black duck	Wintering			100S	J	F	M	A	M	J	J	A	S	O	N	D	-	Feb-Mar	Oct-Nov	-	-	-
	American black duck	Wintering			-													-	Feb-Mar	Oct-Nov	-	-	-
	American coot	Wintering			100S	J	F	M	A	M	J	J	A	S	O	N	D	-	Feb-Mar	Oct-Nov	-	-	-

BIRDS (continued)

Subelement	Species	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				
	American wigeon	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	American wigeon	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Blue-winged teal	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Bufflehead	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Bufflehead	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	Canada goose	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	Canada goose	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Canada goose	Wintering			2000													-	Feb-Mar	Oct-Nov	-
	Canvasback	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Gadwall	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Gadwall	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	Greater scaup	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Green-winged teal	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Green-winged teal	Wintering			1000S													-	Feb-Mar	Oct-Nov	-
	Lesser scaup	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Mallard	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Mallard	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	Northern pintail	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Northern shoveler	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Redhead	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Ring-necked duck	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Ruddy duck	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	Ruddy duck	Wintering			1000S													-	Feb-Mar	Oct-Nov	-
	Scaup	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	Scaup	Wintering			1000S													-	Feb-Mar	Oct-Nov	-
	Snow goose	Wintering			1000S													-	Feb-Mar	Oct-Nov	-
	Snow goose	Wintering			1500													-	Feb-Mar	Oct-Nov	-
	Tundra swan	Wintering			1000S													-	Feb-Mar	Oct-Nov	-
	Tundra swan	Wintering			5000													-	Feb-Mar	Oct-Nov	-
	Wood duck	Wintering			-													-	Feb-Mar	Oct-Nov	-


FISH

Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
						J	F	M	A	M	J	J	A	S	O	N	D					
	Diadromous	Nursery Area			Present													-	-	May-Aug	Jul-Oct	-
	American shad	Spawning Area			Present													Apr-Jun	Apr-Jun	May-Jul	Feb-May	-
	Atlantic sturgeon	General Distribution		C	-													-	-	-	Jan-Dec	Jan-Dec
	Blueback herring	Nursery Area			Present													-	-	May-Jul	Jul-Oct	-





MARINE MAMMALS

Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Mating	Calving	Pupping	Molt
						J	F	M	A	M	J	J	A	S	O	N	D				
	Manatee	General Distribution		E	-													-	-	-	-

BIRDS

Subelement	Species	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	American black duck													Apr-May	-	-	Jan-Dec	Sep-Dec
	Wood duck													Mar-Jun	-	-	May-Nov	Aug-Dec


FISH

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	American eel													-	-	Jan-Dec	Jan-Dec	Sep-Dec
	American eel													-	-	Jan-Jun	Jan-Dec	Aug-Dec
	American shad													-	-	Mar-Jul	May-Nov	-
	Gizzard shad													-	-	-	Oct-Mar	-
	Hickory shad													-	-	-	-	Nov-Apr
	Striped bass													Apr-Jun	Apr-Jun	Apr-Jun	Jan-Dec	Jan-Dec
	Atlantic croaker													-	-	Sep-Mar	Jan-Dec	Jan-Dec
	Atlantic menhaden													-	-	Jan-Jun	Jan-Dec	-
	Bay anchovy													Apr-Sep	Apr-Sep	Apr-Oct	Jan-Dec	Jan-Dec
	Black drum													-	-	-	Jan-Dec	Jun-Nov
	Bluefish													-	-	-	May-Oct	Jun-Oct
	Hogchoker													-	-	-	Jan-Dec	Jan-Dec
	Ladyfish													-	-	-	Apr-Oct	Sep-Oct
	Pinfish													-	-	Dec-Mar	Jan-Dec	May-Oct
	Red drum													-	-	-	Jan-Dec	-
	Red drum													-	-	-	Jan-Dec	Jan-Dec
	Sheepshead													-	-	-	Jun-Sep	Jun-Sep
	Southern flounder													-	-	Dec-Mar	Jan-Dec	Jan-Dec
	Southern kingfish													-	-	-	May-Dec	Jul-Oct
	Spot													-	-	Jan-Mar	Jan-Dec	May-Oct
	Spotted seatrout													-	-	-	Jan-Dec	Jan-Dec
	Striped mullet													-	-	-	May-Sep	-
	Striped mullet													-	-	-	Dec-Sep	-
	Striped mullet													-	-	-	Jan-Dec	Jan-Dec
	Summer flounder													-	-	Oct-May	Jan-Dec	-
	Weakfish													Mar-Oct	Mar-Oct	-	Jan-Dec	Mar-Oct
	White mullet													-	-	-	Jan-Dec	Jan-Dec
	White perch													Mar-Jun	Mar-Jun	May-Aug	Jun-Oct	-
	White perch													Apr-Jul	Apr-Jul	Apr-Aug	Jan-Dec	Jan-Dec
	Inland silverside													Mar-Aug	Mar-Aug	Jun-Sep	-	-
	Bluegill													Apr-Oct	Apr-Oct	-	Jan-Dec	Jan-Dec
	Largemouth bass													May-Jun	May-Jun	May-Jun	-	Jan-Dec
	Longnose gar													Mar-Sep	Mar-Sep	-	Jan-Dec	Jan-Dec
	Yellow perch													-	-	-	Apr-Dec	Apr-Dec
	Yellow perch													Jan-Mar	Jan-Mar	Jan-Mar	Apr-Dec	Apr-Dec
	Atlantic spadefish													-	-	-	Jun-Aug	-

FISH (continued)

Subelement	Species	Monthly Presence												Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D				
	Marine Pelagic													May-Jul	Jun-Aug	Jun-Oct	-
	Spanish mackerel													-	-	Jul-Nov	Jul-Oct

INVERTEBRATES

Subelement	Species	Monthly Presence												Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D				
	Crab													-	-	Jan-Dec	Jan-Dec
	Shrimp													-	Feb-Apr	Mar-Aug	-
	Brown shrimp													-	-	Jan-Dec	Sep-Nov
	Pink shrimp													-	-	Jan-Dec	Sep-Nov
	White shrimp													-	Jun-Dec	Dec-Feb	-

MARINE MAMMALS

Subelement	Species	Monthly Presence												Mating	Calving	Pupping	Molt
		J	F	M	A	M	J	J	A	S	O	N	D				
	Bottlenose dolphin													Sep-Oct	Sep-Oct	-	-

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	914.02	1.43
10B	Freshwater Marshes	641.82	1.00
10C	Swamps	9,598.58	15.00
10D	Scrub and Shrub Wetlands	3,366.35	5.26
9A	Sheltered Tidal Flats	11.28	0.02
7	Exposed Tidal Flats	109.08	0.17

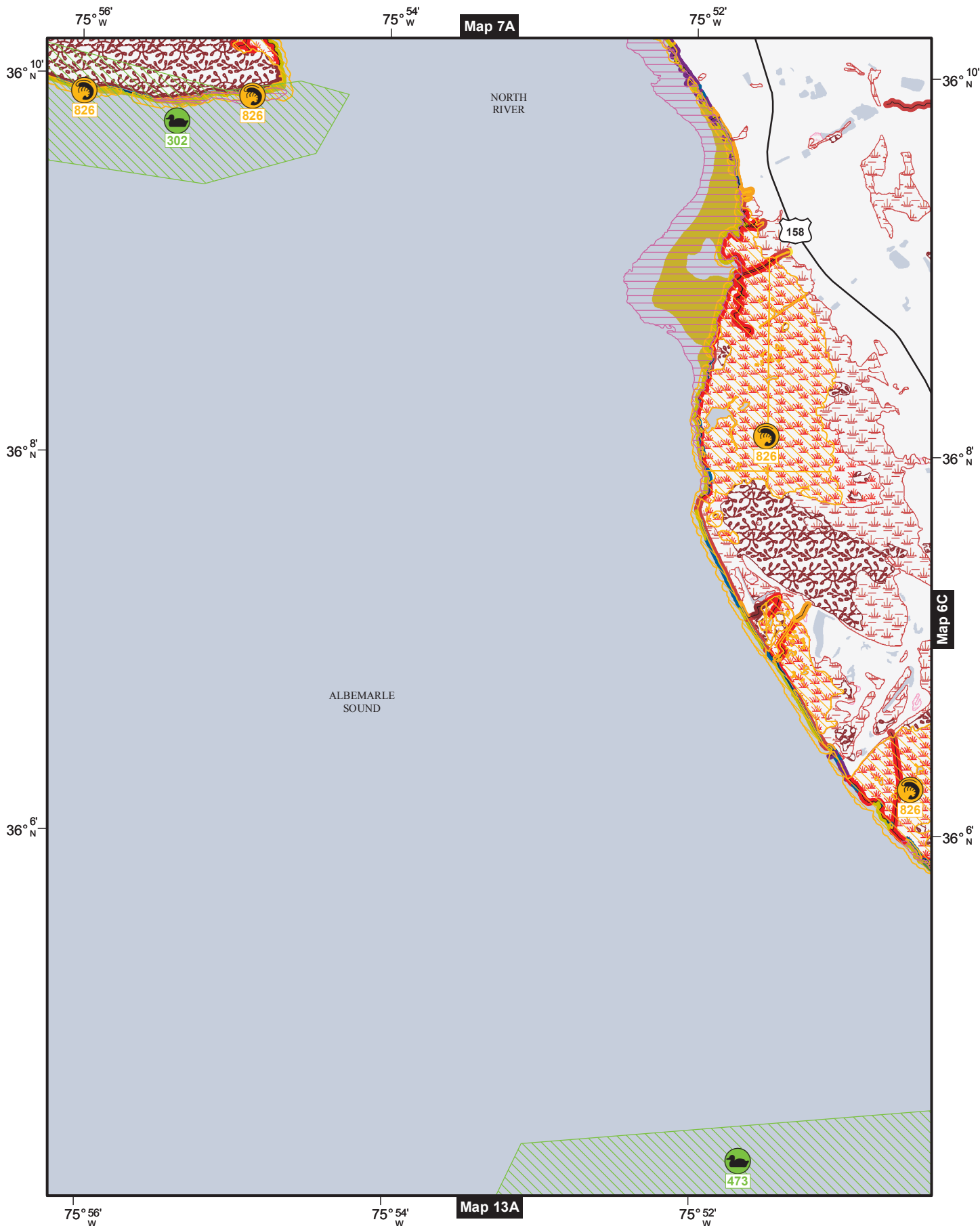
ESI SHORELINE HABITAT TYPES

ESI Rank	Shoreline Habitat Classification	Length (Meters)	Length (Miles)	% of ESI Shoreline
10A	Salt- and brackish-water marshes	85,848.57	53.34	51%
10C	Swamps	10,475.80	6.51	6%
10D	Scrub-shrub wetlands	26,108.46	16.22	16%
9A	Sheltered tidal flats	7,961.85	4.95	5%
9B	Sheltered, vegetated low banks	8,225.60	5.11	5%
8B	Sheltered, solid man-made structures	1,685.80	1.05	1%
8C	Sheltered riprap	196.58	0.12	< 1%
7	Exposed tidal flats	22,616.54	14.05	13%
6B	Exposed riprap	484.12	0.30	< 1%
3A	Fine- to medium-grained sand beaches	3,784.50	2.35	2%
3B	Scarps and steep slopes in sand	39.80	0.02	< 1%
1B	Exposed, solid man-made structures	839.41	0.52	< 1%
Total ESI Shoreline:		168,267.04	Total ESI Shoreline:	104.56
		132,833.55	Total Shoreline:	82.54

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

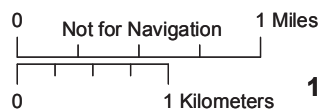




Map 7C
North Carolina



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



1:50,000



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											
SAV	Submerged aquatic veg	High Ecological Value			Present	J	F	M	A	M	J	J	A	S	O	N	D

BIRDS

Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Juveniles	Adults	Molt
302	Waterfowl	Canada goose	Wintering			100S	J	F	M	A	M	J	J	A	S	O	N	D	-	Feb-Mar	Oct-Nov	-	-	-
	Waterfowl	Ruddy duck	Wintering			100S													-	Feb-Mar	Oct-Nov	-	-	-
	Waterfowl	Scaup	Wintering			100S													-	Feb-Mar	Oct-Nov	-	-	-
	Waterfowl	Snow goose	Wintering			1000S													-	Feb-Mar	Oct-Nov	-	-	-
473	Waterfowl	Scaup	Wintering			-													-	Feb-Mar	Oct-Nov	-	-	-

INVERTEBRATES

Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
826	Shrimp	Brown shrimp	Nursery Area			-	J	F	M	A	M	J	J	A	S	O	N	D	-	-	Feb-Apr	Mar-Aug	-

WIDESPREAD IN MAPPED AREA (> 10 SQUARE KILOMETERS)


BIRDS

Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Juveniles	Adults	Molt
	Waterfowl	American black duck	Wintering			-	J	F	M	A	M	J	J	A	S	O	N	D	-	Feb-Mar	Oct-Nov	-	-	-
		American black duck	Wintering			100S													-	Feb-Mar	Oct-Nov	-	-	-
		American coot	Wintering			100S													-	Feb-Mar	Oct-Nov	-	-	-
		American wigeon	Wintering			100S													-	Feb-Mar	Oct-Nov	-	-	-
		American wigeon	Wintering			-													-	Feb-Mar	Oct-Nov	-	-	-
		Black scoter	Wintering			-													-	Feb-Mar	Oct-Nov	-	-	-
		Blue-winged teal	Wintering			-													-	Feb-Mar	Oct-Nov	-	-	-
		Bufflehead	Wintering			-													-	Feb-Mar	Oct-Nov	-	-	-
		Bufflehead	Wintering			100S													-	Feb-Mar	Oct-Nov	-	-	-
		Canada goose	Wintering			-													-	Feb-Mar	Oct-Nov	-	-	-
		Canada goose	Wintering			2000													-	Feb-Mar	Oct-Nov	-	-	-
		Canvasback	Wintering			-													-	Feb-Mar	Oct-Nov	-	-	-
		Gadwall	Wintering			-													-	Feb-Mar	Oct-Nov	-	-	-
		Gadwall	Wintering			100S													-	Feb-Mar	Oct-Nov	-	-	-
		Greater scaup	Wintering			-													-	Feb-Mar	Oct-Nov	-	-	-
		Green-winged teal	Wintering			1000S													-	Feb-Mar	Oct-Nov	-	-	-

BIRDS (continued)

Subelement	Species	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				
	Green-winged teal	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Lesser scaup	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Long-tailed duck	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Mallard	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	Mallard	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Northern pintail	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Northern shoveler	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Red-breasted merganser	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Redhead	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Ring-necked duck	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Ruddy duck	Wintering			1000S													-	Feb-Mar	Oct-Nov	-
	Scaup	Wintering			1000S													-	Feb-Mar	Oct-Nov	-
	Snow goose	Wintering			1500													-	Feb-Mar	Oct-Nov	-
	Surf scoter	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Tundra swan	Wintering			1000S													-	Feb-Mar	Oct-Nov	-
	Tundra swan	Wintering			5000													-	Feb-Mar	Oct-Nov	-
	White-winged scoter	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Wood duck	Wintering			-													-	Feb-Mar	Oct-Nov	-

FISH


Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
						J	F	M	A	M	J	J	A	S	O	N	D					
	Diadromous	Migration			Present													-	-	May-Aug	Jul-Mar	-
	Alewife	Nursery Area			Present													-	-	May-Aug	Jul-Oct	-
	American shad	Spawning Area			Present													Apr-Jun	Apr-Jun	May-Jul	Feb-May	-
	Atlantic sturgeon	General Distribution		C	-													-	-	-	Jan-Dec	Jan-Dec
	Blueback herring	Migration			Present													-	-	May-Jul	Aug-Oct	-
	Blueback herring	Nursery Area			Present													-	-	May-Jul	Jul-Oct	-
	Striped bass	Nursery Area			Medium													Apr-Jun	Apr-Jun	Apr-Jun	Jan-Dec	Jan-Dec

MARINE MAMMALS

Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Mating	Calving	Pupping	Molt
						J	F	M	A	M	J	J	A	S	O	N	D				
	Manatee	General Distribution		E	-													-	-	-	-

ALSO PRESENT IN MAPPED AREA (GENERAL DISTRIBUTION)





BENTHIC

Subelement	Species	Monthly Presence											
		J	F	M	A	M	J	J	A	S	O	N	D
	SAV												
	Submerged aquatic veg												



BIRDS

Subelement	Species	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt
		J	F	M	A	M	J	J	A	S	O	N	D				
	American black duck													Apr-May	-	-	-
	Wood duck													Mar-Jun	-	-	-

FISH

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	American eel													-	-	Jan-Dec	Jan-Dec	Sep-Dec
	American eel													-	-	Jan-Jun	Jan-Dec	Aug-Dec
	American shad													-	-	Mar-Jul	May-Nov	-
	Gizzard shad													-	-	-	Oct-Mar	-
	Hickory shad													-	-	-	-	Nov-Apr
	Striped bass													Apr-Jun	Apr-Jun	Apr-Jun	Jan-Dec	Jan-Dec
	Atlantic croaker													-	-	Sep-Mar	Jan-Dec	Jan-Dec
	Atlantic menhaden													-	-	Jan-Jun	Jan-Dec	-
	Bay anchovy													Apr-Sep	Apr-Sep	Apr-Oct	Jan-Dec	Jan-Dec
	Black drum													-	-	-	Jan-Dec	Jun-Nov
	Bluefish													-	-	-	May-Oct	Jun-Oct
	Hogchoker													-	-	-	Jan-Dec	Jan-Dec
	Ladyfish													-	-	-	Apr-Oct	Sep-Oct
	Pinfish													-	-	Dec-Mar	Jan-Dec	May-Oct
	Red drum													-	-	-	Jan-Dec	Jan-Dec
	Red drum													-	-	-	Jan-Dec	-
	Sheepshead													-	-	-	Jun-Sep	Jun-Sep
	Southern flounder													-	-	Dec-Mar	Jan-Dec	Jan-Dec
	Southern kingfish													-	-	-	May-Dec	Jul-Oct
	Spot													-	-	Jan-Mar	Jan-Dec	May-Oct
	Spotted seatrout													-	-	-	Jan-Dec	Jan-Dec
	Striped mullet													-	-	-	Jan-Dec	Jan-Dec
	Striped mullet													-	-	-	May-Sep	-
	Summer flounder													-	-	Oct-May	Jan-Dec	-
	Weakfish													Mar-Oct	Mar-Oct	-	Jan-Dec	Mar-Oct
	White mullet													-	-	-	Jan-Dec	Jan-Dec
	White perch													Apr-Jul	Apr-Jul	Apr-Aug	Jan-Dec	Jan-Dec
	Inland silverside													Mar-Aug	Mar-Aug	Jun-Sep	-	-
	Largemouth bass													May-Jun	May-Jun	May-Jun	-	Jan-Dec
	Longnose gar													Mar-Sep	Mar-Sep	-	Jan-Dec	Jan-Dec
	Yellow perch													Jan-Mar	Jan-Mar	Jan-Mar	Apr-Dec	Apr-Dec
	Yellow perch													-	-	-	Apr-Dec	Apr-Dec
	Atlantic spadefish													-	-	-	Jun-Aug	-
	Atlantic needlefish													May-Jul	May-Jul	Jun-Aug	Jun-Oct	-
	Spanish mackerel													-	-	-	Jul-Nov	Jul-Oct

INVERTEBRATES

Subelement	Species	Monthly Presence												Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D				
 Crab	Blue crab													-	May-Oct	-	Jan-Dec
	Blue crab													-	-	Jan-Dec	Jan-Dec
 Shrimp	Brown shrimp													-	Feb-Apr	Mar-Aug	-
	Pink shrimp													-	-	Jan-Dec	Sep-Nov
	White shrimp													-	Jun-Dec	Dec-Feb	-

MARINE MAMMALS

Subelement	Species	Monthly Presence												Mating	Calving	Pupping	Molt
		J	F	M	A	M	J	J	A	S	O	N	D				
 Dolphin	Bottlenose dolphin													Sep-Oct	Sep-Oct	-	-

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	919.51	1.44
10B	Freshwater Marshes	8.03	0.01
10C	Swamps	632.22	0.99
10D	Scrub and Shrub Wetlands	596.06	0.93
7	Exposed Tidal Flats	274.78	0.43

ESI SHORELINE HABITAT TYPES

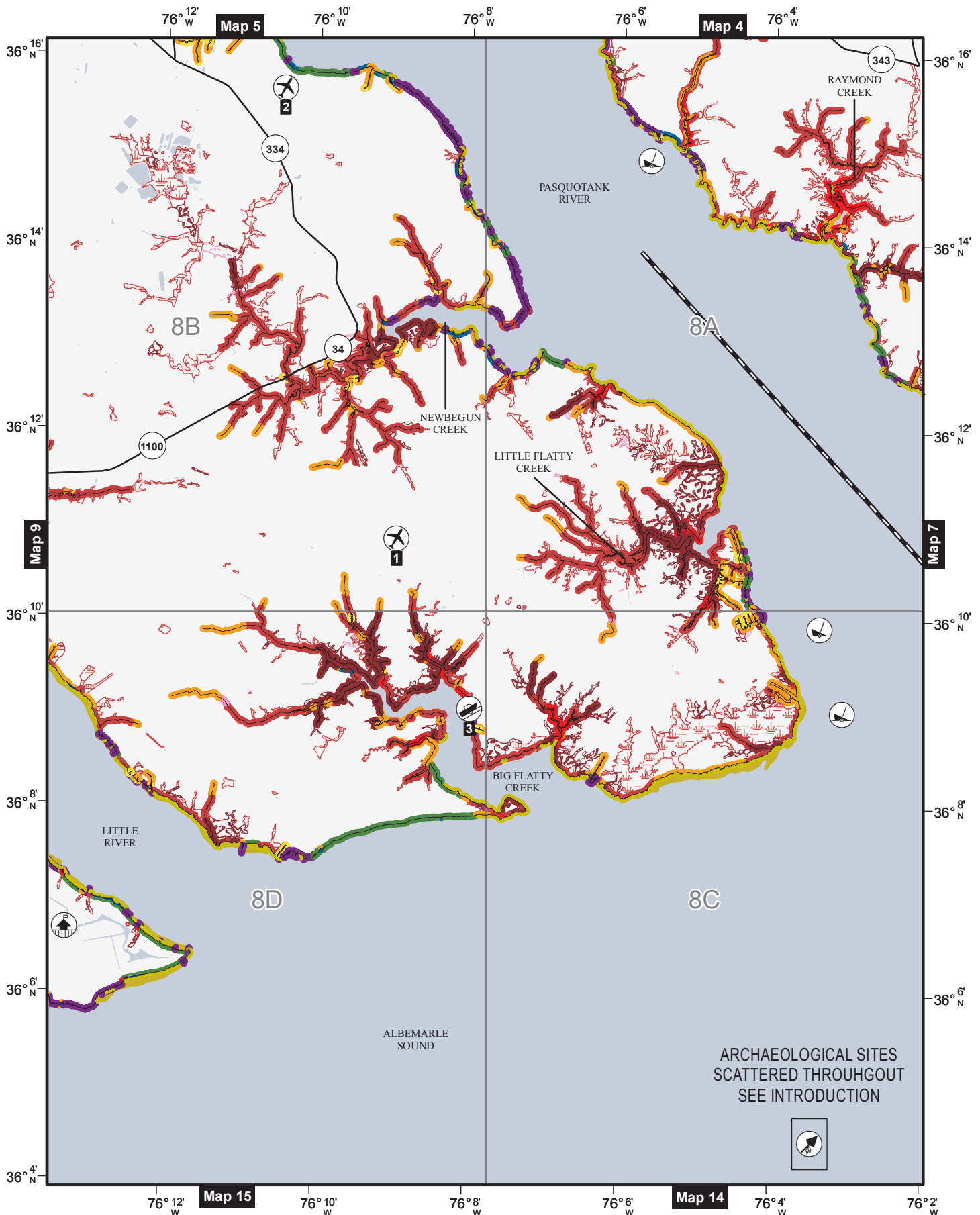
ESI Rank	Shoreline Habitat Classification	Length (Meters)	Length (Miles)	% of ESI Shoreline
10A	Salt- and brackish-water marshes	10,556.81	6.56	27%
10C	Swamps	3,713.46	2.31	9%
10D	Scrub-shrub wetlands	3,055.36	1.90	8%
9B	Sheltered, vegetated low banks	1,755.18	1.09	4%
8B	Sheltered, solid man-made structures	186.27	0.12	< 1%
7	Exposed tidal flats	11,931.67	7.41	30%
6B	Exposed riprap	189.09	0.12	< 1%
3A	Fine- to medium-grained sand beaches	6,256.29	3.89	16%
3B	Scarps and steep slopes in sand	31.71	0.02	< 1%
1B	Exposed, solid man-made structures	1,468.05	0.91	4%

Total ESI Shoreline: 39,143.90
Total Shoreline: 21,161.04
Total ESI Shoreline: 24.32
Total Shoreline: 13.15

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 RESOURCES

DISPLAYED ON MAP (POINTS)			
Map ID	Type	Name	Contact
1	AIRPORT	FLETCHER'S	JAMES T. FLETCHER, MANAGER
2	AIRPORT	ELIZABETH CITY CG AIR STATION REGIONAL	BRUCE GREEN, USCG AIRFIELD OPS. MANAGER
3	BOAT RAMP	BIG FLATTY	HERTFORD DEPOT
			252-330-4710
			252-334-5388
			252-426-2255

ALSO PRESENT IN MAPPED AREA (POLYGONS)			
Type	Name	Contact	Phone
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT; CORAL	DAVID DALE, SOUTHEAST REGION	727-824-5317
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT; SHRIMP	DAVID DALE, SOUTHEAST REGION	727-824-5317
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT; SNAPPER GROUPER	DAVID DALE, SOUTHEAST REGION	727-824-5317
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT; SPINY LOBSTER	DAVID DALE, SOUTHEAST REGION	727-824-5317
ESSENTIAL HABITAT	HAPC; SHRIMP	DAVID DALE, SOUTHEAST REGION	727-824-5317
ESSENTIAL HABITAT	HAPC; SNAPPER GROUPER	DAVID DALE, SOUTHEAST REGION	727-824-5317

JURISDICTIONS

COUNTY:	CAMDEN, PASQUOTANK, PERQUIMANS, TYRRELL	FEMA:	REGION I
COAST GUARD:	DISTRICT 5, SECTOR NORTH CAROLINA	EPA:	REGION 4
USACE:	NORTH ATLANTIC DIVISION, SOUTH ATLANTIC DIVISION, NORFOLK DISTRICT, WILMINGTON 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	137.20	0.21
10B	Freshwater Marshes	89.68	0.14
10C	Swamps	3,630.17	5.67
10D	Scrub and Shrub Wetlands	1,517.62	2.37
9A	Sheltered Tidal Flats	30.60	0.05
7	Exposed Tidal Flats	737.46	1.15

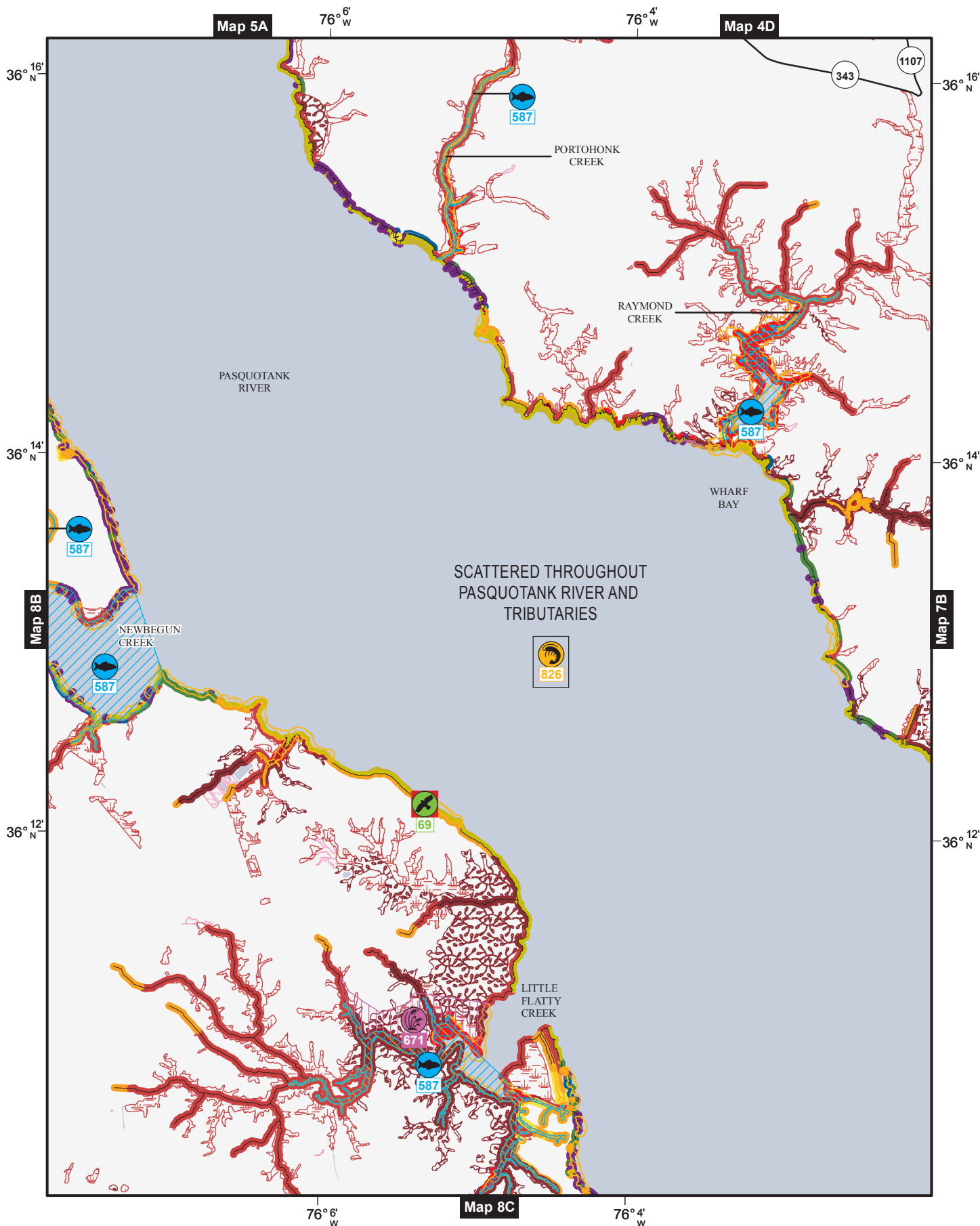
ESI SHORELINE HABITAT TYPES

<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	21,392.28	13.29	6%
10B	Freshwater marshes	455.22	0.28	< 1%
10C	Swamps	114,038.51	70.86	31%
10D	Scrub-shrub wetlands	59,613.53	37.04	16%
9A	Sheltered tidal flats	14,762.15	9.17	4%
9B	Sheltered, vegetated low banks	44,341.03	27.55	12%
8B	Sheltered, solid man-made structures	6,464.40	4.02	2%
8C	Sheltered riprap	220.14	0.14	< 1%
7	Exposed tidal flats	56,209.85	34.93	15%
6B	Exposed riprap	17,859.15	11.10	5%
3A	Fine- to medium-grained sand beaches	3,691.14	2.29	1%
3B	Scarps and steep slopes in sand	2,049.80	1.27	1%
1B	Exposed, solid man-made structures	24,751.18	15.38	7%
Total ESI Shoreline:		365,848.38	227.33	
Total Shoreline:		288,518.52	179.28	

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



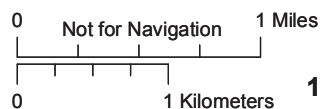


Map 8A

North Carolina



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 8A
North Carolina

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
SAV	Submerged aquatic veg	High Ecological Value			Present	J F M A M J J A S O N D

BIRDS

Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	Nest	Mig.(S)	Mig.(F)	Juveniles	Adults
69	Raptor	Bald eagle	Nesting	T		1 Pair	Jan-Jun	-	-	-	-

FISH

Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	Spawn	Eggs	Larvae	Juveniles	Adults
587	Diadromous	Alewife	Spawning Area			Present	Mar-Jul	Mar-Jul	May-Aug	-	-
	Diadromous	Blueback herring	Spawning Area			Present	Mar-Jul	Mar-Jul	May-Jul	-	-

HABITATS & RARE PLANTS

Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence
671	Plant	Winged primrose-willow	Vulnerable Occurrence			Current	J F M A M J J A S O N D

INVERTEBRATES

Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	Spawn	Eggs	Larvae	Juveniles	Adults
826	Shrimp	Brown shrimp	Nursery Area			-	-	-	Feb-Apr	Mar-Aug	-

WIDESPREAD IN MAPPED AREA (> 10 SQUARE KILOMETERS)


BIRDS

Subelement	Species	Mapping Qualifier	S	F	Concentration	Nest	Mig.(S)	Mig.(F)	Molt
Waterfowl	American black duck	Wintering			-	-	Feb-Mar	Oct-Nov	-
	American wigeon	Wintering			-	-	Feb-Mar	Oct-Nov	-
	Bufflehead	Wintering			-	-	Feb-Mar	Oct-Nov	-
	Canada goose	Wintering			100S	-	Feb-Mar	Oct-Nov	-
	Canada goose	Wintering			-	-	Feb-Mar	Oct-Nov	-
	Gadwall	Wintering			-	-	Feb-Mar	Oct-Nov	-
	Greater scaup	Wintering			-	-	Feb-Mar	Oct-Nov	-
	Green-winged teal	Wintering			-	-	Feb-Mar	Oct-Nov	-
	Lesser scaup	Wintering			-	-	Feb-Mar	Oct-Nov	-

BIRDS (continued)

Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Juveniles	Adults
						J	F	M	A	M	J	J	A	S	O	N	D					
	Mallard	Wintering			-													-	Feb-Mar	Oct-Nov	-	-
	Mallard	Wintering			100S													-	Feb-Mar	Oct-Nov	-	-
	Northern shoveler	Wintering			-													-	Feb-Mar	Oct-Nov	-	-
	Ring-necked duck	Wintering			-													-	Feb-Mar	Oct-Nov	-	-
	Ruddy duck	Wintering			100S													-	Feb-Mar	Oct-Nov	-	-
	Scaup	Wintering			1000S													-	Feb-Mar	Oct-Nov	-	-
	Scaup	Wintering			100S													-	Feb-Mar	Oct-Nov	-	-
	Snow goose	Wintering			1000S													-	Feb-Mar	Oct-Nov	-	-
	Snow goose	Wintering			1500													-	Feb-Mar	Oct-Nov	-	-
	Tundra swan	Wintering			5000													-	Feb-Mar	Oct-Nov	-	-
	Tundra swan	Wintering			1000S													-	Feb-Mar	Oct-Nov	-	-
	Wood duck	Wintering			-													-	Feb-Mar	Oct-Nov	-	-

FISH

Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
						J	F	M	A	M	J	J	A	S	O	N	D					
	Diadromous	Nursery Area			Present													-	-	May-Aug	Jul-Oct	-
	American shad	Spawning Area			Present													Apr-Jun	Apr-Jun	May-Jul	Feb-May	-
	Atlantic sturgeon	General Distribution	C		-													-	-	-	Jan-Dec	Jan-Dec
	Blueback herring	Nursery Area			Present													-	-	May-Jul	Jul-Oct	-

MARINE MAMMALS



Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Mating	Calving	Pupping	Molt
						J	F	M	A	M	J	J	A	S	O	N	D				
	Manatee	General Distribution	E	E	-													-	-	-	-

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				
	Wood duck													Mar-Jun	-	-	-

FISH

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	Diadromous													-	-	Jan-Jun	Jan-Dec	Aug-Dec
	American eel													-	-	Jan-Dec	Jan-Dec	Sep-Dec
	American eel													-	-	Mar-Jul	May-Nov	-
	Gizzard shad													-	-	-	Oct-Mar	-
	Hickory shad													-	-	-	-	Nov-Apr
	Striped bass													Apr-Jun	Apr-Jun	Apr-Jun	Jan-Dec	Jan-Dec
	Estuarine Nursery													-	-	Sep-Mar	Jan-Dec	Jan-Dec
	Atlantic croaker													-	-	Jan-Jun	Jan-Dec	-
	Atlantic menhaden													-	-	Jan-Jun	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													Apr-Sep	Apr-Sep	Apr-Oct	Jan-Dec	Jan-Dec
	Black drum													-	-	-	Jan-Dec	Jun-Nov
	Bluefish													-	-	-	May-Oct	Jun-Oct
	Hogchoker													-	-	-	Jan-Dec	Jan-Dec
	Ladyfish													-	-	-	Apr-Oct	Sep-Oct
	Pinfish													-	-	Dec-Mar	Jan-Dec	May-Oct
	Red drum													-	-	-	Jan-Dec	Jan-Dec
	Red drum													-	-	-	Jan-Dec	-
	Sheepshead													-	-	-	Jun-Sep	Jun-Sep
	Southern flounder													-	-	Dec-Mar	Jan-Dec	Jan-Dec
	Southern kingfish													-	-	-	May-Dec	Jul-Oct
	Spot													-	-	Jan-Mar	Jan-Dec	May-Oct
	Spotted seatrout													-	-	-	Jan-Dec	Jan-Dec
	Striped mullet													-	-	-	Jan-Dec	Jan-Dec
	Striped mullet													-	-	-	Dec-Sep	-
	Summer flounder													-	-	Oct-May	Jan-Dec	-
	Weakfish													Mar-Oct	Mar-Oct	-	Jan-Dec	Mar-Oct
	White mullet													-	-	-	Jan-Dec	Jan-Dec
	White perch													-	-	-	Jan-Dec	Jan-Dec
	White perch													-	-	-	Dec-Sep	-
	White perch													-	-	-	Jan-Dec	-
	Inland silverside													-	-	Oct-May	Jan-Dec	-
	Bluegill													Mar-Oct	Mar-Oct	-	Jan-Dec	Mar-Oct
	Largemouth bass													-	-	-	Jan-Dec	Jan-Dec
	Longnose gar													Apr-Jul	Apr-Jul	Apr-Aug	Jan-Dec	Jan-Dec
	Marine Benthic													Mar-Jun	Mar-Jun	May-Aug	Jun-Oct	-
	Marine Pelagic													Mar-Aug	Mar-Aug	Jun-Sep	-	-
	Yellow perch													Mar-Aug	Mar-Aug	Jun-Sep	-	-
	Yellow perch													Apr-Oct	Apr-Oct	-	Jan-Dec	Jan-Dec
	Atlantic spadefish													May-Jun	May-Jun	May-Jun	-	Jan-Dec
	Atlantic needlefish													Mar-Sep	Mar-Sep	-	Jan-Dec	Jan-Dec
	Spanish mackerel													-	-	-	Apr-Dec	Apr-Dec
														Jan-Mar	Jan-Mar	Jan-Mar	Apr-Dec	Apr-Dec
														-	-	-	Jun-Aug	-
														May-Jul	May-Jul	Jun-Aug	Jun-Oct	-
														-	-	-	Jul-Nov	Jul-Oct

INVERTEBRATES

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
Crab	Blue crab													-	-	-	Jan-Dec	Jan-Dec
Shrimp	Brown shrimp													-	-	Feb-Apr	Mar-Aug	-
	Pink shrimp													-	-	-	Jan-Dec	Sep-Nov
	White shrimp													-	-	Jun-Dec	Dec-Feb	-

MARINE MAMMALS

Subelement	Species	Monthly Presence												Mating	Calving	Pupping	Molt
		J	F	M	A	M	J	J	A	S	O	N	D				
Dolphin	Bottlenose dolphin													Sep-Oct	Sep-Oct	-	-

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	92.03	0.14
10B	Freshwater Marshes	18.32	0.03
10C	Swamps	1,223.34	1.91
10D	Scrub and Shrub Wetlands	637.12	1.00
9A	Sheltered Tidal Flats	29.16	0.05
7	Exposed Tidal Flats	170.36	0.27



ESI SHORELINE HABITAT TYPES

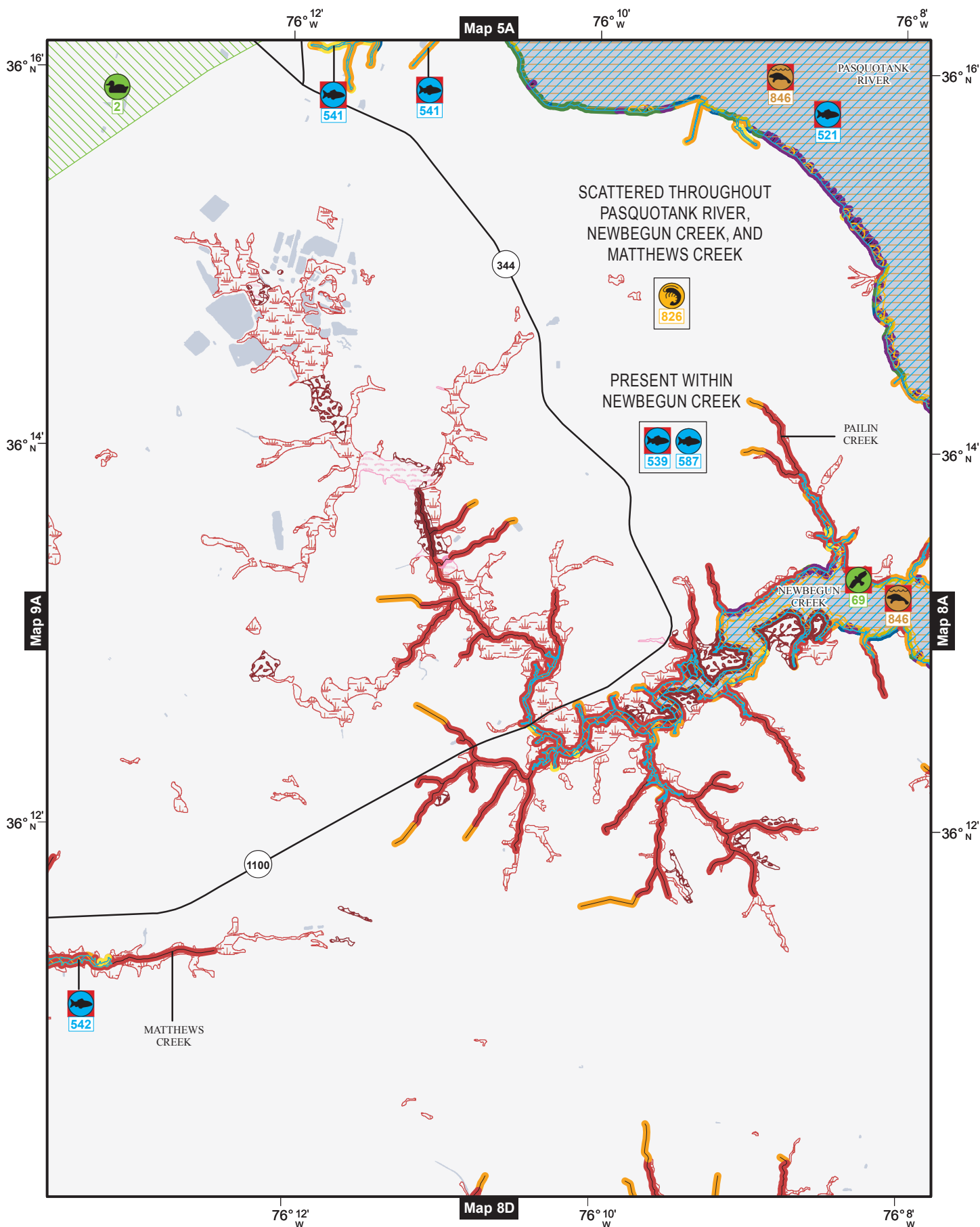
ESI Rank	Shoreline Habitat Classification	Length (Meters)	Length (Miles)	% of ESI Shoreline
10A	Salt- and brackish-water marshes	14,946.65	9.29	10%
10C	Swamps	43,326.94	26.92	29%
10D	Scrub-shrub wetlands	23,152.17	14.39	16%
9A	Sheltered tidal flats	13,794.52	8.57	9%
9B	Sheltered, vegetated low banks	11,636.60	7.23	8%
8B	Sheltered, solid man-made structures	1,637.97	1.02	1%
8C	Sheltered riprap	62.86	0.04	< 1%
7	Exposed tidal flats	22,469.04	13.96	15%
6B	Exposed riprap	5,409.35	3.36	4%
3A	Fine- to medium-grained sand beaches	1,037.87	0.64	1%
3B	Scarps and steep slopes in sand	996.53	0.62	1%
1B	Exposed, solid man-made structures	10,047.46	6.24	7%

Total ESI Shoreline: 148,517.96 Total ESI Shoreline: 92.28
 Total Shoreline: 109,500.00 Total Shoreline: 68.04

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 8B
North Carolina

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	S	F	Concentration	Monthly Presence												Nest	Mig. (S)	Mig. (F)	Juveniles	Adults	Molt
							J	F	M	A	M	J	J	A	S	O	N	D						
2	Waterfowl	American black duck	Wintering	-	-	-													-	Feb-Mar	Oct-Nov	-	-	-
	Waterfowl	American wigeon	Wintering	-	-	-													-	Feb-Mar	Oct-Nov	-	-	-
	Waterfowl	Bufflehead	Wintering	-	-	-													-	Feb-Mar	Oct-Nov	-	-	-
	Waterfowl	Canada goose	Wintering	-	-	-													-	Feb-Mar	Oct-Nov	-	-	-
	Waterfowl	Gadwall	Wintering	-	-	-													-	Feb-Mar	Oct-Nov	-	-	-
	Waterfowl	Greater scaup	Wintering	-	-	-													-	Feb-Mar	Oct-Nov	-	-	-
	Waterfowl	Green-winged teal	Wintering	-	-	-													-	Feb-Mar	Oct-Nov	-	-	-
	Waterfowl	Lesser scaup	Wintering	-	-	-													-	Feb-Mar	Oct-Nov	-	-	-
	Waterfowl	Mallard	Wintering	-	-	-													-	Feb-Mar	Oct-Nov	-	-	-
	Waterfowl	Northern shoveler	Wintering	-	-	-													-	Feb-Mar	Oct-Nov	-	-	-
	Waterfowl	Ring-necked duck	Wintering	-	-	-													-	Feb-Mar	Oct-Nov	-	-	-
	Waterfowl	Snow goose	Wintering	-	-	1500													-	Feb-Mar	Oct-Nov	-	-	-
	Waterfowl	Tundra swan	Wintering	-	-	5000													-	Feb-Mar	Oct-Nov	-	-	-
	Waterfowl	Wood duck	Wintering	-	-	-													-	Feb-Mar	Oct-Nov	-	-	-
	Raptor	Bald eagle	Nesting	T	-	1 Pair													Jan-Jun	-	-	-	-	-

FISH

Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
							J	F	M	A	M	J	J	A	S	O	N	D					
521	Diadromous	Alewife	Nursery Area	-	-	Present													-	-	May-Aug	Jul-Oct	-
	Diadromous	American shad	Spawning Area	-	-	Present													Apr-Jun	Apr-Jun	May-Jul	Feb-May	-
	Diadromous	Atlantic sturgeon	General Distribution	C	-	-													-	-	-	Jan-Dec	Jan-Dec
	Diadromous	Blueback herring	Nursery Area	-	-	Present													-	-	May-Jul	Jul-Oct	-
539	Diadromous	American shad	Spawning Area	-	-	Present													Apr-Jun	Apr-Jun	May-Jul	Feb-May	-
	Diadromous	Atlantic sturgeon	General Distribution	C	-	-													-	-	-	Jan-Dec	Jan-Dec
541	Diadromous	Alewife	Spawning Area	-	-	Present													Mar-Jul	Mar-Jul	May-Aug	-	-
	Diadromous	American shad	Spawning Area	-	-	Present													Apr-Jun	Apr-Jun	May-Jul	Feb-May	-
542	Diadromous	Atlantic sturgeon	General Distribution	C	-	-													-	-	-	Jan-Dec	Jan-Dec
	Diadromous	Blueback herring	Spawning Area	-	-	Present													Mar-Jul	Mar-Jul	May-Jul	-	-
	Diadromous	Alewife	Spawning Area	-	-	Present													Mar-Jul	Mar-Jul	May-Aug	-	-
	Diadromous	American shad	Spawning Area	-	-	Present													Apr-Jun	Apr-Jun	May-Jul	Feb-May	-
	Diadromous	Atlantic sturgeon	General Distribution	C	-	-													-	-	-	Jan-Dec	Jan-Dec
587	Diadromous	Blueback herring	Spawning Area	-	-	Present													Mar-Jul	Mar-Jul	May-Jul	-	-
	Diadromous	Gizzard shad	Spawning Area	-	-	-													Mar-May	Mar-May	Apr-Jun	May-Sep	-
	Diadromous	Alewife	Spawning Area	-	-	Present													Mar-Jul	Mar-Jul	May-Aug	-	-
	Diadromous	Blueback herring	Spawning Area	-	-	Present													Mar-Jul	Mar-Jul	May-Jul	-	-

INVERTEBRATES

Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Eggs	Larvae	Juveniles	Adults	
826	Shrimp	Brown shrimp	Nursery Area			-	J	F	M	A	M	J	J	A	S	O	N	D	Spawn	-	Feb-Apr	Mar-Aug	-

MARINE MAMMALS

Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Mating	Calving	Pupping	Molt
				E	E	-	J	F	M	A	M	J	J	A	S	O	N	D				
846	Manatee	West Indian manatee	General Distribution																			

WIDESPREAD IN MAPPED AREA (> 10 SQUARE KILOMETERS)

BIRDS



	Subelement	Species	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				
Waterfowl		Canada goose	Wintering			100S													-	Feb-Mar	Oct-Nov	-
		Mallard	Wintering			100S													-	Feb-Mar	Oct-Nov	-
		Ruddy duck	Wintering			100S													-	Feb-Mar	Oct-Nov	-
		Scaup	Wintering			1000S													-	Feb-Mar	Oct-Nov	-
		Scaup	Wintering			100S													-	Feb-Mar	Oct-Nov	-
		Snow goose	Wintering			1000S													-	Feb-Mar	Oct-Nov	-
		Tundra swan	Wintering			1000S													-	Feb-Mar	Oct-Nov	-
																			-	Feb-Mar	Oct-Nov	-

ALSO PRESENT IN MAPPED AREA (GENERAL DISTRIBUTION)

BIRDS





Subelement	Species	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt
	Wood duck	J	F	M	A	M	J	J	A	S	O	N	D	Mar-Jun	-	-	-

FISH



Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
	American eel	J	F	M	A	M	J	J	A	S	O	N	D	-	-	Jan-Dec	Jan-Dec	Sep-Dec
	American eel													-	-	Jan-Jun	Jan-Dec	Aug-Dec
	Hickory shad													Apr-Jun	-	-	-	Nov-Apr
	Striped bass													Apr-Jun	Apr-Jun	Apr-Jun	Jan-Dec	Jan-Dec
	Atlantic croaker													-	-	Sep-Mar	Jan-Dec	Jan-Dec
	Atlantic menhaden													-	-	Jan-Jun	Jan-Dec	-
	Bay anchovy													Apr-Sep	Apr-Sep	Apr-Oct	Jan-Dec	Jan-Dec
	Black drum													-	-	-	Jan-Dec	Jun-Nov
	Bluefish													-	-	-	May-Oct	Jun-Oct
	Ladyfish													-	-	-	Apr-Oct	Sep-Oct
	Red drum													-	-	-	Jan-Dec	-
	Red drum													-	-	-	Jan-Dec	Jan-Dec
	Southern flounder													-	-	Dec-Mar	Jan-Dec	Jan-Dec
	Southern kingfish													-	-	-	May-Dec	Jul-Oct

North Carolina: Map 8B

FISH (continued)

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	Spot													-	-	Jan-Mar	Jan-Dec	May-Oct
	Spotted seatrout													-	-	-	Jan-Dec	Jan-Dec
	Striped mullet													-	-	-	Jan-Dec	Jan-Dec
	Striped mullet													-	-	-	Dec-Sep	-
	Summer flounder													-	-	Oct-May	Jan-Dec	-
	Weakfish													Mar-Oct	Mar-Oct	-	Jan-Dec	Mar-Oct
	White mullet													-	-	-	Jan-Dec	Jan-Dec
	White perch													Mar-Jun	Mar-Jun	May-Aug	Jun-Oct	-
	White perch													Apr-Jul	Apr-Jul	Apr-Aug	Jan-Dec	Jan-Dec
 Estuarine Resident	Inland silverside													Mar-Aug	Mar-Aug	Jun-Sep	-	-
 Freshwater	Bluegill													Apr-Oct	Apr-Oct	-	Jan-Dec	Jan-Dec
	Largemouth bass													May-Jun	May-Jun	May-Jun	-	Jan-Dec
	Longnose gar													Mar-Sep	Mar-Sep	-	Jan-Dec	Jan-Dec
	Yellow perch													Jan-Mar	Jan-Mar	Jan-Mar	Apr-Dec	Apr-Dec
 Marine Benthic	Atlantic spadefish													-	-	-	Jun-Aug	-
 Marine Pelagic	Atlantic needlefish													May-Jul	May-Jul	Jun-Aug	Jun-Oct	-
	Spanish mackerel													-	-	-	Jul-Nov	Jul-Oct

INVERTEBRATES

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
 Crab	Blue crab													-	-	-	Jan-Dec	Jan-Dec
 Shrimp	Brown shrimp													-	-	Feb-Apr	Mar-Aug	-

MARINE MAMMALS

Subelement	Species	Monthly Presence												Mating	Calving	Pupping	Molt
		J	F	M	A	M	J	J	A	S	O	N	D				
 Dolphin	Bottlenose dolphin													Sep-Oct	Sep-Oct	-	-

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>
10B	Freshwater Marshes	56.10	0.09
10C	Swamps	1,196.07	1.87
10D	Scrub and Shrub Wetlands	199.10	0.31
9A	Sheltered Tidal Flats	1.44	0.00
7	Exposed Tidal Flats	14.00	0.02



ESI SHORELINE HABITAT TYPES

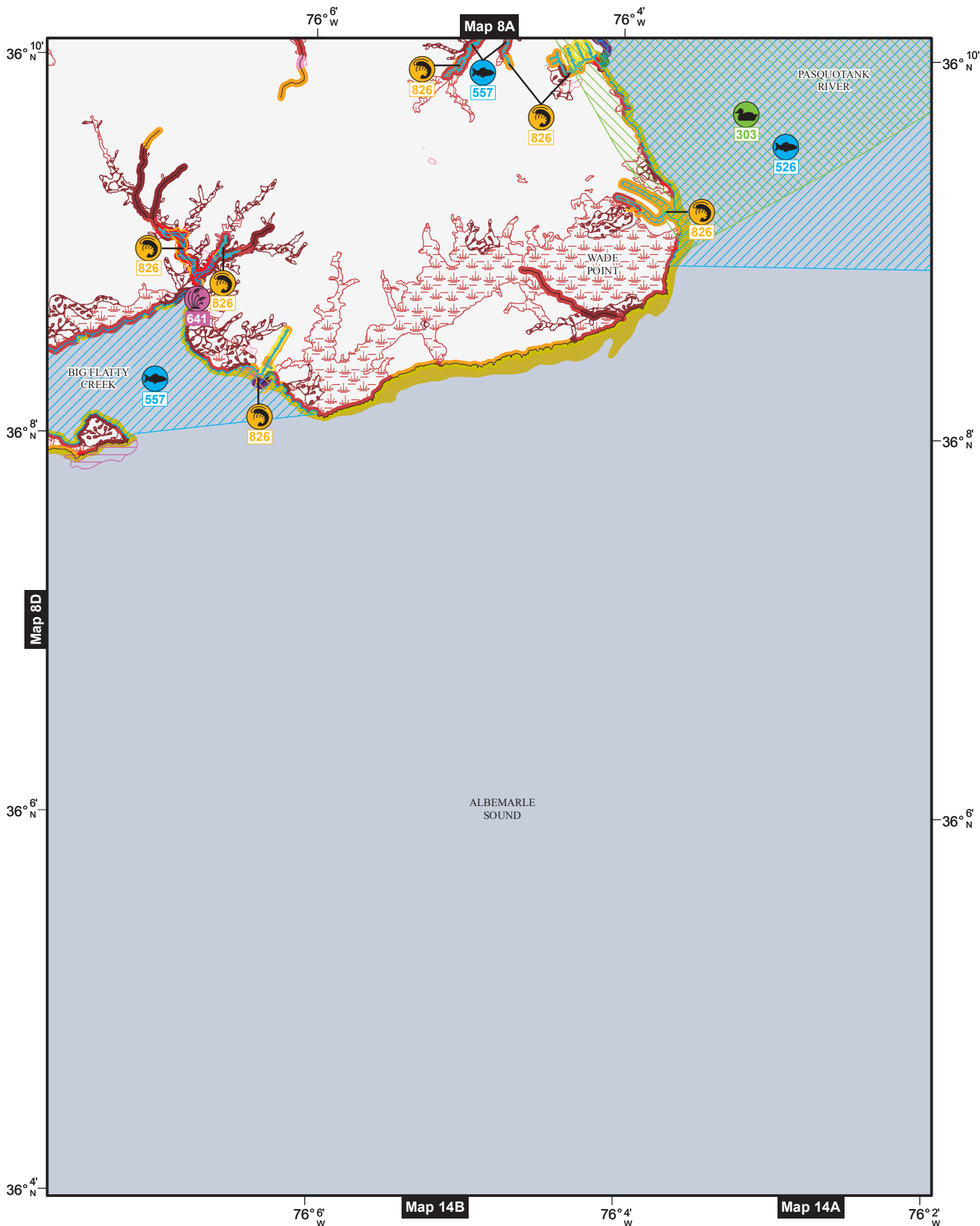
<i>ESI Rank</i>	<i>Shoreline Habitat Classification</i>	<i>Length (Meters)</i>	<i>Length (Miles)</i>	<i>% of ESI Shoreline</i>
10A	Salt- and brackish-water marshes	799.15	0.50	1%
10B	Freshwater marshes	198.21	0.12	< 1%
10C	Swamps	41,226.62	25.62	52%
10D	Scrub-shrub wetlands	6,340.16	3.94	8%
9A	Sheltered tidal flats	832.56	0.52	1%
9B	Sheltered, vegetated low banks	12,900.74	8.02	16%
8B	Sheltered, solid man-made structures	2,125.70	1.32	3%
8C	Sheltered riprap	157.27	0.10	< 1%
7	Exposed tidal flats	3,906.82	2.43	5%
6B	Exposed riprap	2,878.39	1.79	4%
3A	Fine- to medium-grained sand beaches	1,149.30	0.71	1%
3B	Scarps and steep slopes in sand	786.92	0.49	1%
1B	Exposed, solid man-made structures	6,209.04	3.86	8%

Total ESI Shoreline: 79,510.88 Total ESI Shoreline: 49.41
 Total Shoreline: 72,945.29 Total Shoreline: 45.33

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

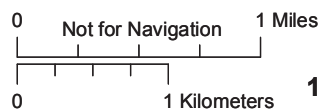




Map 8C
North Carolina



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



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Map 8C
North Carolina

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
SAV	Submerged aquatic veg	High Ecological Value			Present	J F M A M J J A S O N D

BIRDS

Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence	Nest	Mig.(S)	Mig.(F)	Juveniles	Adults
303	Waterfowl	Canada goose	Wintering			100S		-	Feb-Mar	Oct-Nov	-	-
	Waterfowl	Mallard	Wintering			100S		-	Feb-Mar	Oct-Nov	-	-
	Waterfowl	Ruddy duck	Wintering			100S		-	Feb-Mar	Oct-Nov	-	-
	Waterfowl	Scaup	Wintering			100S		-	Feb-Mar	Oct-Nov	-	-

FISH

Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence	Spawn	Eggs	Larvae	Juveniles	Adults
526	Diadromous	Alewife	Nursery Area			Present		-	-	May-Aug	Jul-Oct	-
	Diadromous	American shad	Spawning Area			Present		Apr-Jun	Apr-Jun	May-Jul	Feb-May	-
	Diadromous	Blueback herring	Nursery Area			Present		-	-	May-Jul	Jul-Oct	-
557	Diadromous	Alewife	Spawning Area			Present		Mar-Jul	Mar-Jul	May-Aug	-	-
	Diadromous	American shad	Spawning Area			Present		Apr-Jun	Apr-Jun	May-Jul	Feb-May	-
	Diadromous	Blueback herring	Spawning Area			Present		Mar-Jul	Mar-Jul	May-Jul	-	-



HABITATS & RARE PLANTS

Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence
641	Wetland	Carolina grasswort	Vulnerable Occurrence			Current	J F M A M J J A S O N D


INVERTEBRATES

Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence	Spawn	Eggs	Larvae	Juveniles	Adults
826	Shrimp	Brown shrimp	Nursery Area			-		-	-	Feb-Apr	Mar-Aug	-

BIRDS

Subelement	Species	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				
	American black duck	Wintering	-	-	-													-	Feb-Mar	Oct-Nov	-
	American wigeon	Wintering	-	-	-													-	Feb-Mar	Oct-Nov	-
	Black scoter	Wintering	-	-	-													-	Feb-Mar	Oct-Nov	-
	Bufflehead	Wintering	-	-	-													-	Feb-Mar	Oct-Nov	-
	Canada goose	Wintering	-	-	-													-	Feb-Mar	Oct-Nov	-
	Canvasback	Wintering	-	-	-													-	Feb-Mar	Oct-Nov	-
	Gadwall	Wintering	-	-	-													-	Feb-Mar	Oct-Nov	-
	Greater scaup	Wintering	-	-	-													-	Feb-Mar	Oct-Nov	-
	Green-winged teal	Wintering	-	-	-													-	Feb-Mar	Oct-Nov	-
	Lesser scaup	Wintering	-	-	-													-	Feb-Mar	Oct-Nov	-
	Long-tailed duck	Wintering	-	-	-													-	Feb-Mar	Oct-Nov	-
	Mallard	Wintering	-	-	-													-	Feb-Mar	Oct-Nov	-
	Northern shoveler	Wintering	-	-	-													-	Feb-Mar	Oct-Nov	-
	Red-breasted merganser	Wintering	-	-	-													-	Feb-Mar	Oct-Nov	-
	Redhead	Wintering	-	-	-													-	Feb-Mar	Oct-Nov	-
	Ring-necked duck	Wintering	-	-	-													-	Feb-Mar	Oct-Nov	-
	Scaup	Wintering	1000S	-	-													-	Feb-Mar	Oct-Nov	-
	Snow goose	Wintering	1000S	-	-													-	Feb-Mar	Oct-Nov	-
	Snow goose	Wintering	1500	-	-													-	Feb-Mar	Oct-Nov	-
	Surf scoter	Wintering	-	-	-													-	Feb-Mar	Oct-Nov	-
	Tundra swan	Wintering	5000	-	-													-	Feb-Mar	Oct-Nov	-
	Tundra swan	Wintering	1000S	-	-													-	Feb-Mar	Oct-Nov	-
	White-winged scoter	Wintering	-	-	-													-	Feb-Mar	Oct-Nov	-
	Wood duck	Wintering	-	-	-													-	Feb-Mar	Oct-Nov	-

FISH

Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
						J	F	M	A	M	J	J	A	S	O	N	D					
	Alewife	Migration			Present													-	-	May-Aug	Jul-Mar	-
	Atlantic sturgeon	General Distribution	C		-													-	-	-	Jan-Dec	Jan-Dec
	Blueback herring	Migration			Present													-	-	May-Jul	Aug-Oct	-

MARINE MAMMALS

Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Mating	Calving	Pupping	Molt
						J	F	M	A	M	J	J	A	S	O	N	D				
	West Indian manatee	General Distribution	E		-													-	-	-	-

ALSO PRESENT IN MAPPED AREA (GENERAL DISTRIBUTION)

BENTHIC

Monthly Presence



Subelement
SAV

Species
Submerged aquatic veg

BIRDS

Monthly Presence

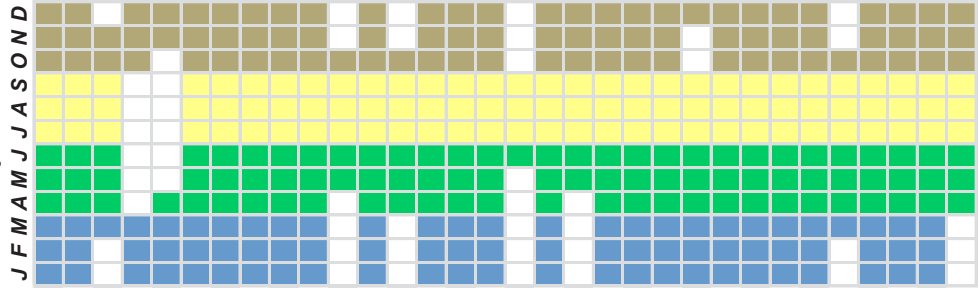


Subelement
Waterfowl

Species
Wood duck



FISH

Monthly Presence





Subelement	Species	Spawn	Eggs	Larvae	Juveniles	Adults
Diadromous	American eel	-	-	Jan-Jun	Jan-Dec	Aug-Dec
	American eel	-	-	Jan-Dec	Jan-Dec	Sep-Dec
	American shad	-	-	Mar-Jul	May-Nov	-
	Gizzard shad	-	-	-	Oct-Mar	-
	Hickory shad	-	-	-	-	Nov-Apr
	Striped bass	Apr-Jun	Apr-Jun	Apr-Jun	Jan-Dec	Jan-Dec
Estuarine Nursery	Atlantic croaker	-	-	Sep-Mar	Jan-Dec	Jan-Dec
	Atlantic menhaden	-	-	Jan-Jun	Jan-Dec	-
	Bay anchovy	Apr-Sep	Apr-Sep	Apr-Oct	Jan-Dec	Jan-Dec
	Black drum	-	-	-	Jan-Dec	Jun-Nov
	Bluefish	-	-	-	May-Oct	Jun-Oct
	Hogchoker	-	-	-	Jan-Dec	Jan-Dec
	Ladyfish	-	-	-	Apr-Oct	Sep-Oct
	Pinfish	-	-	Dec-Mar	Jan-Dec	May-Oct
	Red drum	-	-	-	Jan-Dec	Jan-Dec
	Red drum	-	-	-	Jan-Dec	-
	Sheepshead	-	-	-	Jun-Sep	Jun-Sep
	Southern flounder	-	-	Dec-Mar	Jan-Dec	Jan-Dec
	Southern kingfish	-	-	-	May-Dec	Jul-Oct
	Spot	-	-	Jan-Mar	Jan-Dec	May-Oct
	Spotted seatrout	-	-	-	Jan-Dec	Jan-Dec
	Striped mullet	-	-	-	Jan-Dec	Jan-Dec
	Striped mullet	-	-	-	Dec-Sep	-
	Summer flounder	-	-	Oct-May	Jan-Dec	-
	Weakfish	Mar-Oct	Mar-Oct	-	Jan-Dec	Mar-Oct
	White mullet	-	-	-	Jan-Dec	Jan-Dec
	White perch	Apr-Jul	Apr-Jul	Apr-Aug	Jan-Dec	Jan-Dec
Estuarine Resident	White perch	Mar-Jun	Mar-Jun	May-Aug	Jun-Oct	-
Freshwater	Inland silverside	Mar-Aug	Mar-Aug	Jun-Sep	-	-
	Largemouth bass	May-Jun	May-Jun	May-Jun	-	Jan-Dec
	Longnose gar	Mar-Sep	Mar-Sep	-	Jan-Dec	Jan-Dec
	Yellow perch	-	-	-	Apr-Dec	Apr-Dec

FISH (continued)

Subelement	Species	Monthly Presence												Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D				
 Marine Benthic	Yellow perch													Jan-Mar	Jan-Mar	Apr-Dec	Apr-Dec
	Atlantic spadefish													-	-	Jun-Aug	-
 Marine Pelagic	Atlantic needlefish													May-Jul	Jun-Aug	Jun-Oct	-
	Spanish mackerel													-	-	Jul-Nov	Jul-Oct

INVERTEBRATES

Subelement	Species	Monthly Presence												Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D				
 Crab	Blue crab													-	May-Oct	-	Jan-Dec
	Blue crab													-	-	Jan-Dec	Jan-Dec
 Shrimp	Brown shrimp													-	Feb-Apr	Mar-Aug	-
	Pink shrimp													-	-	Jan-Dec	Sep-Nov
	White shrimp													-	Jun-Dec	Dec-Feb	-

MARINE MAMMALS

Subelement	Species	Monthly Presence												Mating	Calving	Pupping	Molt
		J	F	M	A	M	J	J	A	S	O	N	D				
 Dolphin	Bottlenose dolphin													Sep-Oct	Sep-Oct	-	-

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	25.59	0.04
10B	Freshwater Marshes	10.20	0.02
10C	Swamps	762.22	1.19
10D	Scrub and Shrub Wetlands	315.43	0.49
7	Exposed Tidal Flats	219.79	0.34

ESI SHORELINE HABITAT TYPES

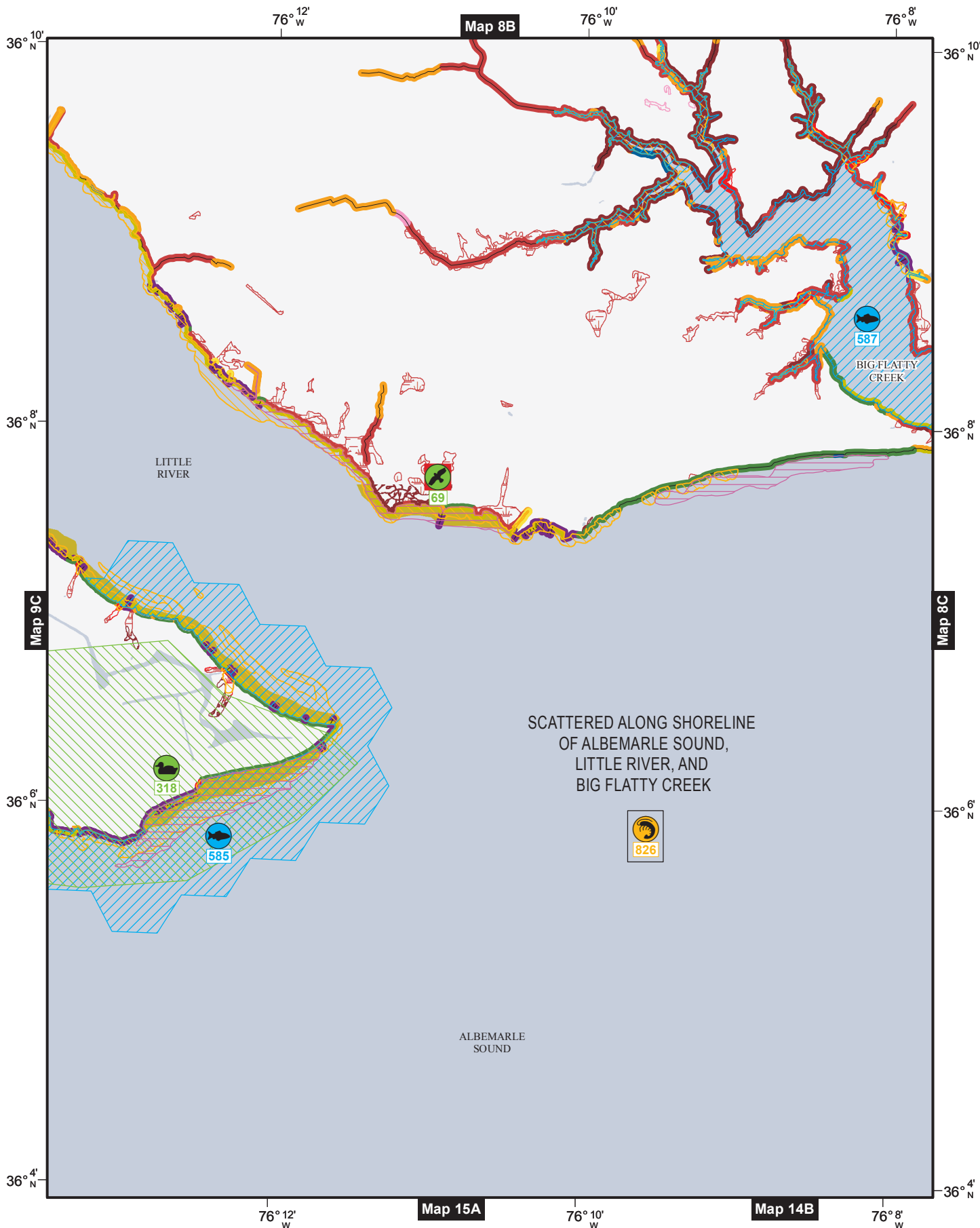
<i>ESI Rank</i>	<i>Shoreline Habitat Classification</i>	<i>Length (Meters)</i>	<i>Length (Miles)</i>	<i>% of ESI Shoreline</i>
10A	Salt- and brackish-water marshes	3,320.31	2.06	7%
10B	Freshwater marshes	76.39	0.05	< 1%
10C	Swamps	10,501.18	6.53	22%
10D	Scrub-shrub wetlands	7,713.67	4.79	16%
9B	Sheltered, vegetated low banks	9,224.79	5.73	20%
8B	Sheltered, solid man-made structures	1,743.73	1.08	4%
7	Exposed tidal flats	13,121.22	8.15	28%
6B	Exposed riprap	182.65	0.11	< 1%
1B	Exposed, solid man-made structures	975.39	0.61	2%

Total ESI Shoreline: 46,859.30 Total ESI Shoreline: 29.12
 Total Shoreline: 33,641.74 Total Shoreline: 20.90

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



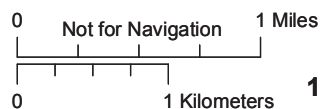


Map 8D

North Carolina



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



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Map 8D
North Carolina

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											
SAV	Submerged aquatic veg	High Ecological Value			Present	J	F	M	A	M	J	J	A	S	O	N	D

BIRDS

Map ID	Subelement	Species	Mapping Qualifier	S		F	Concentration	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt
				T	J			F	M	A	M	J	J	A	S	O	N	D					
69	Raptor	Bald eagle	Nesting				1 Pair												Jan-Jun	-	-	-	
318	Waterfowl	Mallard	Wintering				100S												-	Feb-Mar	Oct-Nov	-	
	Waterfowl	Tundra swan	Wintering				100S												-	Feb-Mar	Oct-Nov	-	

FISH

Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
585	Diadromous	Striped bass	Nursery Area			Medium	J	F	M	A	M	J	J	A	S	O	N	D	Apr-Jun	Apr-Jun	Apr-Jun	Jan-Dec	Jan-Dec
587	Diadromous	Alewife	Spawning Area			Present	J	F	M	A	M	J	J	A	S	O	N	D	Mar-Jul	Mar-Jul	May-Aug	-	-
	Diadromous	Blueback herring	Spawning Area			Present	J	F	M	A	M	J	J	A	S	O	N	D	Mar-Jul	Mar-Jul	May-Jul	-	-

INVERTEBRATES

Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
826	Shrimp	Brown shrimp	Nursery Area			-	J	F	M	A	M	J	J	A	S	O	N	D	-	-	Feb-Apr	Mar-Aug	-

WIDESPREAD IN MAPPED AREA (> 10 SQUARE KILOMETERS)


BIRDS

Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Juveniles	Adults
	Waterfowl	American black duck	Wintering			-	J	F	M	A	M	J	J	A	S	O	N	D	-	Feb-Mar	Oct-Nov	-	-
		American wigeon	Wintering			-	J	F	M	A	M	J	J	A	S	O	N	D	-	Feb-Mar	Oct-Nov	-	-
		Black scoter	Wintering			-	J	F	M	A	M	J	J	A	S	O	N	D	-	Feb-Mar	Oct-Nov	-	-
		Bufflehead	Wintering			-	J	F	M	A	M	J	J	A	S	O	N	D	-	Feb-Mar	Oct-Nov	-	-
		Canada goose	Wintering			1000S	J	F	M	A	M	J	J	A	S	O	N	D	-	Feb-Mar	Oct-Nov	-	-
		Canada goose	Wintering			-	J	F	M	A	M	J	J	A	S	O	N	D	-	Feb-Mar	Oct-Nov	-	-
		Canvasback	Wintering			-	J	F	M	A	M	J	J	A	S	O	N	D	-	Feb-Mar	Oct-Nov	-	-
		Gadwall	Wintering			-	J	F	M	A	M	J	J	A	S	O	N	D	-	Feb-Mar	Oct-Nov	-	-
		Greater scaup	Wintering			-	J	F	M	A	M	J	J	A	S	O	N	D	-	Feb-Mar	Oct-Nov	-	-
		Green-winged teal	Wintering			-	J	F	M	A	M	J	J	A	S	O	N	D	-	Feb-Mar	Oct-Nov	-	-
		Lesser scaup	Wintering			-	J	F	M	A	M	J	J	A	S	O	N	D	-	Feb-Mar	Oct-Nov	-	-

BIRDS (continued)

Subelement	Species	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				
	Long-tailed duck	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Mallard	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Northern shoveler	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Red-breasted merganser	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Redhead	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Ring-necked duck	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	Ring-necked duck	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Ruddy duck	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	Scaup	Wintering			1000S													-	Feb-Mar	Oct-Nov	-
	Snow goose	Wintering			1000S													-	Feb-Mar	Oct-Nov	-
	Snow goose	Wintering			1500													-	Feb-Mar	Oct-Nov	-
	Surf scoter	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Tundra swan	Wintering			1000S													-	Feb-Mar	Oct-Nov	-
	Tundra swan	Wintering			5000													-	Feb-Mar	Oct-Nov	-
	Tundra swan	Wintering			10000S													-	Feb-Mar	Oct-Nov	-
	White-winged scoter	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Wood duck	Wintering			-													-	Feb-Mar	Oct-Nov	-

FISH

Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
						J	F	M	A	M	J	J	A	S	O	N	D					
	Diadromous	Migration			Present													-	-	May-Aug	Jul-Mar	-
	Alewife	Nursery Area			Present													-	-	May-Aug	Jul-Oct	-
	American shad	Spawning Area			Present													Apr-Jun	Apr-Jun	May-Jul	Feb-May	-
	Atlantic sturgeon	Concentration Area	C		Common													-	-	-	Jun-Feb	Jun-Feb
	Atlantic sturgeon	General Distribution	C		-													-	-	-	Jan-Dec	Jan-Dec
	Blueback herring	Migration			Present													-	-	May-Jul	Aug-Oct	-
	Blueback herring	Nursery Area			Present													-	-	May-Jul	Jul-Oct	-

MARINE MAMMALS

Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Mating	Calving	Pupping	Molt
						J	F	M	A	M	J	J	A	S	O	N	D				
	Manatee	General Distribution	E		-													-	-	-	-
	West Indian manatee	General Distribution	E		-													-	-	-	-

ALSO PRESENT IN MAPPED AREA (GENERAL DISTRIBUTION)

BENTHIC

Subelement	Species
SAV	Submerged aquatic veg



BIRDS



Subelement	Species
Waterfowl	Wood duck



FISH

Subelement	Species	Spawn	Eggs	Larvae	Juveniles	Adults
Diadromous	American eel	-	-	Jan-Jun	Jan-Dec	Aug-Dec
	American shad	-	-	Mar-Jul	May-Nov	-
	Gizzard shad	-	-	-	Oct-Mar	-
	Hickory shad	-	-	-	-	Nov-Apr
Estuarine Nursery	Striped bass	Apr-Jun	Apr-Jun	Apr-Jun	Jan-Dec	Jan-Dec
	Atlantic croaker	-	-	Sep-Mar	Jan-Dec	Jan-Dec
	Atlantic menhaden	-	-	Jan-Jun	Jan-Dec	-
	Bay anchovy	Apr-Sep	Apr-Sep	Apr-Oct	Jan-Dec	Jan-Dec
	Black drum	-	-	-	Jan-Dec	Jun-Nov
	Bluefish	-	-	-	May-Oct	Jun-Oct
	Hogchoker	-	-	-	Jan-Dec	Jan-Dec
	Ladyfish	-	-	-	Apr-Oct	Sep-Oct
	Pinfish	-	-	Dec-Mar	Jan-Dec	May-Oct
	Red drum	-	-	-	Jan-Dec	-
	Sheepshead	-	-	-	Jun-Sep	Jun-Sep
	Southern flounder	-	-	Dec-Mar	Jan-Dec	Jan-Dec
	Southern kingfish	-	-	-	May-Dec	Jul-Oct
	Spot	-	-	Jan-Mar	Jan-Dec	May-Oct
	Spotted seatrout	-	-	-	Jan-Dec	Jan-Dec
	Striped mullet	-	-	-	Jan-Dec	Jan-Dec
	Summer flounder	-	-	-	Jan-Dec	Jan-Dec
	Weakfish	-	-	Oct-May	Jan-Dec	-
	White mullet	Mar-Oct	Mar-Oct	-	Jan-Dec	Mar-Oct
	White perch	-	-	-	Jan-Dec	Jan-Dec
Estuarine Resident	Inland silverside	Apr-Jul	Apr-Jul	Apr-Aug	Jan-Dec	Jan-Dec
	Black crappie	Mar-Aug	Mar-Aug	Jun-Sep	-	-
	Largemouth bass	Mar-May	Mar-May	Mar-May	Jan-Dec	Jan-Dec
	Longnose gar	May-Jun	May-Jun	May-Jun	-	Jan-Dec
	Yellow perch	Mar-Sep	Mar-Sep	-	Jan-Dec	Jan-Dec
	Yellow perch	Jan-Mar	Jan-Mar	Jan-Mar	Apr-Dec	Apr-Dec
	Atlantic spadefish	-	-	-	Apr-Dec	Apr-Dec
	Atlantic needlefish	-	-	-	Jun-Aug	-
Marine Benthic	Spanish mackerel	May-Jul	May-Jul	Jun-Aug	Jun-Oct	-
	Spanish mackerel	-	-	-	Jul-Nov	Jul-Oct

INVERTEBRATES

Subelement	Species	Monthly Presence												Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D				
 Crab	Blue crab													-	-	Jan-Dec	Jan-Dec
	Blue crab													-	May-Oct	-	Jan-Dec
 Shrimp	Brown shrimp													-	Feb-Apr	Mar-Aug	-
	Pink shrimp													-	-	Jan-Dec	Sep-Nov
	White shrimp													-	Jun-Dec	Dec-Feb	-

MARINE MAMMALS

Subelement	Species	Monthly Presence												Mating	Calving	Pupping	Molt
		J	F	M	A	M	J	J	A	S	O	N	D				
 Dolphin	Bottlenose dolphin													Sep-Oct	Sep-Oct	-	-

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	19.58	0.03
10B	Freshwater Marshes	5.07	0.01
10C	Swamps	232.97	0.36

ESI SHORELINE HABITAT TYPES

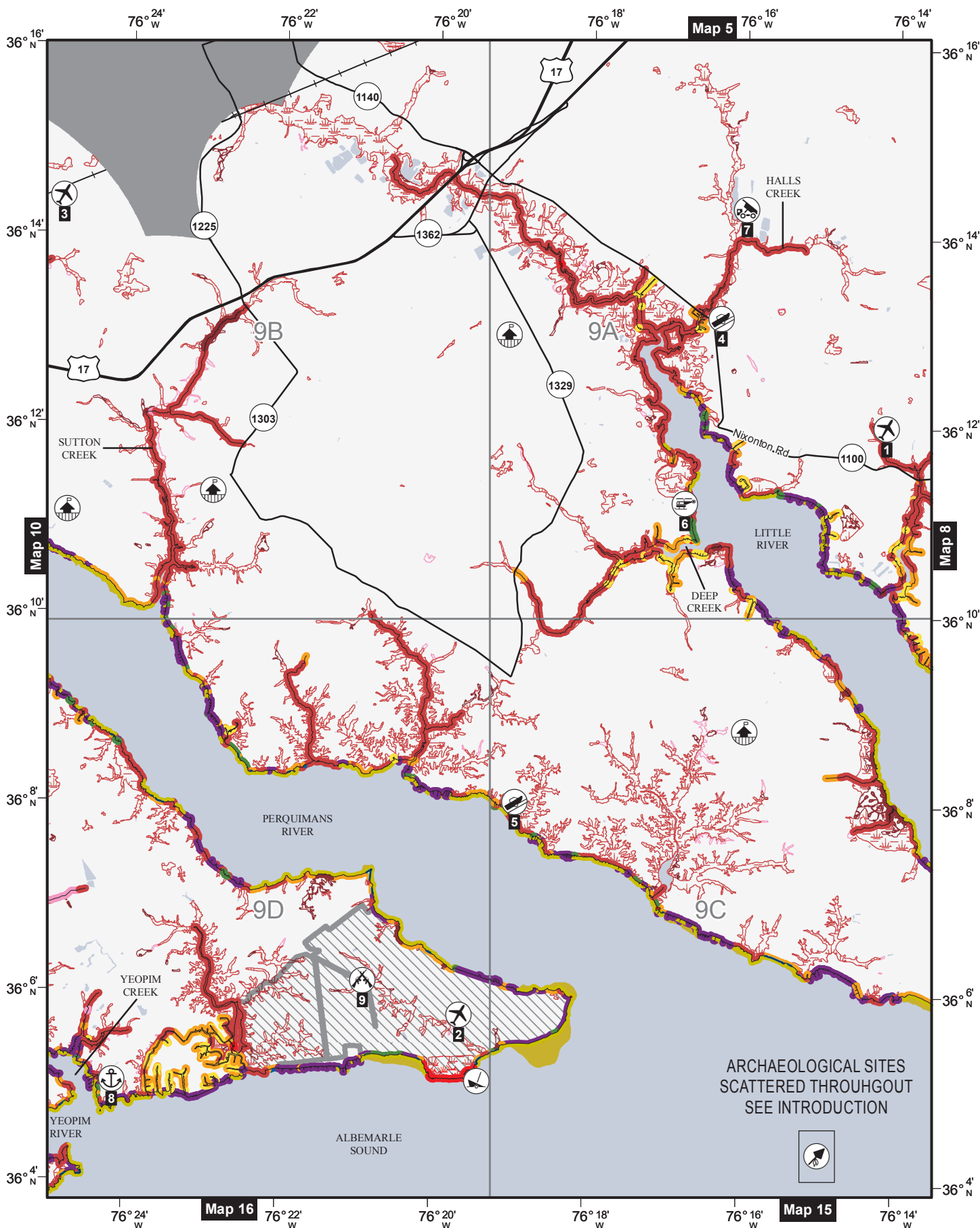
ESI Rank	Shoreline Habitat Classification	Length (Meters)	Length (Miles)	% of ESI Shoreline
10A	Salt- and brackish-water marshes	2,329.00	1.45	3%
10B	Freshwater marshes	180.63	0.11	< 1%
10C	Swamps	18,854.20	11.72	21%
10D	Scrub-shrub wetlands	21,773.73	13.53	24%
9A	Sheltered tidal flats	135.07	0.08	< 1%
9B	Sheltered, vegetated low banks	10,401.59	6.46	12%
8B	Sheltered, solid man-made structures	918.90	0.57	1%
7	Exposed tidal flats	16,647.61	10.34	19%
6B	Exposed riprap	9,390.20	5.83	10%
3A	Fine- to medium-grained sand beaches	1,503.97	0.93	2%
3B	Scarps and steep slopes in sand	267.50	0.17	< 1%
1B	Exposed, solid man-made structures	7,451.95	4.63	8%

Total ESI Shoreline: 89,854.34
Total ESI Shoreline: 55.83
Total Shoreline: 71,387.92
Total Shoreline: 44.36

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

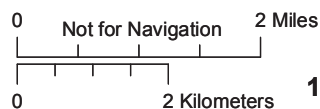




Map 9
North Carolina



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



Map 9
North Carolina

HUMAN USE RESOURCES

DISPLAYED ON MAP (POINTS)				
Map ID	Type	Name	Contact	Phone
1	AIRPORT	MEADSTOWN AIRSTRIP	R. BRENT MEADS	252-340-2777
2	AIRPORT	HARVEY POINT DEFENSE TESTING ACTIVITY	TONY BASS, MANAGER	252-426-5221
3	AIRPORT	DILLARD	CRAIG CRAFT, MANAGER	252-426-7613
4	BOAT RAMP	HALLS CREEK, LITTLE RIVER	HERTFORD DEPOT	252-426-2255
5	BOAT RAMP	PERQUIMANS, NEW HOPE	HERTFORD DEPOT	252-426-2255
6	HELIPORT	ISBELL	WILLIAM J. ISBELL, MANAGER	252-619-0927
7	LANDFILL	PASQUOTANK COUNTY C&D LANDFILL	MICHAEL ETHERIDGE	252-335-4105
8	MARINA	ALBERMARLE PLANTATION MARINA		252-426-4037

DISPLAYED ON MAP (POLYGONS)				
Map ID	Type	Name	Contact	Phone
9	MILITARY	HARVEY POINT DEFENSE TESTING ACTIVITY FACILITY	US DEPARTMENT OF DEFENSE	252-426-5221

ALSO PRESENT IN MAPPED AREA (POLYGONS)			
Type	Name	Contact	Phone
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT; CORAL	DAVID DALE, SOUTHEAST REGION	727-824-5317
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT; SHRIMP	DAVID DALE, SOUTHEAST REGION	727-824-5317
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT; SNAPPER GROUPER	DAVID DALE, SOUTHEAST REGION	727-824-5317
ESSENTIAL HABITAT	HAPC; SHRIMP	DAVID DALE, SOUTHEAST REGION	727-824-5317
ESSENTIAL HABITAT	HAPC; SNAPPER GROUPER	DAVID DALE, SOUTHEAST REGION	727-824-5317

JURISDICTIONS				
COUNTY:	CHOWAN, PASQUOTANK, PERQUIMANS	FEMA:	REGION 1	
COAST GUARD:	DISTRICT 5, SECTOR NORTH CAROLINA	EPA:	REGION 4	
USACE:	SOUTH ATLANTIC DIVISION, WILMINGTON 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	60.21	0.09
10B	Freshwater Marshes	240.75	0.38
10C	Swamps	6,355.36	9.93
10D	Scrub and Shrub Wetlands	387.21	0.61
9A	Sheltered Tidal Flats	0.31	0.00
7	Exposed Tidal Flats	761.88	1.19

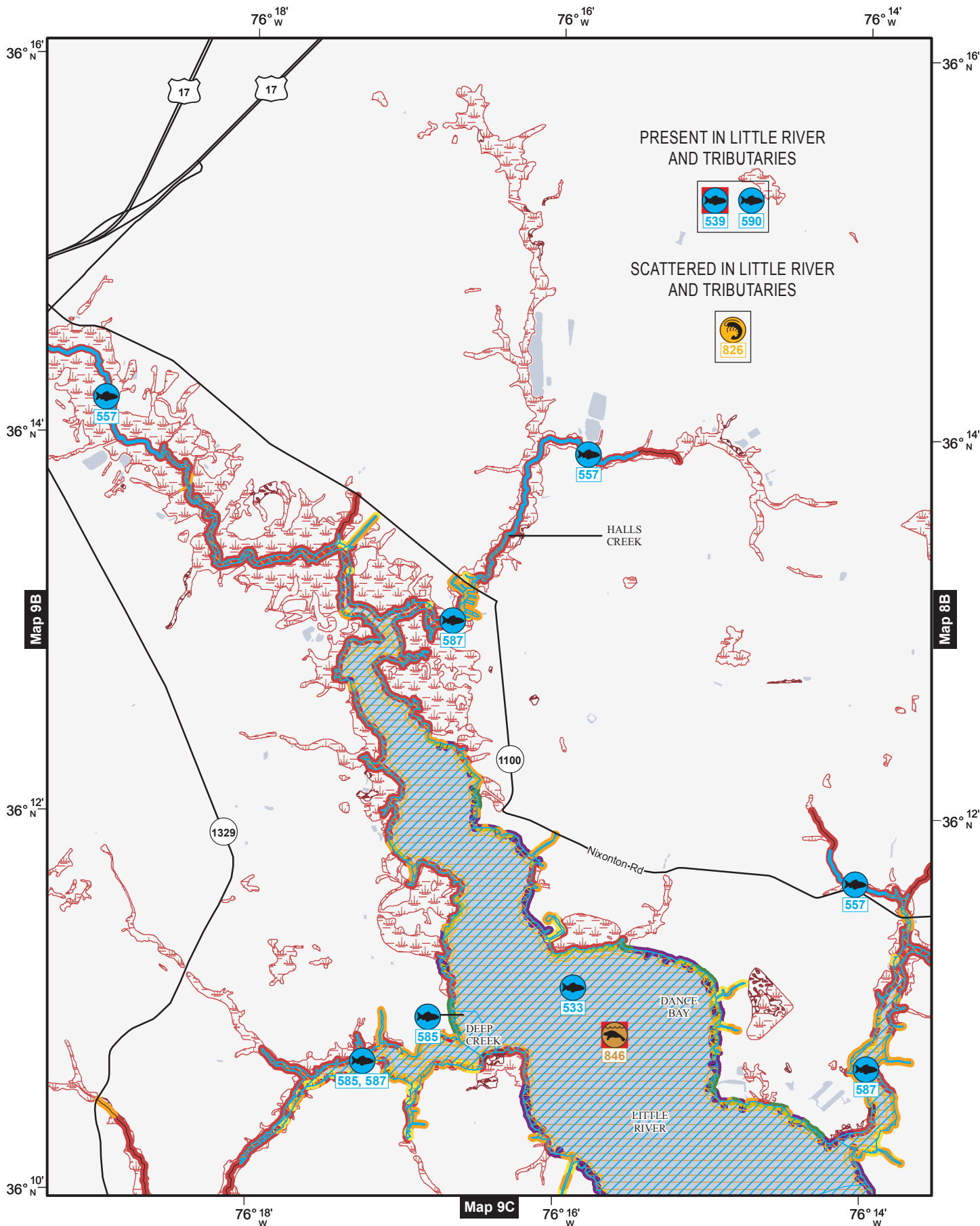
ESI SHORELINE HABITAT TYPES

<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	3,798.29	2.36	1%
10B	Freshwater marshes	722.75	0.45	< 1%
10C	Swamps	118,030.12	73.34	41%
10D	Scrub-shrub wetlands	5,127.78	3.19	2%
9A	Sheltered tidal flats	150.29	0.09	< 1%
9B	Sheltered, vegetated low banks	35,482.07	22.05	12%
8B	Sheltered, solid man-made structures	14,155.72	8.80	5%
8C	Sheltered riprap	696.19	0.43	< 1%
7	Exposed tidal flats	56,562.06	35.15	20%
6B	Exposed riprap	6,552.63	4.07	2%
3A	Fine- to medium-grained sand beaches	3,860.60	2.40	1%
1B	Exposed, solid man-made structures	40,490.04	25.16	14%
Total ESI Shoreline:		285,628.51	177.48	
Total Shoreline:		223,810.92	139.07	

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

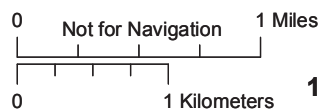




Map 9A
North Carolina



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 9A
North Carolina

BIOLOGICAL RESOURCES

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

DISPLAYED ON MAP

FISH

Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
							J	F	M	A	M	J	J	A	S	O	N	D					
533	Diadromous	Alewife	Nursery Area			Present													-	-	May-Aug	Jul-Oct	-
	Diadromous	Blueback herring	Nursery Area			Present													-	-	May-Jul	Jul-Oct	-
539	Diadromous	American shad	Spawning Area			Present													Apr-Jun	Apr-Jun	May-Jul	Feb-May	-
	Diadromous	Atlantic sturgeon	General Distribution		C	-													-	-	-	Jan-Dec	Jan-Dec
557	Diadromous	Alewife	Spawning Area			Present													Mar-Jul	Mar-Jul	May-Aug	-	-
	Diadromous	American shad	Spawning Area			Present													Apr-Jun	Apr-Jun	May-Jul	Feb-May	-
	Diadromous	Blueback herring	Spawning Area			Present													Mar-Jul	Mar-Jul	May-Jul	-	-
585	Diadromous	Striped bass	Nursery Area			Medium													Apr-Jun	Apr-Jun	Apr-Jun	Jan-Dec	Jan-Dec
587	Diadromous	Alewife	Spawning Area			Present													Mar-Jul	Mar-Jul	May-Aug	-	-
	Diadromous	Blueback herring	Spawning Area			Present													Mar-Jul	Mar-Jul	May-Jul	-	-
590	Diadromous	Gizzard shad	Spawning Area			-													Mar-May	Mar-May	Apr-Jun	May-Sep	-

INVERTEBRATES

Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
							J	F	M	A	M	J	J	A	S	O	N	D					
826	Shrimp	Brown shrimp	Nursery Area			-													-	-	Feb-Apr	Mar-Aug	-

MARINE MAMMALS

Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Mating	Calving	Pupping	Molt
							J	F	M	A	M	J	J	A	S	O	N	D				
846	Manatee	West Indian manatee	General Distribution		E	-													-	-	-	-

WIDESPREAD IN MAPPED AREA (> 10 SQUARE KILOMETERS)

BIRDS

Map ID	Subelement	Species	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				
	Waterfowl	American black duck	Wintering			-													-	Feb-Mar	Oct-Nov	-
		American wigeon	Wintering			-													-	Feb-Mar	Oct-Nov	-
		Bufflehead	Wintering			-													-	Feb-Mar	Oct-Nov	-
		Canada goose	Wintering			-													-	Feb-Mar	Oct-Nov	-
		Canada goose	Wintering			1000S													-	Feb-Mar	Oct-Nov	-
		Gadwall	Wintering			-													-	Feb-Mar	Oct-Nov	-
		Greater scaup	Wintering			-													-	Feb-Mar	Oct-Nov	-
		Green-winged teal	Wintering			-													-	Feb-Mar	Oct-Nov	-
		Lesser scaup	Wintering			-													-	Feb-Mar	Oct-Nov	-
		Mallard	Wintering			-													-	Feb-Mar	Oct-Nov	-

BIRDS (continued)

Subelement	Species	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				
	Northern shoveler	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Ring-necked duck	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Ring-necked duck	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	Ruddy duck	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	Scaup	Wintering			1000S													-	Feb-Mar	Oct-Nov	-
	Snow goose	Wintering			1500													-	Feb-Mar	Oct-Nov	-
	Snow goose	Wintering			1000S													-	Feb-Mar	Oct-Nov	-
	Tundra swan	Wintering			10000S													-	Feb-Mar	Oct-Nov	-
	Tundra swan	Wintering			1000S													-	Feb-Mar	Oct-Nov	-
	Tundra swan	Wintering			5000													-	Feb-Mar	Oct-Nov	-
	Wood duck	Wintering			-													-	Feb-Mar	Oct-Nov	-

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				
Waterfowl	Wood duck													Mar-Jun	-	-	-

FISH

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
Diadromous	American eel													-	-	Jan-Jun	Jan-Dec	Aug-Dec
	Gizzard shad													-	-	-	Oct-Mar	-
	Hickory shad													Apr-Jun	-	-	-	Nov-Apr
	Hickory shad													-	-	-	-	Nov-Apr
Estuarine Nursery	Striped bass													Apr-Jun	Apr-Jun	Apr-Jun	Jan-Dec	Jan-Dec
	Atlantic croaker													-	-	Sep-Mar	Jan-Dec	Jan-Dec
	Atlantic menhaden													-	-	Jan-Jun	Jan-Dec	-
	Bay anchovy													Apr-Sep	Apr-Sep	Apr-Oct	Jan-Dec	Jan-Dec
	Black drum													-	-	-	Jan-Dec	Jun-Nov
	Bluefish													-	-	-	May-Oct	Jun-Oct
	Ladyfish													-	-	-	Apr-Oct	Sep-Oct
	Red drum													-	-	-	Jan-Dec	-
	Southern flounder													-	-	Dec-Mar	Jan-Dec	Jan-Dec
	Southern kingfish													-	-	-	May-Dec	Jul-Oct
	Spot													-	-	Jan-Mar	Jan-Dec	May-Oct
	Spotted seatrout													-	-	-	Jan-Dec	Jan-Dec
	Striped mullet													-	-	-	Jan-Dec	Jan-Dec
	Summer flounder													-	-	-	Jan-Dec	Jan-Dec
	Weakfish													-	-	Oct-May	Jan-Dec	-
	White perch													Mar-Oct	Mar-Oct	-	Jan-Dec	Mar-Oct
Estuarine Resident	Inland silverside													Apr-Jul	Apr-Jul	Apr-Aug	Jan-Dec	Jan-Dec
	Black crappie													Mar-Aug	Mar-Aug	Jun-Sep	-	-
	Black crappie													Mar-May	Mar-May	Mar-May	Jan-Dec	Jan-Dec

North Carolina: Map 9A

FISH (continued)

Subelement	Species	Monthly Presence												Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D				
	Bluegill													Apr-Oct	-	Jan-Dec	Jan-Dec
	Largemouth bass													May-Jun	May-Jun	-	Jan-Dec
	Longnose gar													Mar-Sep	-	Jan-Dec	Jan-Dec
	Yellow perch													Jan-Mar	Jan-Mar	Apr-Dec	Apr-Dec
 Marine Benthic	Atlantic spadefish													-	-	Jun-Aug	-
 Marine Pelagic	Atlantic needlefish													May-Jul	Jun-Aug	Jun-Oct	-
	Spanish mackerel													-	-	Jul-Nov	Jul-Oct

INVERTEBRATES

Subelement	Species	Monthly Presence												Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D				
 Crab	Blue crab													-	-	Jan-Dec	Jan-Dec
 Shrimp	Brown shrimp													-	Feb-Apr	Mar-Aug	-

MARINE MAMMALS

Subelement	Species	Monthly Presence												Calving	Pupping	Molt
		J	F	M	A	M	J	J	A	S	O	N	D			
 Dolphin	Bottlenose dolphin													Sep-Oct	-	-

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	2.65	0.00
10B	Freshwater Marshes	17.12	0.03



ESI SHORELINE HABITAT TYPES

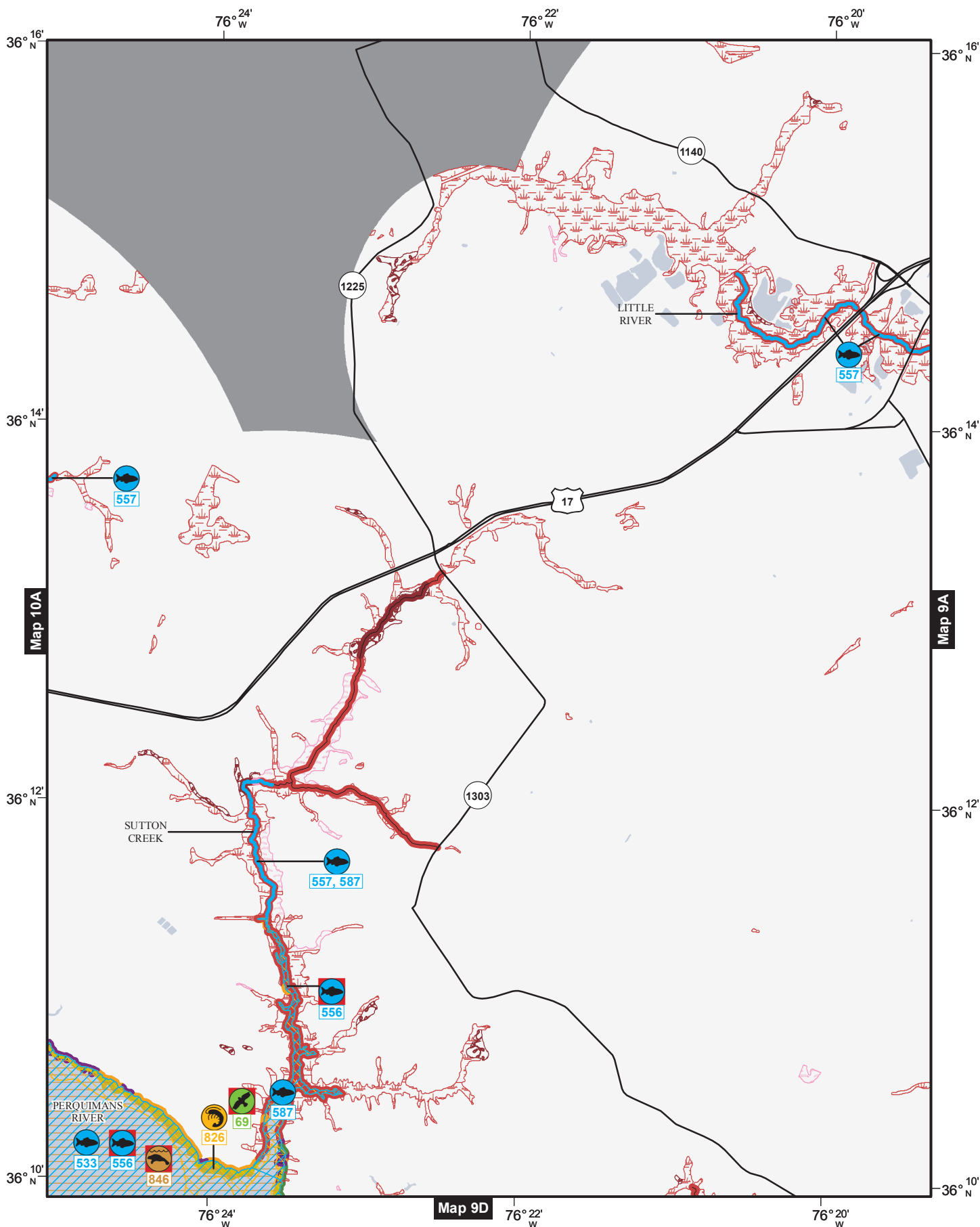
ESI Rank	Shoreline Habitat Classification	Length (Meters)	Length (Miles)	% of ESI Shoreline
10A	Salt- and brackish-water marshes	480.57	0.30	1%
10C	Swamps	35,210.65	21.88	59%
10D	Scrub-shrub wetlands	365.28	0.23	1%
9B	Sheltered, vegetated low banks	6,915.97	4.30	12%
8B	Sheltered, solid man-made structures	4,436.25	2.76	7%
8C	Sheltered riprap	242.18	0.15	< 1%
7	Exposed tidal flats	4,449.17	2.76	7%
6B	Exposed riprap	983.05	0.61	2%
3A	Fine- to medium-grained sand beaches	17.40	0.01	< 1%
1B	Exposed, solid man-made structures	6,482.21	4.03	11%

Total ESI Shoreline: 59,582.71 Total ESI Shoreline: 37.02
 Total Shoreline: 54,830.56 Total Shoreline: 34.07

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 9B
North Carolina

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	S	F	Concentration	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Juveniles	Adults	Molt
				T			J	F	M	A	M	J	J	A	S	O	N	D	Jan-Jun			Jul-Oct	Jul-Oct	
69	Raptor	Bald eagle	Nesting			1 Pair																		-

FISH

Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
				C			J	F	M	A	M	J	J	A	S	O	N	D				Jan-Dec	Jan-Dec
533	Diadromous	Alewife	Nursery Area			Present													-	-	May-Aug	Jul-Oct	-
	Diadromous	Blueback herring	Nursery Area			Present													-	-	May-Jul	Jul-Oct	-
556	Diadromous	American shad	Spawning Area			Present													Apr-Jun	Apr-Jun	May-Jul	Feb-May	-
	Diadromous	Atlantic sturgeon	General Distribution			-													-	-	-	Jan-Dec	Jan-Dec
	Diadromous	Gizzard shad	Spawning Area			Common													Mar-May	Mar-May	Apr-Jun	May-Sep	-
557	Diadromous	Alewife	Spawning Area			Present													Mar-Jul	Mar-Jul	May-Aug	-	-
	Diadromous	American shad	Spawning Area			Present													Apr-Jun	Apr-Jun	May-Jul	Feb-May	-
	Diadromous	Blueback herring	Spawning Area			Present													Mar-Jul	Mar-Jul	May-Jul	-	-
587	Diadromous	Alewife	Spawning Area			Present													Mar-Jul	Mar-Jul	May-Aug	-	-
	Diadromous	Blueback herring	Spawning Area			Present													Mar-Jul	Mar-Jul	May-Jul	-	-

INVERTEBRATES


Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
							J	F	M	A	M	J	J	A	S	O	N	D				Mar-Aug	-
826	Shrimp	Brown shrimp	Nursery Area			-													-	-	Feb-Apr	Mar-Aug	-

MARINE MAMMALS

Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Mating	Calving	Pupping	Molt		
				E			J	F	M	A	M	J	J	A	S	O	N	D				-	-	-
846	Manatee	West Indian manatee	General Distribution			-													-	-	-	-	-	-

WIDESPREAD IN MAPPED AREA (> 10 SQUARE KILOMETERS)

BIRDS

	Subelement	Species	Mapping Qualifier	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt				
				S	F	Concentration	J	F	M	A	M	J	J	A	S					O	N	D	
	Waterfowl	American black duck	Wintering																-	Feb-Mar	Oct-Nov	-	-
		American wigeon	Wintering																-	Feb-Mar	Oct-Nov	-	-
		Bufflehead	Wintering																-	Feb-Mar	Oct-Nov	-	-
		Canada goose	Wintering																-	Feb-Mar	Oct-Nov	-	-
	Canada goose	Wintering				1000S													-	Feb-Mar	Oct-Nov	-	-
	Gadwall	Wintering				-													-	Feb-Mar	Oct-Nov	-	-

BIRDS (continued)

Subelement	Species	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				
	Greater scaup	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Green-winged teal	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Lesser scaup	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Mallard	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Mallard	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	Northern shoveler	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Ring-necked duck	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	Ring-necked duck	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Ruddy duck	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	Snow goose	Wintering			1500													-	Feb-Mar	Oct-Nov	-
	Snow goose	Wintering			1000S													-	Feb-Mar	Oct-Nov	-
	Tundra swan	Wintering			5000													-	Feb-Mar	Oct-Nov	-
	Tundra swan	Wintering			10000S													-	Feb-Mar	Oct-Nov	-
	Tundra swan	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	Wood duck	Wintering			-													-	Feb-Mar	Oct-Nov	-

ALSO PRESENT IN MAPPED AREA (GENERAL DISTRIBUTION)

BENTHIC

Subelement	Species	Monthly Presence											
SAV	Submerged aquatic veg	J	F	M	A	M	J	J	A	S	O	N	D



BIRDS

Subelement	Species	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt
Waterfowl	Wood duck	J	F	M	A	M	J	J	A	S	O	N	D				
														Mar-Jun	-	-	-

FISH

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
Diadromous	American eel	J	F	M	A	M	J	J	A	S	O	N	D					
	Hickory shad													Apr-Jun	-	-	-	Sep-Dec
	Striped bass													Apr-Jun	Apr-Jun	Apr-Jun	Jan-Dec	Jan-Apr
	Atlantic croaker													-	-	Sep-Mar	Jan-Dec	Jan-Dec
	Atlantic menhaden													-	-	-	-	Dec-Mar
	Bay anchovy													Apr-Sep	Apr-Sep	Apr-Oct	Jan-Dec	Jan-Dec
	Bluefish													-	-	-	May-Oct	-
	Ladyfish													-	-	-	Apr-Oct	Sep-Oct
	Red drum													-	-	-	Jan-Dec	Jan-Dec
	Southern flounder													-	-	Dec-Mar	Jan-Dec	Jan-Dec
	Spot													-	-	Jan-May	Jun-Dec	-
	Spotted seatrout													-	-	-	Jan-Dec	Jan-Dec
	Striped mullet													-	-	-	Jan-Dec	-

FISH (continued)

Subelement	Species	Monthly Presence												Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D				
	Summer flounder													-	Oct-May	Jan-Dec	-
	Weakfish													Mar-Oct	Mar-Jun	Jan-Dec	Sep-Nov
	White perch													Mar-Jun	May-Aug	Jun-Oct	-
	Inland silverside													Mar-Aug	Jun-Sep	-	-
	Bluegill													Apr-Oct	-	Jan-Dec	Jan-Dec
	Largemouth bass													May-Jun	May-Jun	-	Jan-Dec
	Yellow perch													Jan-Mar	Jan-Mar	Apr-Dec	Apr-Dec
	Atlantic needlefish													May-Jul	Jun-Aug	Jun-Oct	-

INVERTEBRATES

Subelement	Species	Monthly Presence												Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D				
	Blue crab													-	-	Jan-Dec	Jan-Dec
	Brown shrimp													-	Feb-Apr	Mar-Aug	-

MARINE MAMMALS

Subelement	Species	Monthly Presence												Mating	Calving	Pupping	Molt
		J	F	M	A	M	J	J	A	S	O	N	D				
	Bottlenose dolphin													Sep-Oct	Sep-Oct	-	-

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>
10B	Freshwater Marshes	103.73	0.16
10C	Swamps	1,176.89	1.84
10D	Scrub and Shrub Wetlands	75.58	0.12
7	Exposed Tidal Flats	48.22	0.08



ESI SHORELINE HABITAT TYPES

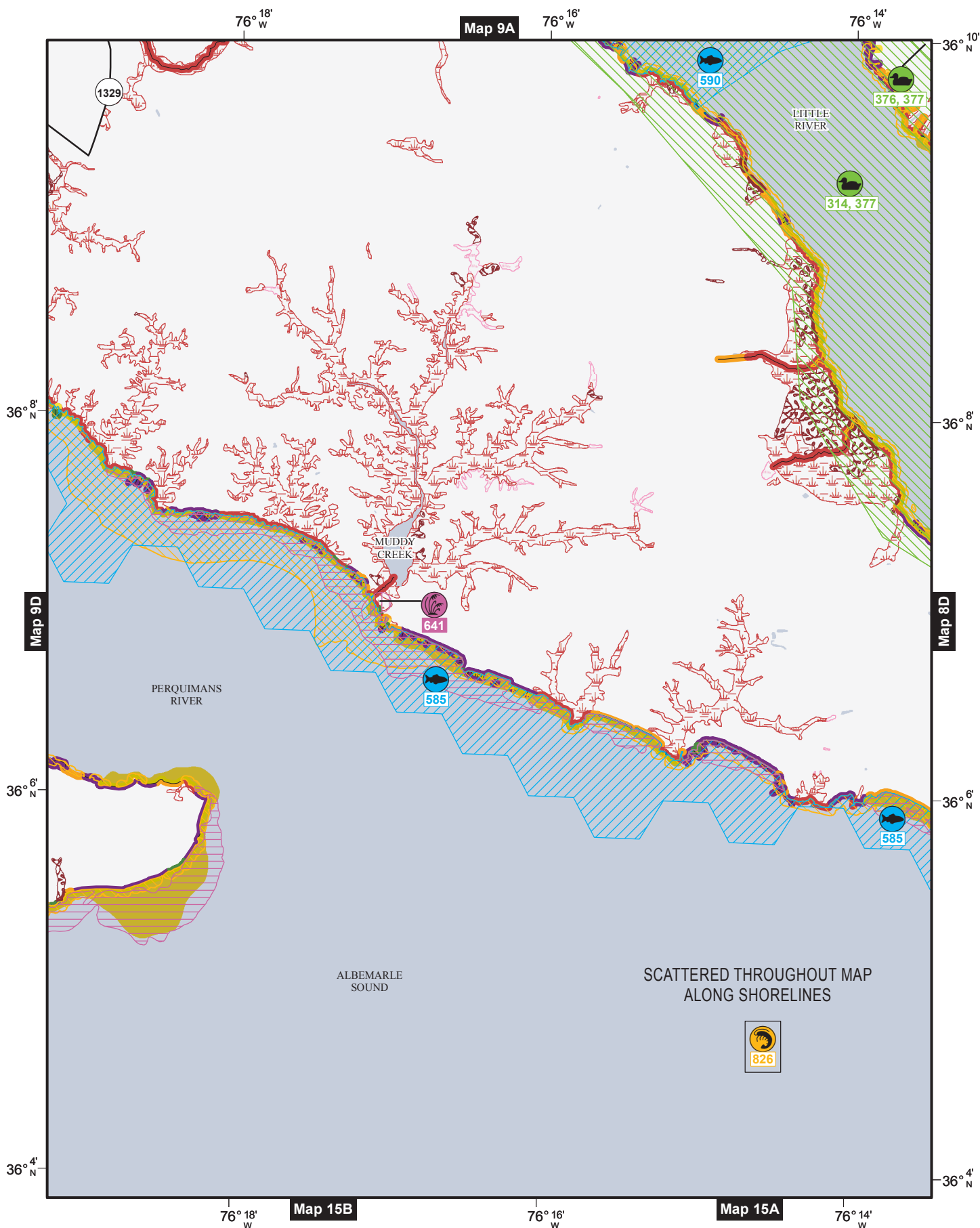
<i>ESI Rank</i>	<i>Shoreline Habitat Classification</i>	<i>Length (Meters)</i>	<i>Length (Miles)</i>	<i>% of ESI Shoreline</i>
10B	Freshwater marshes	76.03	0.05	< 1%
10C	Swamps	16,155.19	10.04	65%
10D	Scrub-shrub wetlands	1,254.41	0.78	5%
9B	Sheltered, vegetated low banks	2,280.99	1.42	9%
7	Exposed tidal flats	3,262.53	2.03	13%
6B	Exposed riprap	372.35	0.23	2%
1B	Exposed, solid man-made structures	1,377.53	0.86	6%

Total ESI Shoreline: 24,779.03 Total ESI Shoreline: 15.40
 Total Shoreline: 21,516.50 Total Shoreline: 13.37

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 9C
North Carolina

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	J	F	M	A	M	J	J	A	S	O	N	D
SAV	Submerged aquatic veg	High Ecological Value			Present												

Monthly Presence

BIRDS

Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N	D	Nest	Mig.(S)	Mig.(F)	Juveniles	Adults	Molt
314	Waterfowl	Ring-necked duck	Wintering			100S													-	Feb-Mar	Oct-Nov	-	-	-
	Waterfowl	Ruddy duck	Wintering			100S													-	Feb-Mar	Oct-Nov	-	-	-
376	Waterfowl	Tundra swan	Wintering			10000S													-	Feb-Mar	Oct-Nov	-	-	-
	Waterfowl	Scaup	Wintering			1000S													-	Feb-Mar	Oct-Nov	-	-	-
	Waterfowl	Tundra swan	Wintering			1000S													-	Feb-Mar	Oct-Nov	-	-	-
377	Waterfowl	Snow goose	Wintering			1000S													-	Feb-Mar	Oct-Nov	-	-	-

Monthly Presence

FISH

Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N	D	Spawn	Eggs	Larvae	Juveniles	Adults
585	Diadromous	Striped bass	Nursery Area			Medium													Apr-Jun	Apr-Jun	Apr-Jun	Jan-Dec	Jan-Dec
590	Diadromous	Gizzard shad	Spawning Area			-													Mar-May	Mar-May	Apr-Jun	May-Sep	-

Monthly Presence

HABITATS & RARE PLANTS

Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N	D
641	Wetland	Carolina grasswort	Vulnerable Occurrence			Current												


Monthly Presence

INVERTEBRATES


Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N	D	Spawn	Eggs	Larvae	Juveniles	Adults
826	Shrimp	Brown shrimp	Nursery Area			-													-	-	Feb-Apr	Mar-Aug	-

Monthly Presence

BIRDS

Subelement	Species	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				
	Waterfowl																	-	Feb-Mar	Oct-Nov	-
	American black duck	Wintering			-													-	Feb-Mar	Oct-Nov	-
	American wigeon	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Black scoter	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Bufflehead	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Canada goose	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	Canada goose	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Canvasback	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Gadwall	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Greater scaup	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Green-winged teal	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Lesser scaup	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Long-tailed duck	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Mallard	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Mallard	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	Northern shoveler	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Red-breasted merganser	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Redhead	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Ring-necked duck	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Snow goose	Wintering			1500													-	Feb-Mar	Oct-Nov	-
	Surf scoter	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Tundra swan	Wintering			5000													-	Feb-Mar	Oct-Nov	-
	Tundra swan	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	White-winged scoter	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Wood duck	Wintering			-													-	Feb-Mar	Oct-Nov	-
																		-			
																		-			

FISH

Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
						J	F	M	A	M	J	J	A	S	O	N	D					
	Diadromous																	-	-	May-Aug	Jul-Mar	-
	Alewife	Migration			Present													-	-	May-Aug	Jul-Oct	-
	Alewife	Nursery Area			Present													-	-	May-Aug	Jul-Oct	-
	American shad	Spawning Area			Present													Apr-Jun	Apr-Jun	May-Jul	Feb-May	-
	Atlantic sturgeon	Concentration Area	C		Common													-	-	-	Jun-Feb	Jun-Feb
	Atlantic sturgeon	General Distribution	C		-													-	-	-	Jan-Dec	Jan-Dec
	Blueback herring	Migration			Present													-	-	May-Jul	Aug-Oct	-
	Blueback herring	Nursery Area			Present													-	-	May-Jul	Jul-Oct	-
																		-	-			
																		-	-			

MARINE MAMMALS

Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Mating	Calving	Pupping	Molt
						J	F	M	A	M	J	J	A	S	O	N	D				
	Manatee	General Distribution	E		-													-	-	-	-

BENTHIC

Monthly Presence



Subelement
SAV

Species
Submerged aquatic veg

BIRDS

Monthly Presence



Species
Wood duck

FISH

Monthly Presence





Subelement
Diadromous



Species
American eel
American eel
American shad
Gizzard shad
Hickory shad
Hickory shad
Hickory shad
Striped bass
Atlantic croaker
Atlantic menhaden
Atlantic menhaden
Bay anchovy
Black drum
Bluefish
Bluefish
Hogchoker
Ladyfish
Pinfish
Red drum
Red drum
Sheepshead
Southern flounder
Southern kingfish
Spot
Spot
Spotted seatrout
Striped mullet
Striped mullet
Summer flounder
Weakfish
Weakfish
White mullet

Subelement	Species	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Spawns	Eggs	Larvae	Juveniles	Adults
Diadromous	American eel													-	-	Jan-Dec	Jan-Dec	Sep-Dec
	American eel													-	-	Jan-Jun	Jan-Dec	Aug-Dec
	American shad													-	-	Mar-Jul	May-Nov	-
	Gizzard shad													-	-	-	Oct-Mar	-
	Hickory shad													-	-	-	-	Jan-Apr
	Hickory shad													-	-	-	-	Nov-Apr
	Hickory shad													Apr-Jun	-	-	-	Nov-Apr
	Striped bass													Apr-Jun	Apr-Jun	Apr-Jun	Jan-Dec	Jan-Dec
	Atlantic croaker													-	-	Sep-Mar	Jan-Dec	Jan-Dec
	Atlantic menhaden													-	-	-	-	Dec-Mar
	Atlantic menhaden													-	-	Jan-Jun	Jan-Dec	-
	Bay anchovy													Apr-Sep	Apr-Sep	Apr-Oct	Jan-Dec	Jan-Dec
	Black drum													-	-	-	Jan-Dec	Jun-Nov
	Bluefish													-	-	-	May-Oct	Jun-Oct
	Bluefish													-	-	-	May-Oct	-
	Hogchoker													-	-	-	Jan-Dec	Jan-Dec
	Ladyfish													-	-	-	Apr-Oct	Sep-Oct
	Pinfish													-	-	Dec-Mar	Jan-Dec	May-Oct
	Red drum													-	-	-	Jan-Dec	-
	Red drum													-	-	-	Jan-Dec	Jan-Dec
	Sheepshead													-	-	-	Jun-Sep	Jun-Sep
	Southern flounder													-	-	Dec-Mar	Jan-Dec	Jan-Dec
	Southern kingfish													-	-	-	May-Dec	Jul-Oct
	Spot													-	-	Jan-May	Jun-Dec	-
	Spot													-	-	Jan-Mar	Jan-Dec	May-Oct
	Spotted seatrout													-	-	-	Jan-Dec	Jan-Dec
	Striped mullet													-	-	-	Jan-Dec	Jan-Dec
	Striped mullet													-	-	-	Jan-Dec	-
	Summer flounder													-	-	Oct-May	Jan-Dec	-
	Weakfish													Mar-Oct	Mar-Oct	-	Jan-Dec	Mar-Oct
	Weakfish													Mar-Oct	Mar-Oct	-	Jan-Dec	Sep-Nov
	White mullet													-	-	-	Jan-Dec	Jan-Dec

FISH (continued)

Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Eggs	Larvae	Juveniles	Adults
						J	F	M	A	M	J	J	A	S	O	N	D				
 Estuarine Resident Freshwater	White perch																	Mar-Jun	May-Aug	Jun-Oct	-
	White perch																	Apr-Jul	Apr-Aug	Jan-Dec	Jan-Dec
	Inland silverside																	Mar-Aug	Jun-Sep	-	-
	Black crappie																	Mar-May	Mar-May	Jan-Dec	Jan-Dec
	Bluegill																	Apr-Oct	-	Jan-Dec	Jan-Dec
	Largemouth bass																	May-Jun	May-Jun	-	Jan-Dec
	Longnose gar																	Mar-Sep	-	Jan-Dec	Jan-Dec
	Yellow perch																	-	-	Apr-Dec	Apr-Dec
 Marine Benthic Marine Pelagic	Yellow perch																	Jan-Mar	Jan-Mar	Apr-Dec	Apr-Dec
	Atlantic spadefish																	-	-	Jun-Aug	-
	Atlantic needlefish																	May-Jul	Jun-Aug	Jun-Oct	-
	Spanish mackerel																	-	-	Jul-Nov	Jul-Oct

INVERTEBRATES

Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Eggs	Larvae	Juveniles	Adults
						J	F	M	A	M	J	J	A	S	O	N	D				
 Crab	Blue crab																	-	-	Jan-Dec	Jan-Dec
	Blue crab																	-	May-Oct	-	Jan-Dec
 Shrimp	Brown shrimp																	-	Feb-Apr	Mar-Aug	-
	Pink shrimp																	-	-	Jan-Dec	Sep-Nov
	White shrimp																	-	Jun-Dec	Dec-Feb	-

MARINE MAMMALS

Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Calving	Pupping	Molt
						J	F	M	A	M	J	J	A	S	O	N	D			
 Dolphin	Bottlenose dolphin																	Sep-Oct	-	-

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	0.30	0.00
10B	Freshwater Marshes	44.96	0.07
10C	Swamps	1,356.37	2.12
10D	Scrub and Shrub Wetlands	172.07	0.27
9A	Sheltered Tidal Flats	0.31	0.00
7	Exposed Tidal Flats	374.40	0.58

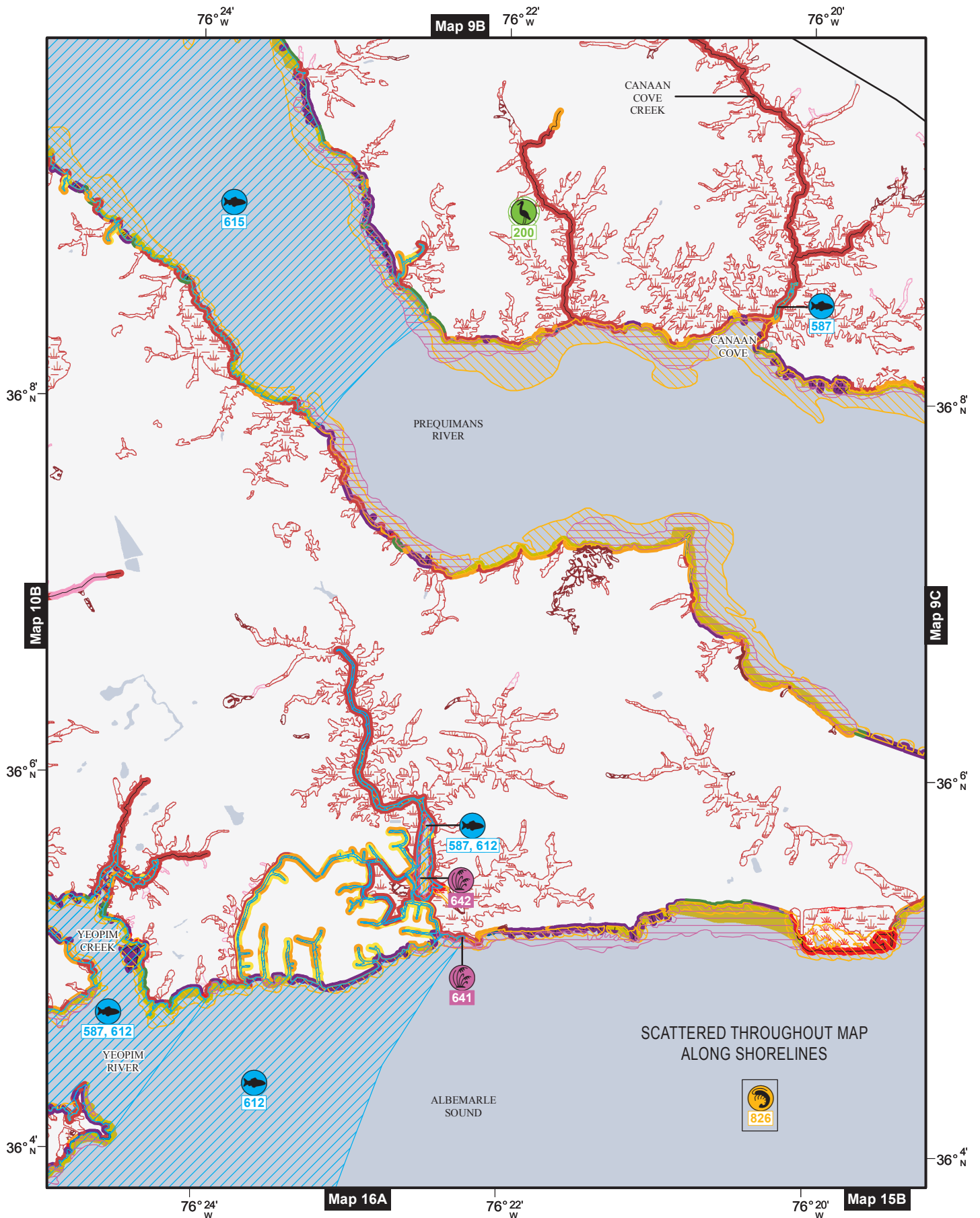
ESI SHORELINE HABITAT TYPES

ESI Rank	Shoreline Habitat Classification	Length (Meters)	Length (Miles)	% of ESI Shoreline
10A	Salt- and brackish-water marshes	154.04	0.10	< 1%
10C	Swamps	13,819.59	8.59	24%
10D	Scrub-shrub wetlands	2,430.84	1.51	4%
9A	Sheltered tidal flats	150.29	0.09	< 1%
9B	Sheltered, vegetated low banks	5,104.47	3.17	9%
8B	Sheltered, solid man-made structures	737.25	0.46	1%
8C	Sheltered riprap	207.75	0.13	< 1%
7	Exposed tidal flats	20,251.96	12.58	35%
6B	Exposed riprap	1,231.27	0.77	2%
3A	Fine- to medium-grained sand beaches	1,074.73	0.67	2%
1B	Exposed, solid man-made structures	12,093.19	7.51	21%
Total ESI Shoreline:		57,255.38	Total ESI Shoreline:	35.58
		35,616.13	Total Shoreline:	22.13

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



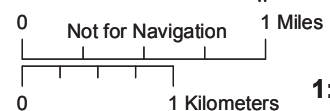


Map 9D

North Carolina



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



1:50,000



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											
SAV	Submerged aquatic veg	High Ecological Value			Present	J	F	M	A	M	J	J	A	S	O	N	D

BIRDS

Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N	D	Nest	Mig.(S)	Mig.(F)	Molt
200	Wading	Great blue heron	Nesting			28 Pairs													Mar-Aug	-	-	-
	Wading	Great egret	Nesting			17 Pairs													Mar-Aug	-	-	-

FISH

Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N	D	Spawn	Eggs	Larvae	Juveniles	Adults
587	Diadromous	Alewife	Spawning Area			Present													Mar-Jul	Mar-Jul	May-Aug	-	-
	Diadromous	Blueback herring	Spawning Area			Present													Mar-Jul	Mar-Jul	May-Jul	-	-
612	Diadromous	Gizzard shad	Spawning Area			Highly Abundant													Mar-May	Mar-May	Apr-Jun	May-Sep	-
615	Diadromous	Gizzard shad	Spawning Area			Common													Mar-May	Mar-May	Apr-Jun	May-Sep	-


HABITATS & RARE PLANTS

Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N	D
641	Wetland	Carolina grasswort	Vulnerable Occurrence			Current												
	Wetland	Carolina grasswort	Vulnerable Occurrence			Current												
642	Wetland	Rare wetland community	Vulnerable Occurrence			Current												
	Wetland	Rare wetland community	Vulnerable Occurrence			Current												

INVERTEBRATES

Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N	D	Spawn	Eggs	Larvae	Juveniles	Adults
826	Shrimp	Brown shrimp	Nursery Area			-													-	-	Feb-Apr	Mar-Aug	-

BIRDS

Subelement	Species	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				
	American black duck	Wintering	-		-													-	Feb-Mar	Oct-Nov	-
	American coot	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	American wigeon	Wintering	-		-													-	Feb-Mar	Oct-Nov	-
	Black scoter	Wintering	-		-													-	Feb-Mar	Oct-Nov	-
	Bufflehead	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	Bufflehead	Wintering	-		-													-	Feb-Mar	Oct-Nov	-
	Canada goose	Wintering			1000S													-	Feb-Mar	Oct-Nov	-
	Canada goose	Wintering	-		-													-	Feb-Mar	Oct-Nov	-
	Canvasback	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	Canvasback	Wintering	-		-													-	Feb-Mar	Oct-Nov	-
	Gadwall	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	Gadwall	Wintering	-		-													-	Feb-Mar	Oct-Nov	-
	Greater scaup	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Green-winged teal	Wintering	-		-													-	Feb-Mar	Oct-Nov	-
	Hooded merganser	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	Lesser scaup	Wintering	-		-													-	Feb-Mar	Oct-Nov	-
	Long-tailed duck	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Mallard	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	Mallard	Wintering	-		-													-	Feb-Mar	Oct-Nov	-
	Northern shoveler	Wintering	-		-													-	Feb-Mar	Oct-Nov	-
	Red-breasted merganser	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Redhead	Wintering	-		-													-	Feb-Mar	Oct-Nov	-
	Redhead	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	Ring-necked duck	Wintering	-		-													-	Feb-Mar	Oct-Nov	-
	Ring-necked duck	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	Ruddy duck	Wintering			1000S													-	Feb-Mar	Oct-Nov	-
	Scaup	Wintering			1000S													-	Feb-Mar	Oct-Nov	-
	Snow goose	Wintering			1500													-	Feb-Mar	Oct-Nov	-
	Surf scoter	Wintering	-		-													-	Feb-Mar	Oct-Nov	-
	Tundra swan	Wintering			5000													-	Feb-Mar	Oct-Nov	-
	Tundra swan	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	White-winged scoter	Wintering	-		-													-	Feb-Mar	Oct-Nov	-
	Wood duck	Wintering			-													-	Feb-Mar	Oct-Nov	-
			-		-													-	Feb-Mar	Oct-Nov	-

FISH

Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Eggs	Larvae	Juveniles	Adults
						J	F	M	A	M	J	J	A	S	O	N	D				
	Diadromous	Alewife			Present													-	May-Aug	Jul-Mar	-
		Alewife			Present													-	May-Aug	Jul-Oct	-
	American shad	Spawning Area			Present													Apr-Jun	May-Jul	Feb-May	-
	Atlantic sturgeon	Concentration Area	C		Common													-	-	Jun-Feb	Jun-Feb
	Atlantic sturgeon	General Distribution	C		-													-	-	Jan-Dec	Jan-Dec
	Blueback herring	Migration			Present													-	May-Jul	Aug-Oct	-
	Blueback herring	Nursery Area			Present													-	May-Jul	Jul-Oct	-
	Striped bass	Nursery Area			Medium													Apr-Jun	Apr-Jun	Jan-Dec	Jan-Dec

MARINE MAMMALS

Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Calving	Pupping	Molt
						J	F	M	A	M	J	J	A	S	O	N	D			
	Manatee	West Indian manatee			-													-	-	-

ALSO PRESENT IN MAPPED AREA (GENERAL DISTRIBUTION)



BENTHIC

Subelement	Species	Monthly Presence											
		J	F	M	A	M	J	J	A	S	O	N	D
	SAV												

BIRDS

Subelement	Species	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt
		J	F	M	A	M	J	J	A	S	O	N	D				
	Waterfowl													Mar-Jun	-	-	-

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	Sep-Dec
	American eel													-	-	Jan-Jun	Jan-Dec	Aug-Dec
	American eel													-	-	Mar-Jul	May-Nov	-
	Gizzard shad													-	-	-	Oct-Mar	-
	Hickory shad													-	-	-	-	Nov-Apr
	Hickory shad													Apr-Jun	-	-	-	Nov-Apr
	Hickory shad													Apr-Jun	-	-	-	Jan-Apr
	Hickory shad													-	-	-	-	Jan-Apr
	Striped bass													Apr-Jun	Apr-Jun	Apr-Jun	Jan-Dec	Jan-Dec
	Atlantic croaker													-	-	Sep-Mar	Jan-Dec	Jan-Dec
	Atlantic menhaden													-	-	-	-	Dec-Mar
	Atlantic menhaden													-	-	Jan-Jun	Jan-Dec	-
	Bay anchovy													Apr-Sep	Apr-Sep	Apr-Oct	Jan-Dec	Jan-Dec
	Black drum													-	-	-	Jan-Dec	Jan-Nov
	Bluefish													-	-	-	May-Oct	Jun-Oct
	Bluefish													-	-	-	May-Oct	Jun-Oct

North Carolina: Map 9D

FISH (continued)

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	Bluefish													-	-	-	May-Oct	-
	Hogchoker													-	-	-	Jan-Dec	Jan-Dec
	Ladyfish													-	-	-	Apr-Oct	Sep-Oct
	Pinfish													-	-	Dec-Mar	Jan-Dec	May-Oct
	Red drum													-	-	-	Jan-Dec	Jan-Dec
	Red drum													-	-	-	Jan-Dec	-
	Sheepshead													-	-	-	Jun-Sep	Jun-Sep
	Southern flounder													-	-	Dec-Mar	Jan-Dec	Jan-Dec
	Southern kingfish													-	-	-	May-Dec	Jul-Oct
	Spot													-	-	Jan-Mar	Jan-Dec	May-Oct
	Spot													-	-	Jan-May	Jun-Dec	-
	Spotted seatrout													-	-	-	Jan-Dec	Jan-Dec
	Striped mullet													-	-	-	Jan-Dec	-
	Striped mullet													-	-	-	Jan-Dec	-
	Summer flounder													-	-	-	Jan-Dec	Jan-Dec
	Weakfish													-	-	Oct-May	Jan-Dec	-
	Weakfish													Mar-Oct	Mar-Oct	-	Jan-Dec	Mar-Oct
	White mullet													Mar-Oct	Mar-Oct	-	Jan-Dec	Sep-Nov
	White perch													-	-	-	Jan-Dec	Jan-Dec
	White perch													Apr-Jul	Apr-Jul	Apr-Aug	Jan-Dec	Jan-Dec
	White perch													Mar-Jun	Mar-Jun	May-Aug	Jun-Oct	-
	Inland silverside													Mar-Aug	Mar-Aug	Jun-Sep	-	-
	Black crappie													Mar-May	Mar-May	Mar-May	Jan-Dec	Jan-Dec
	Bluegill													Apr-Oct	Apr-Oct	-	Jan-Dec	Jan-Dec
	Largemouth bass													May-Jun	May-Jun	May-Jun	-	Jan-Dec
	Longnose gar													Mar-Sep	Mar-Sep	-	Jan-Dec	Jan-Dec
	Threadfin shad													Apr-Jul	Apr-Jul	Apr-Jul	-	-
	Yellow perch													-	-	-	Apr-Dec	Apr-Dec
	Yellow perch													Jan-Mar	Jan-Mar	Jan-Mar	Apr-Dec	Apr-Dec
	Atlantic spadefish													-	-	-	Jun-Aug	-
	Atlantic needlefish													May-Jul	May-Jul	Jun-Aug	Jun-Oct	-
	Spanish mackerel													-	-	-	Jul-Nov	Jul-Oct

INVERTEBRATES

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
Crab	Blue crab													-	-	May-Oct	-	Jan-Dec
	Blue crab													-	-	-	Jan-Dec	Jan-Dec
Shrimp	Brown shrimp													-	-	Feb-Apr	Mar-Aug	-
	Pink shrimp													-	-	-	Jan-Dec	Sep-Nov
	White shrimp													-	-	Jun-Dec	Dec-Feb	-

MARINE MAMMALS

Monthly Presence

Subelement	Species	Monthly Presence												Calving	Pupping	Molt
Dolphin	Bottlenose dolphin	J	F	M	A	M	J	J	A	S	O	N	D	Mating Sep-Oct		

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	57.26	0.09
10B	Freshwater Marshes	40.64	0.06
10C	Swamps	1,935.28	3.02
10D	Scrub and Shrub Wetlands	78.65	0.12
7	Exposed Tidal Flats	297.89	0.47

ESI SHORELINE HABITAT TYPES

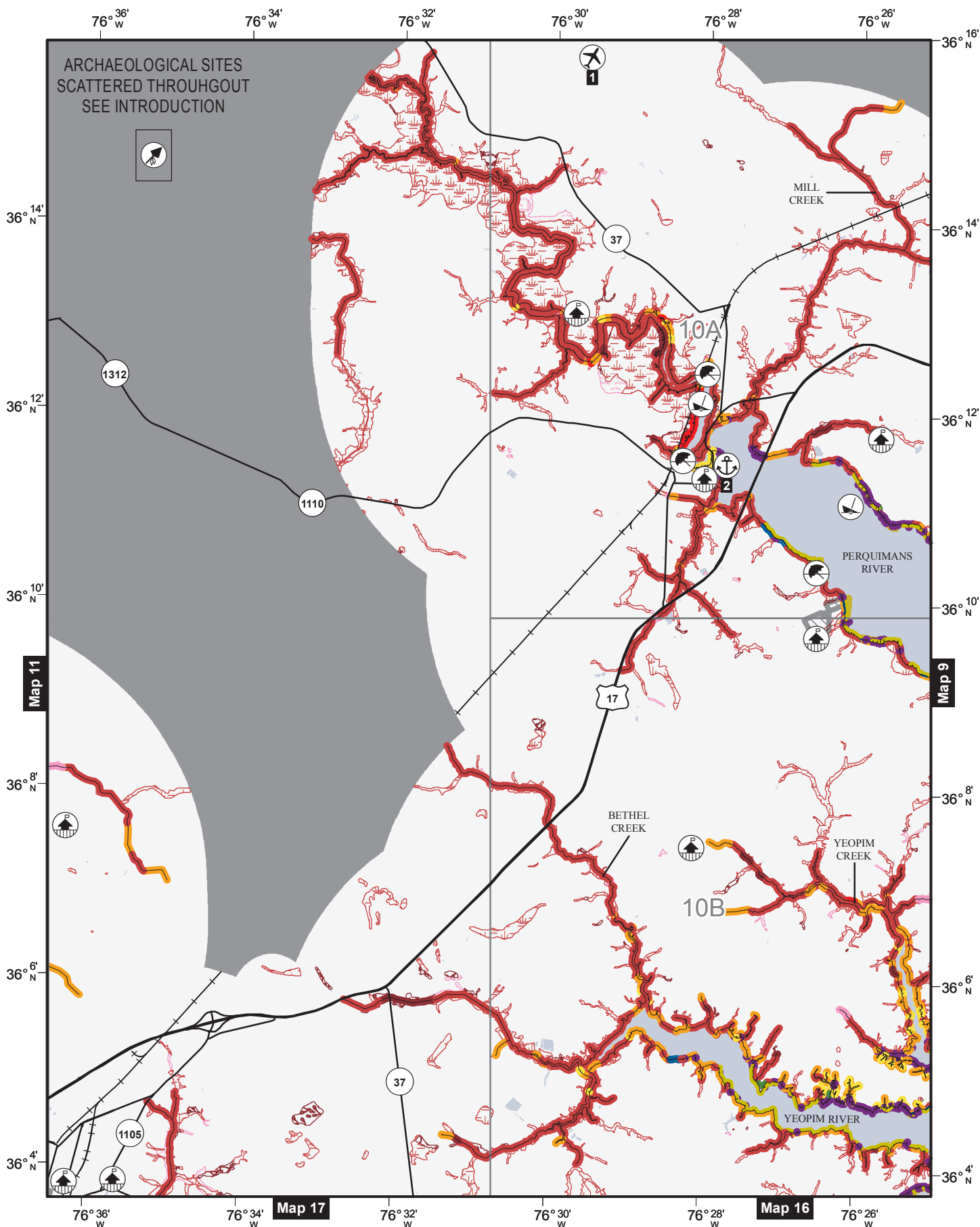
ESI Rank	Shoreline Habitat Classification	Length (Meters)	Length (Miles)	% of ESI Shoreline
10A	Salt- and brackish-water marshes	3,121.17	1.94	3%
10B	Freshwater marshes	646.72	0.40	1%
10C	Swamps	39,988.18	24.85	33%
10D	Scrub-shrub wetlands	1,033.41	0.64	1%
9B	Sheltered, vegetated low banks	17,715.58	11.01	14%
8B	Sheltered, solid man-made structures	7,932.99	4.93	6%
8C	Sheltered riprap	175.20	0.11	< 1%
7	Exposed tidal flats	27,743.83	17.24	23%
6B	Exposed riprap	3,324.52	2.07	3%
3A	Fine- to medium-grained sand beaches	2,750.90	1.71	2%
1B	Exposed, solid man-made structures	18,049.42	11.22	15%

Total ESI Shoreline: 122,481.92 Total ESI Shoreline: 76.11
Total Shoreline: 91,217.50 Total Shoreline: 56.68

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 10
North Carolina



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 10
North Carolina

HUMAN USE RESOURCES

DISPLAYED ON MAP (POINTS)			
Map ID	Type	Name	Phone
1	AIRPORT	CRAFT	252-426-2676
2	MARINA	HERTFORD BAY MARINA	252-426-1969

ALSO PRESENT IN MAPPED AREA (POLYGONS)			
Type	Name	Contact	Phone
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT; SHRIMP	DAVID DALE, SOUTHEAST REGION	727-824-5317
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT; SNAPPER GROUPER	DAVID DALE, SOUTHEAST REGION	727-824-5317
ESSENTIAL HABITAT	HAPC; SHRIMP	DAVID DALE, SOUTHEAST REGION	727-824-5317
ESSENTIAL HABITAT	HAPC; SNAPPER GROUPER	DAVID DALE, SOUTHEAST REGION	727-824-5317

JURISDICTIONS			
COUNTY:	CHOWAN, PERQUIMANS	FEMA:	REGION I
COAST GUARD:	DISTRICT 5, SECTOR NORTH CAROLINA	EPA:	REGION 4
USACE:	SOUTH ATLANTIC DIVISION, WILMINGTON 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	18.47	0.03
10B	Freshwater Marshes	256.77	0.40
10C	Swamps	5,575.09	8.71
10D	Scrub and Shrub Wetlands	352.61	0.55
7	Exposed Tidal Flats	196.74	0.31

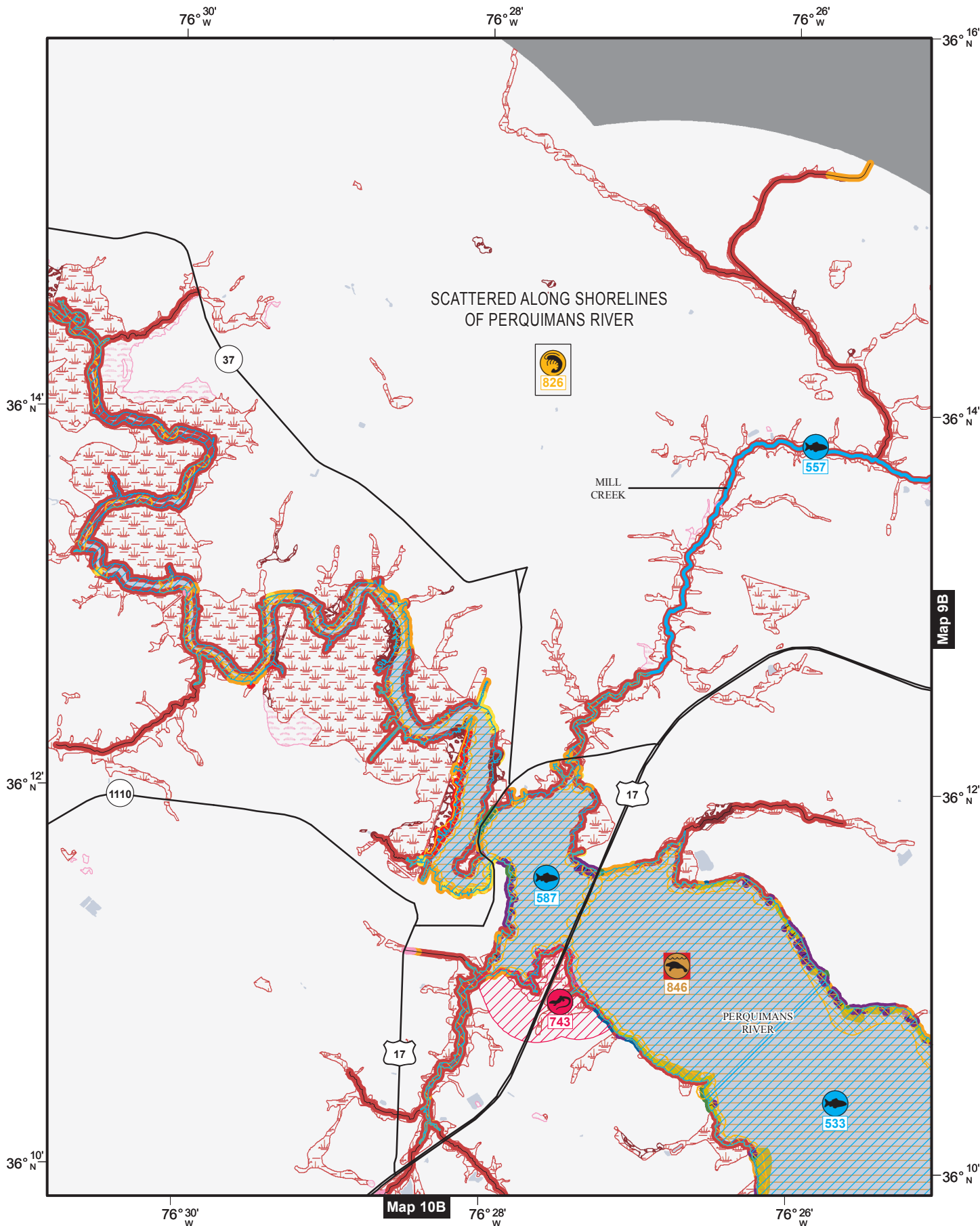
ESI SHORELINE HABITAT TYPES

<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	3,083.41	1.92	1%
10B	Freshwater marshes	1,245.11	0.77	< 1%
10C	Swamps	161,389.19	100.28	65%
10D	Scrub-shrub wetlands	5,115.45	3.18	2%
9B	Sheltered, vegetated low banks	32,983.18	20.49	13%
8B	Sheltered, solid man-made structures	8,890.46	5.52	4%
8C	Sheltered riprap	158.70	0.10	< 1%
7	Exposed tidal flats	19,778.00	12.29	8%
6B	Exposed riprap	1,527.37	0.95	1%
3A	Fine- to medium-grained sand beaches	1,258.11	0.78	1%
3B	Scarps and steep slopes in sand	861.68	0.54	< 1%
1B	Exposed, solid man-made structures	13,813.51	8.58	6%
Total ESI Shoreline:		250,104.18	155.41	
Total Shoreline:		229,014.91	142.30	

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



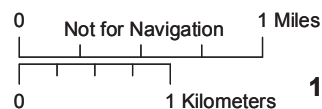


Map 10A

North Carolina



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 10A
North Carolina

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											
SAV	Submerged aquatic veg	High Ecological Value			Present	J	F	M	A	M	J	J	A	S	O	N	D

FISH

Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Eggs	Larvae	Juveniles	Adults
533	Diadromous	Alewife	Nursery Area			Present	J	F	M	A	M	J	J	A	S	O	N	D	-	May-Aug	Jul-Oct	-
	Diadromous	Blueback herring	Nursery Area			Present													-	May-Jul	Jul-Oct	-
557	Diadromous	Alewife	Spawning Area			Present													Mar-Jul	May-Aug	-	-
	Diadromous	American shad	Spawning Area			Present													Apr-Jun	May-Jul	Feb-May	-
	Diadromous	Blueback herring	Spawning Area			Present													Mar-Jul	May-Jul	-	-
587	Diadromous	Alewife	Spawning Area			Present													Mar-Jul	May-Aug	-	-
	Diadromous	Blueback herring	Spawning Area			Present													Mar-Jul	May-Jul	-	-

REPTILES & AMPHIBIANS

Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Nest	Hatch	Internest	Juveniles	Adults
743	Snake	Rainbow snake	Vulnerable Occurrence			-	J	F	M	A	M	J	J	A	S	O	N	D	May-Sep	Aug-Nov	-	Jan-Dec	Jan-Dec


INVERTEBRATES

Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
826	Shrimp	Brown shrimp	Nursery Area			-	J	F	M	A	M	J	J	A	S	O	N	D	-	-	Feb-Apr	Mar-Aug	-

MARINE MAMMALS

Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Mating	Calving	Pupping	Molt
846	Manatee	West Indian manatee	General Distribution	E	E	-													-	-	-	-

BIRDS


Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Juveniles	Molt
						J	F	M	A	M	J	J	A	S	O	N	D					
	American black duck	Wintering	-	-	-													-	Feb-Mar	Oct-Nov	-	-
	American wigeon	Wintering	-	-	-													-	Feb-Mar	Oct-Nov	-	-
	Bufflehead	Wintering	-	-	-													-	Feb-Mar	Oct-Nov	-	-
	Canada goose	Wintering	-	-	1000S													-	Feb-Mar	Oct-Nov	-	-
	Canada goose	Wintering	-	-	-													-	Feb-Mar	Oct-Nov	-	-
	Gadwall	Wintering	-	-	-													-	Feb-Mar	Oct-Nov	-	-
	Greater scaup	Wintering	-	-	-													-	Feb-Mar	Oct-Nov	-	-
	Green-winged teal	Wintering	-	-	-													-	Feb-Mar	Oct-Nov	-	-
	Lesser scaup	Wintering	-	-	-													-	Feb-Mar	Oct-Nov	-	-
	Mallard	Wintering	-	-	-													-	Feb-Mar	Oct-Nov	-	-
	Mallard	Wintering	-	-	100S													-	Feb-Mar	Oct-Nov	-	-
	Northern shoveler	Wintering	-	-	-													-	Feb-Mar	Oct-Nov	-	-
	Ring-necked duck	Wintering	-	-	100S													-	Feb-Mar	Oct-Nov	-	-
	Ruddy duck	Wintering	-	-	100S													-	Feb-Mar	Oct-Nov	-	-
	Snow goose	Wintering	-	-	1500													-	Feb-Mar	Oct-Nov	-	-
	Snow goose	Wintering	-	-	1000S													-	Feb-Mar	Oct-Nov	-	-

FISH

Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
						J	F	M	A	M	J	J	A	S	O	N	D					
	American shad	Spawning Area	-	-	Present													Apr-Jun	Apr-Jun	May-Jul	Feb-May	-
	Atlantic sturgeon	General Distribution	C	-	-													-	-	-	Jan-Dec	-
	Gizzard shad	Spawning Area	-	-	Common													Mar-May	Mar-May	Apr-Jun	May-Sep	-

ALSO PRESENT IN MAPPED AREA (GENERAL DISTRIBUTION)






BENTHIC

Subelement	Species	Monthly Presence											
		J	F	M	A	M	J	J	A	S	O	N	D
	Submerged aquatic veg												

BIRDS

Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Juveniles	Molt
						J	F	M	A	M	J	J	A	S	O	N	D					
	Waterfowl	Wintering	-	-	-													Mar-Jun	-	-	-	-
	Wood duck	Wintering	-	-	-													-	-	-	-	-

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	Sep-Dec
	Hickory shad													Apr-Jun	-	-	-	Jan-Apr
	Estuarine Nursery													Apr-Jun	Apr-Jun	Apr-Jun	Jan-Dec	Jan-Dec
	Striped bass													-	-	Sep-Mar	Jan-Dec	Jan-Dec
	Atlantic croaker													-	-	-	-	Dec-Mar
	Atlantic menhaden													Apr-Sep	Apr-Sep	Apr-Oct	Jan-Dec	Jan-Dec
	Bay anchovy													-	-	-	May-Oct	-
	Bluefish													-	-	-	-	-
	Ladyfish													-	-	-	Apr-Oct	Sep-Oct
	Red drum													-	-	-	Jan-Dec	Jan-Dec
	Southern flounder													-	-	Dec-Mar	Jan-Dec	Jan-Dec
	Spot													-	-	Jan-May	Jan-Dec	-
	Spotted seatrout													-	-	-	Jan-Dec	Jan-Dec
	Striped mullet													-	-	-	Jan-Dec	-
	Summer flounder													-	-	-	Jan-Dec	-
	Weakfish													-	-	Oct-May	Jan-Dec	-
	White perch													Mar-Oct	Mar-Oct	-	Jan-Dec	Sep-Nov
	Estuarine Resident													Mar-Jun	Mar-Jun	May-Aug	Jun-Oct	-
	Inland silverside													Mar-Aug	Mar-Aug	Jun-Sep	-	-
	Freshwater													Apr-Oct	Apr-Oct	-	Jan-Dec	Jan-Dec
	Bluegill													May-Jun	May-Jun	May-Jun	-	Jan-Dec
	Largemouth bass													Jan-Mar	Jan-Mar	Jan-Mar	Apr-Dec	Apr-Dec
	Yellow perch													May-Jul	May-Jul	Jun-Aug	Jun-Oct	-
	Marine Pelagic																	

INVERTEBRATES

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	Crab													-	-	-	Jan-Dec	Jan-Dec
	Shrimp													-	-	Feb-Apr	Mar-Aug	-

MARINE MAMMALS

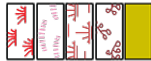
Subelement	Species	Monthly Presence												Mating	Calving	Pupping	Molt
		J	F	M	A	M	J	J	A	S	O	N	D				
	Dolphin													Sep-Oct	Sep-Oct	-	-
	Bottlenose dolphin													-	-	-	-

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	16.29	0.03
10B	Freshwater Marshes	130.32	0.20
10C	Swamps	2,518.66	3.94
10D	Scrub and Shrub Wetlands	92.22	0.14
7	Exposed Tidal Flats	70.86	0.11



ESI SHORELINE HABITAT TYPES

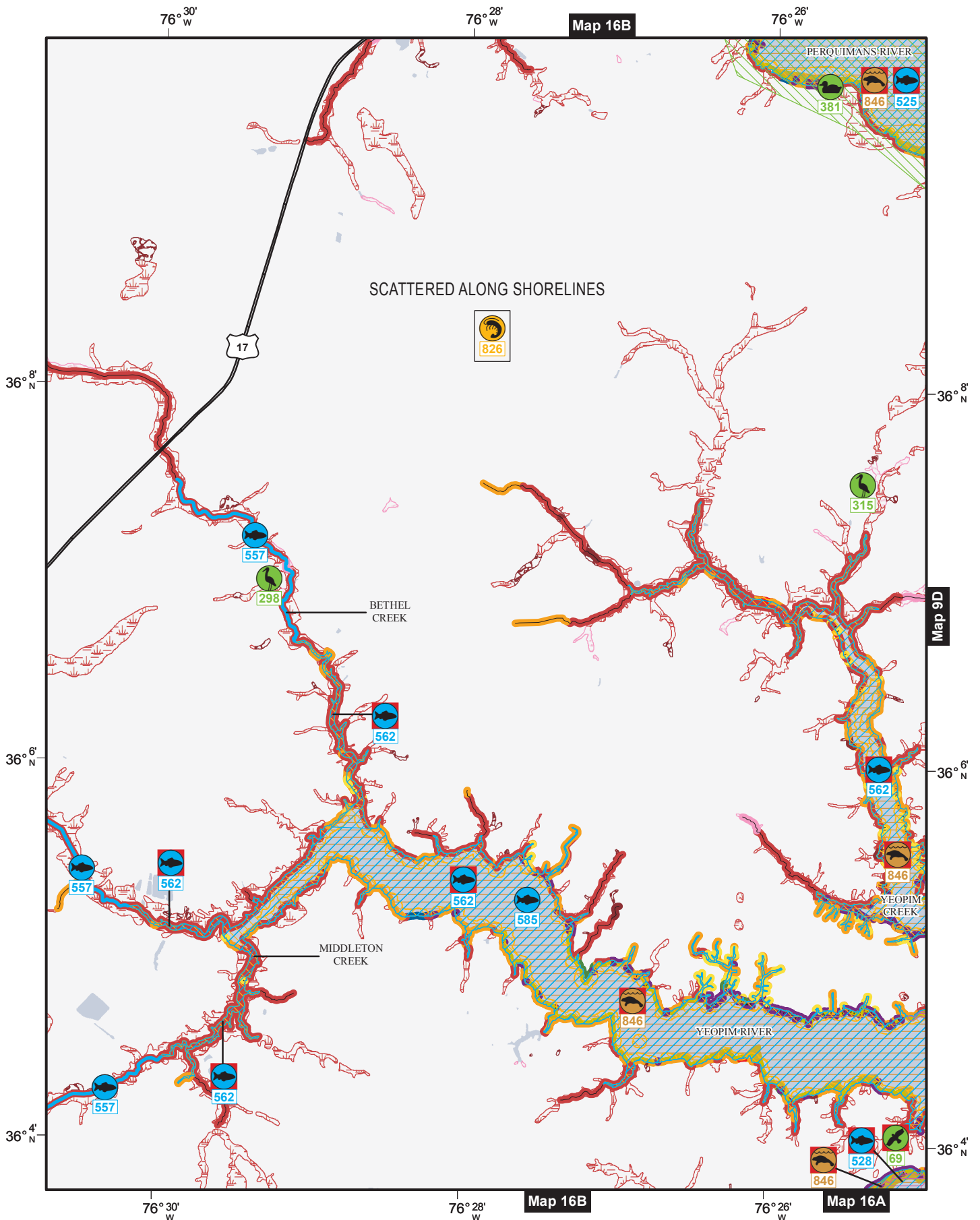
<i>ESI Rank</i>	<i>Shoreline Habitat Classification</i>	<i>Length (Meters)</i>	<i>Length (Miles)</i>	<i>% of ESI Shoreline</i>
10A	Salt- and brackish-water marshes	2,789.71	1.73	3%
10B	Freshwater marshes	265.76	0.17	< 1%
10C	Swamps	69,363.77	43.10	72%
10D	Scrub-shrub wetlands	2,995.53	1.86	3%
9B	Sheltered, vegetated low banks	7,178.96	4.46	7%
8B	Sheltered, solid man-made structures	1,559.29	0.97	2%
8C	Sheltered riprap	33.17	0.02	< 1%
7	Exposed tidal flats	5,489.61	3.41	6%
6B	Exposed riprap	851.55	0.53	1%
3A	Fine- to medium-grained sand beaches	717.50	0.45	1%
3B	Scarps and steep slopes in sand	551.53	0.34	1%
1B	Exposed, solid man-made structures	4,646.94	2.89	5%

Total ESI Shoreline: 96,443.33 Total ESI Shoreline: 59.93
 Total Shoreline: 90,222.39 Total Shoreline: 56.06

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 10B
North Carolina

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											
SAV	Submerged aquatic veg	High Ecological Value			Present	J	F	M	A	M	J	J	A	S	O	N	D

BIRDS

Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence											
69	Raptor	Bald eagle	Nesting	T		1 Pair	J	F	M	A	M	J	J	A	S	O	N	D
298	Wading	Great blue heron	Nesting			12 Pairs												
315	Wading	Great blue heron	Nesting			11 Pairs												
381	Waterfowl	Mallard	Wintering			100S												

FISH

Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence											
525	Diadromous	Alewife	Nursery Area			Present	J	F	M	A	M	J	J	A	S	O	N	D
	Diadromous	American shad	Spawning Area			Present												
	Diadromous	Atlantic sturgeon	General Distribution	C		-												
	Diadromous	Blueback herring	Nursery Area			Present												
	Diadromous	Gizzard shad	Spawning Area			Common												
528	Diadromous	Alewife	Nursery Area			Present	J	F	M	A	M	J	J	A	S	O	N	D
	Diadromous	American shad	Spawning Area			Present												
	Diadromous	Atlantic sturgeon	Concentration Area	C		Common												
	Diadromous	Blueback herring	Nursery Area			Present												
	Diadromous	Gizzard shad	Spawning Area			Highly Abundant												
557	Diadromous	Striped bass	Nursery Area			Medium	J	F	M	A	M	J	J	A	S	O	N	D
	Diadromous	Alewife	Spawning Area			Present												
	Diadromous	American shad	Spawning Area			Present												
	Diadromous	Blueback herring	Spawning Area			Present												
562	Diadromous	Alewife	Spawning Area			Present												
	Diadromous	American shad	Spawning Area			Present												
	Diadromous	Atlantic sturgeon	Concentration Area	C		Common												
	Diadromous	Blueback herring	Spawning Area			Present												
585	Diadromous	Gizzard shad	Spawning Area			Highly Abundant												
	Diadromous	Striped bass	Nursery Area			Medium	J	F	M	A	M	J	J	A	S	O	N	D

INVERTEBRATES


Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Eggs	Larvae	Juveniles	Adults
826	Shrimp	Brown shrimp	Nursery Area			-	J	F	M	A	M	J	J	A	S	O	N	D	Spawn	Feb-Apr	Mar-Aug	-

MARINE MAMMALS

Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Calving	Pupping	Molt	
846	Manatee	West Indian manatee	General Distribution	E	E	-	J	F	M	A	M	J	J	A	S	O	N	D	Mating	-	-	-

WIDESPREAD IN MAPPED AREA (> 10 SQUARE KILOMETERS)

BIRDS

Subelement	Species	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				
	American black duck	Wintering			-													-	Feb-Mar	Oct-Nov	-
	American coot	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	American wigeon	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Bufflehead	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	Bufflehead	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Canada goose	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Canada goose	Wintering			1000S													-	Feb-Mar	Oct-Nov	-
	Canvasback	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	Gadwall	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Gadwall	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	Greater scaup	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Green-winged teal	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Hooded merganser	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	Lesser scaup	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Mallard	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Northern shoveler	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Redhead	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	Ring-necked duck	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	Ring-necked duck	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Ruddy duck	Wintering			1000S													-	Feb-Mar	Oct-Nov	-
Scaup	Wintering			1000S													-	Feb-Mar	Oct-Nov	-	
Snow goose	Wintering			1500													-	Feb-Mar	Oct-Nov	-	
Tundra swan	Wintering			5000													-	Feb-Mar	Oct-Nov	-	
Tundra swan	Wintering			100S													-	Feb-Mar	Oct-Nov	-	
Wood duck	Wintering			-													-	Feb-Mar	Oct-Nov	-	

ALSO PRESENT IN MAPPED AREA (GENERAL DISTRIBUTION)

BENTHIC

Subelement	Species	Monthly Presence											
 SAV	Submerged aquatic veg	J	F	M	A	M	J	J	A	S	O	N	D



BIRDS

[illegible]



FISH

[illegible]

FISH (continued)

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	Yellow perch													Jan-Mar	Jan-Mar	Jan-Mar	Apr-Dec	Apr-Dec
	Yellow perch													-	-	-	Apr-Dec	Apr-Dec
	Atlantic spadefish													May-Jul	May-Jul	Jun-Aug	Jun-Oct	-
	Atlantic needlefish													-	-	-	Jul-Nov	Jul-Oct
	Spanish mackerel													-	-	-	-	Jul-Oct

INVERTEBRATES

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	Blue crab													-	-	-	Jan-Dec	Jan-Dec
	Brown shrimp													-	-	Feb-Apr	Mar-Aug	-
	Pink shrimp													-	-	-	Jan-Dec	Sep-Nov
	White shrimp													-	-	Jun-Dec	Dec-Feb	-

MARINE MAMMALS

Subelement	Species	Monthly Presence												Mating	Calving	Pupping	Molt
		J	F	M	A	M	J	J	A	S	O	N	D				
	Bottlenose dolphin													Sep-Oct	Sep-Oct	-	-
														-	-	-	-

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	2.19	0.00
10B	Freshwater Marshes	43.38	0.07
10C	Swamps	1,434.17	2.24
10D	Scrub and Shrub Wetlands	56.33	0.09
7	Exposed Tidal Flats	125.88	0.20

ESI SHORELINE HABITAT TYPES

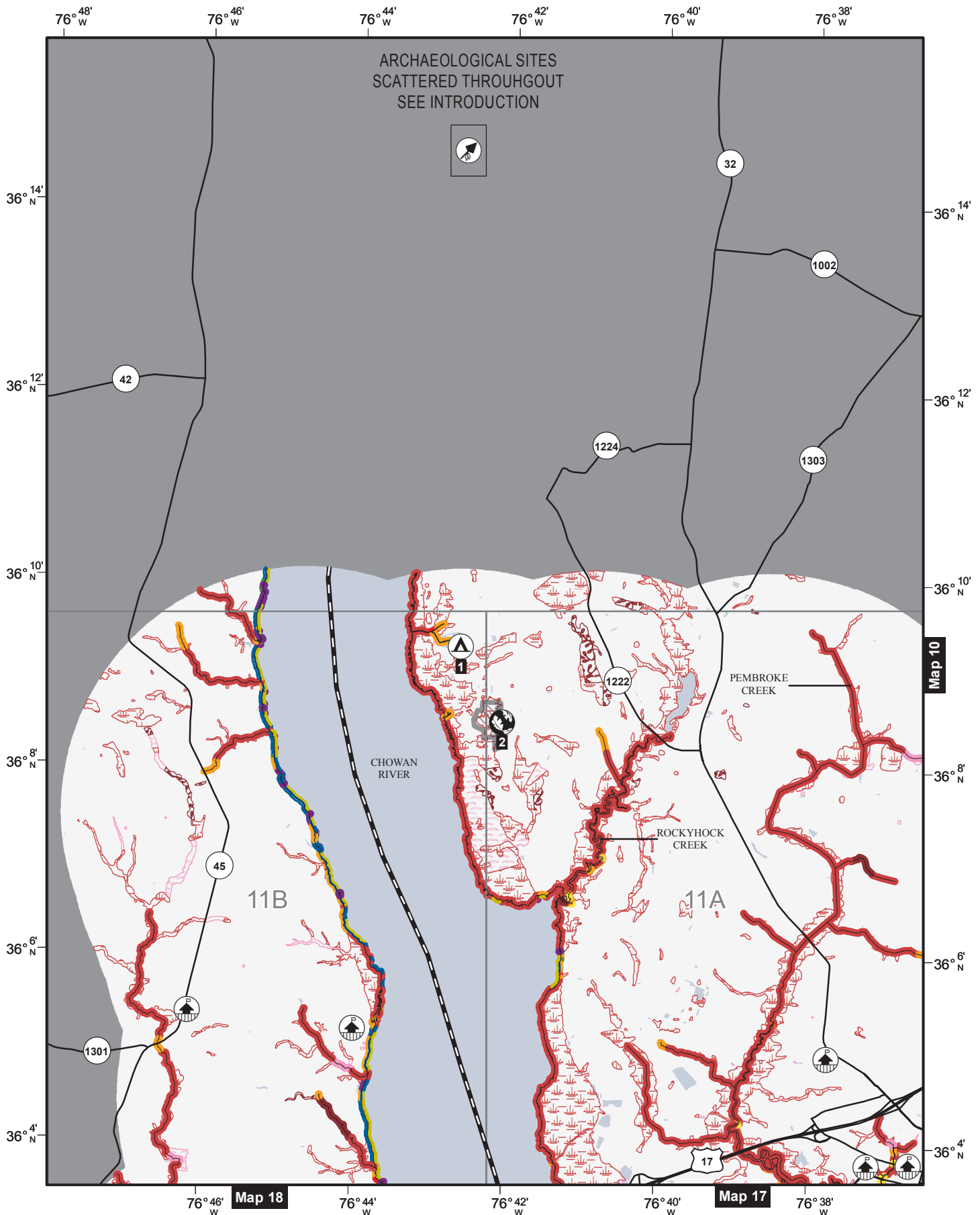
<i>ESI Rank</i>	<i>Shoreline Habitat Classification</i>	<i>Length (Meters)</i>	<i>Length (Miles)</i>	<i>% of ESI Shoreline</i>
10A	Salt- and brackish-water marshes	293.70	0.18	< 1%
10B	Freshwater marshes	691.41	0.43	1%
10C	Swamps	60,360.70	37.51	51%
10D	Scrub-shrub wetlands	822.63	0.51	1%
9B	Sheltered, vegetated low banks	23,342.07	14.50	20%
8B	Sheltered, solid man-made structures	7,331.18	4.56	6%
8C	Sheltered riprap	125.53	0.08	< 1%
7	Exposed tidal flats	14,288.98	8.88	12%
6B	Exposed riprap	675.82	0.42	1%
3A	Fine- to medium-grained sand beaches	540.61	0.34	< 1%
3B	Scarps and steep slopes in sand	310.15	0.19	< 1%
1B	Exposed, solid man-made structures	9,167.17	5.70	8%

Total ESI Shoreline: 117,949.95 Total ESI Shoreline: 73.29
 Total Shoreline: 103,081.02 Total Shoreline: 64.05

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 11
North Carolina

HUMAN USE RESOURCES

DISPLAYED ON MAP (POINTS)			
Map ID	Type	Name	Phone
1	CAMPGROUND	ROCKY HOCK CAMPGROUND	252-221-4695

DISPLAYED ON MAP (POLYGONS)			
Map ID	Type	Name	Phone
2	NATURE CONSERVANCY	ROCKY HOCK SWAMP FOREST PRESERVE	919-403-8558

ALSO PRESENT IN MAPPED AREA (POLYGONS)			
Type	Name	Contact	Phone
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT; SHRIMP	DAVID DALE, SOUTHEAST REGION	727-824-5317
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT; SNAPPER GROUPER	DAVID DALE, SOUTHEAST REGION	727-824-5317
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT; SPINY LOBSTER	DAVID DALE, SOUTHEAST REGION	727-824-5317
ESSENTIAL HABITAT	HAPC; SHRIMP	DAVID DALE, SOUTHEAST REGION	727-824-5317
ESSENTIAL HABITAT	HAPC; SNAPPER GROUPER	DAVID DALE, SOUTHEAST REGION	727-824-5317
STATE PROTECTED AREA	GAME LAND	NC WILDLIFE RESOURCES COMMISSION	

JURISDICTIONS

COUNTY: BERTIE, CHOWAN
COAST GUARD: DISTRICT 5, SECTOR NORTH CAROLINA
USACE: SOUTH ATLANTIC DIVISION, WILMINGTON DISTRICT

FEMA: REGION I
EPA: REGION 4

SHORELINE RESOURCES

ESI POLYGON HABITAT TYPES

ESI Rank	Habitat Classification	Area (Acres)	Area (Sq. Miles)
10A	Salt and Brackish Water Marshes	1.92	0.00
10B	Freshwater Marshes	471.07	0.74
10C	Swamps	5,377.49	8.40
10D	Scrub and Shrub Wetlands	240.67	0.38
7	Exposed Tidal Flats	69.22	0.11

ESI SHORELINE HABITAT TYPES

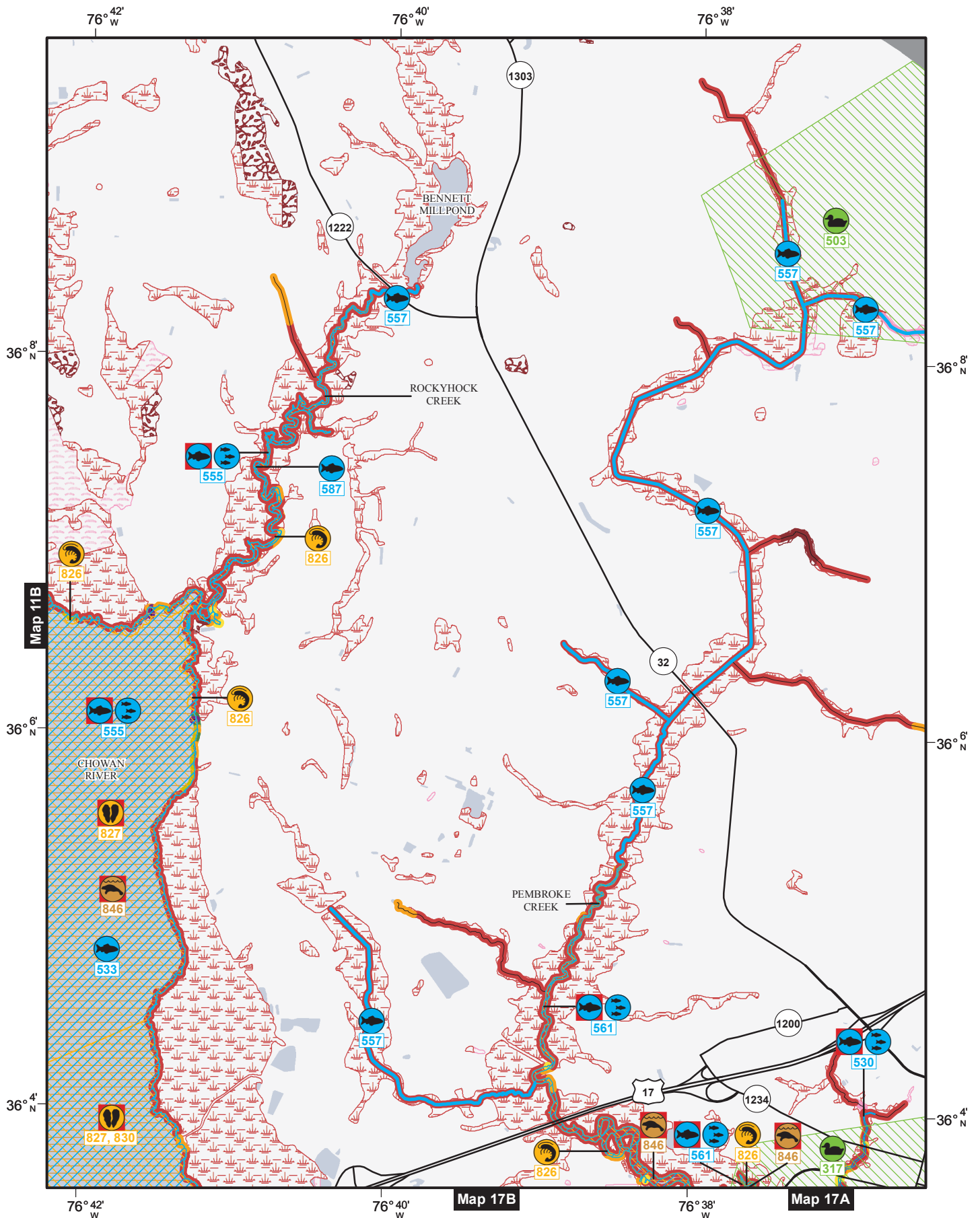
ESI Rank	Shoreline Habitat Classification	Length (Meters)	Length (Miles)	% of ESI Shoreline
10A	Salt- and brackish-water marshes	1,689.64	1.05	1%
10B	Freshwater marshes	1,660.21	1.03	1%
10C	Swamps	100,024.99	62.15	69%
10D	Scrub-shrub wetlands	2,061.61	1.28	1%
9B	Sheltered, vegetated low banks	10,305.45	6.40	7%
8B	Sheltered, solid man-made structures	660.49	0.41	< 1%
8C	Sheltered riprap	12.40	0.01	< 1%
7	Exposed tidal flats	12,552.07	7.80	9%
6B	Exposed riprap	509.06	0.32	< 1%
3A	Fine- to medium-grained sand beaches	11,182.73	6.95	8%
3B	Scarps and steep slopes in sand	1,378.81	0.86	1%
1B	Exposed, solid man-made structures	2,184.97	1.36	2%

Total ESI Shoreline: 144,222.44 Total ESI Shoreline: 89.62
 Total Shoreline: 122,872.40 Total Shoreline: 76.35

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

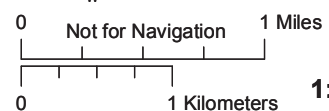




Map 11A
North Carolina



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 11A
North Carolina

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	S	F	Concentration	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt
							J	F	M	A	M	J	J	A	S	O	N	D				
317	Waterfowl	Bufflehead	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	Waterfowl	Canvasback	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	Waterfowl	Redhead	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	Waterfowl	Ruddy duck	Wintering			1000S													-	Feb-Mar	Oct-Nov	-
	Waterfowl	Scaup	Wintering			1000S													-	Feb-Mar	Oct-Nov	-
503	Waterfowl	Tundra swan	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	Waterfowl	Mallard	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Waterfowl	Snow goose	Wintering			1500													-	Feb-Mar	Oct-Nov	-
	Waterfowl	Tundra swan	Wintering			5000													-	Feb-Mar	Oct-Nov	-
	Waterfowl	Wood duck	Wintering			-													-	Feb-Mar	Oct-Nov	-

FISH

Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
							J	F	M	A	M	J	J	A	S	O	N	D					
530	Diadromous	Alewife	Nursery Area			Present													-	-	May-Aug	Jul-Oct	-
	Diadromous	American shad	Spawning Area			Present													Apr-Jun	Apr-Jun	May-Jul	Feb-May	-
	Diadromous	Atlantic sturgeon	Concentration Area		C	Common													-	-	-	Jan-Dec	Jan-Dec
	Diadromous	Blueback herring	Nursery Area			Present													-	-	May-Jul	Jul-Oct	-
	Diadromous	Gizzard shad	Spawning Area			Highly Abundant													Mar-May	Mar-May	Apr-Jun	May-Sep	-
533	Diadromous	Striped bass	Spawning Area			Abundant													Apr-Oct	Apr-Oct	Apr-Oct	Jan-Dec	-
	Estuarine Nursery	Hogchoker	Spawning Area			Abundant													-	-	May-Aug	Jul-Oct	-
	Diadromous	Alewife	Nursery Area			Present													-	-	May-Jul	Jul-Oct	-
	Diadromous	Blueback herring	Nursery Area			Present													-	-	May-Jul	Jul-Oct	-
	Diadromous	American shad	Spawning Area			Present													Apr-Jun	Apr-Jun	May-Jul	Feb-May	-
555	Diadromous	Atlantic sturgeon	General Distribution		C	-													-	-	-	Jan-Dec	Jan-Dec
	Diadromous	Gizzard shad	Spawning Area			Abundant													Mar-May	Mar-May	Apr-Jun	May-Sep	-
	Diadromous	Striped bass	Nursery Area			Abundant													Apr-Jun	Apr-Jun	Apr-Jun	Jan-Dec	Jan-Dec
	Estuarine Nursery	Hogchoker	Spawning Area			Abundant													Apr-Oct	Apr-Oct	Apr-Oct	Jan-Dec	-
	Diadromous	Alewife	Spawning Area			Present													Mar-Jul	Mar-Jul	May-Aug	-	-
557	Diadromous	American shad	Spawning Area			Present													Apr-Jun	Apr-Jun	May-Jul	Feb-May	-
	Diadromous	Blueback herring	Spawning Area			Present													Mar-Jul	Mar-Jul	May-Jul	-	-
	Diadromous	Alewife	Spawning Area			Present													Mar-Jul	Mar-Jul	May-Aug	-	-
	Diadromous	American shad	Spawning Area			Present													Apr-Jun	Apr-Jun	May-Jul	Feb-May	-
	Diadromous	Atlantic sturgeon	Concentration Area		C	Common													-	-	-	Jan-Dec	Jan-Dec
561	Diadromous	Blueback herring	Spawning Area			Present													Mar-May	Mar-May	Apr-Jun	May-Sep	-
	Diadromous	Gizzard shad	Spawning Area			Highly Abundant													Apr-Jun	Apr-Jun	Apr-Jun	Jan-Dec	Jan-Dec
	Diadromous	Striped bass	Nursery Area			Abundant													Apr-Jun	Apr-Jun	Apr-Jun	Jan-Dec	Jan-Dec
	Diadromous	American shad	Spawning Area			Present													Mar-May	Mar-May	May-Jul	Feb-May	-
	Diadromous	Atlantic sturgeon	Concentration Area		C	Common													-	-	-	Jan-Dec	Jan-Dec

FISH (continued)

Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Eggs	Larvae	Juveniles	Adults
							J	F	M	A	M	J	J	A	S	O	N	D				
587	Estuarine Nursery	Hogchoker	Spawning Area			Abundant													Apr-Oct	Apr-Oct	-	-
	Diadromous	Alewife	Spawning Area			Present													Mar-Jul	May-Aug	-	-
	Diadromous	Blueback herring	Spawning Area			Present													Mar-Jul	May-Jul	-	-

INVERTEBRATES


Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Eggs	Larvae	Juveniles	Adults																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
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MARINE MAMMALS

Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Calving	Pupping	Molt																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
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846	Manatee	West Indian manatee	General Distribution	E	E	-																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						

WIDESPREAD IN MAPPED AREA (> 10 SQUARE KILOMETERS)

BIRDS

Subelement	Species	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					
	Waterfowl	American black duck	Wintering			-												-	Feb-Mar	Oct-Nov	-	-
		American coot	Wintering			100S												-	Feb-Mar	Oct-Nov	-	-
		American wigeon	Wintering			-												-	Feb-Mar	Oct-Nov	-	-
		Bufflehead	Wintering			-												-	Feb-Mar	Oct-Nov	-	-
		Canada goose	Wintering			1000S												-	Feb-Mar	Oct-Nov	-	-
		Canada goose	Wintering			-												-	Feb-Mar	Oct-Nov	-	-
		Canvasback	Wintering			-												-	Feb-Mar	Oct-Nov	-	-
		Gadwall	Wintering			100S												-	Feb-Mar	Oct-Nov	-	-
		Gadwall	Wintering			-												-	Feb-Mar	Oct-Nov	-	-
		Greater scaup	Wintering			-												-	Feb-Mar	Oct-Nov	-	-
		Green-winged teal	Wintering			-												-	Feb-Mar	Oct-Nov	-	-
		Hooded merganser	Wintering			100S												-	Feb-Mar	Oct-Nov	-	-
		Lesser scaup	Wintering			-												-	Feb-Mar	Oct-Nov	-	-
		Mallard	Wintering			High												-	Feb-Mar	Oct-Nov	-	-
		Mallard	Wintering			100S												-	Feb-Mar	Oct-Nov	-	-
		Northern shoveler	Wintering			-												-	Feb-Mar	Oct-Nov	-	-
		Ring-necked duck	Wintering			-												-	Feb-Mar	Oct-Nov	-	-
		Ring-necked duck	Wintering			100S												-	Feb-Mar	Oct-Nov	-	-
		Scaup	Wintering			100S												-	Feb-Mar	Oct-Nov	-	-
		Tundra swan	Wintering			1000S												-	Feb-Mar	Oct-Nov	-	-
		Tundra swan	Wintering			6000												-	Feb-Mar	Oct-Nov	-	-
		Wood duck	Wintering			High												-	Feb-Mar	Oct-Nov	-	-

Monthly Presence

FISH



Monthly Presence

234

FISH (continued)

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	Marine Pelagic													May-Jul	May-Jul	Jun-Aug	Jun-Oct	-
	Spanish mackerel													-	-	-	Jul-Nov	Jul-Oct

INVERTEBRATES

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	Crab													-	-	-	Jan-Dec	Jan-Dec
	Blue crab													-	-	May-Oct	-	Jan-Dec
	Shrimp													-	-	Feb-Apr	Mar-Aug	-
	Brown shrimp													-	-	-	-	-

MARINE MAMMALS

Subelement	Species	Monthly Presence												Mating	Calving	Pupping	Molt
		J	F	M	A	M	J	J	A	S	O	N	D				
	Dolphin													Sep-Oct	Sep-Oct	-	-
	Bottlenose dolphin													Sep-Oct	Sep-Oct	-	-

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>
10B	Freshwater Marshes	182.86	0.29
10C	Swamps	3,736.65	5.84
10D	Scrub and Shrub Wetlands	159.84	0.25
7	Exposed Tidal Flats	8.11	0.01



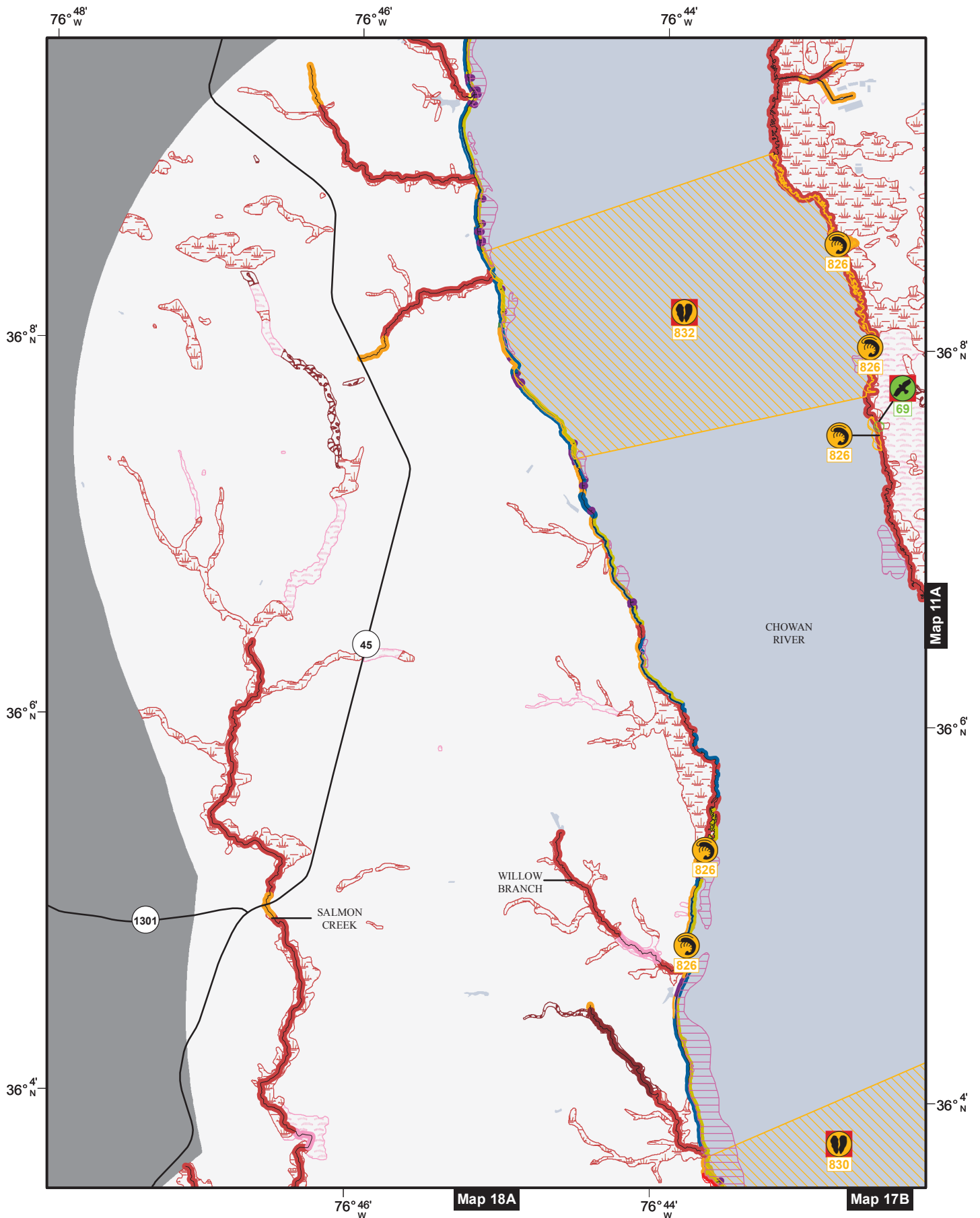
ESI SHORELINE HABITAT TYPES

<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	513.79	0.32	1%
10B	Freshwater marshes	745.30	0.46	1%
10C	Swamps	63,916.15	39.72	89%
10D	Scrub-shrub wetlands	828.12	0.51	1%
9B	Sheltered, vegetated low banks	3,549.59	2.21	5%
8B	Sheltered, solid man-made structures	633.70	0.39	1%
8C	Sheltered riprap	12.40	0.01	< 1%
7	Exposed tidal flats	1,226.10	0.76	2%
6B	Exposed riprap	177.80	0.11	< 1%
3A	Fine- to medium-grained sand beaches	158.62	0.10	< 1%
1B	Exposed, solid man-made structures	115.86	0.07	< 1%
Total ESI Shoreline:		71,877.43	44.66	
Total Shoreline:		69,875.53	43.42	

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





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
SAV	Submerged aquatic veg	High Ecological Value			Present	J F M A M J J A S O N D

BIRDS

Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	Nest	Mig.(S)	Mig.(F)	Molt
69	Raptor	Bald eagle	Nesting	T		1 Pair	Jan-Jun	-	-	-

INVERTEBRATES

Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	Spawn	Eggs	Larvae	Juveniles	Adults
826	Shrimp	Brown shrimp	Nursery Area			-	-	-	Feb-Apr	Mar-Aug	-
830	Bivalve	Alewife floater	Vulnerable Occurrence	T	T	-	Aug	Aug-Jun	-	Jan-Dec	Jan-Dec
832	Bivalve	Eastern lampmussel	Vulnerable Occurrence	T		-	Jul-Sep	Jan-Dec	-	Jan-Dec	Jan-Dec

WIDESPREAD IN MAPPED AREA (> 10 SQUARE KILOMETERS)



BIRDS

Subelement	Species	Mapping Qualifier	S	F	Concentration	Nest	Mig.(S)	Mig.(F)	Molt
Waterfowl	American black duck	Wintering			-	-	Feb-Mar	Oct-Nov	-
	American coot	Wintering			100S	-	Feb-Mar	Oct-Nov	-
	American wigeon	Wintering			-	-	Feb-Mar	Oct-Nov	-
	Bufflehead	Wintering			-	-	Feb-Mar	Oct-Nov	-
	Canada goose	Wintering			-	-	Feb-Mar	Oct-Nov	-
	Canada goose	Wintering			1000S	-	Feb-Mar	Oct-Nov	-
	Canvasback	Wintering			-	-	Feb-Mar	Oct-Nov	-
	Gadwall	Wintering			100S	-	Feb-Mar	Oct-Nov	-
	Gadwall	Wintering			-	-	Feb-Mar	Oct-Nov	-
	Greater scaup	Wintering			-	-	Feb-Mar	Oct-Nov	-
	Green-winged teal	Wintering			-	-	Feb-Mar	Oct-Nov	-
	Hooded merganser	Wintering			100S	-	Feb-Mar	Oct-Nov	-
	Lesser scaup	Wintering			-	-	Feb-Mar	Oct-Nov	-
	Mallard	Wintering			High	-	Feb-Mar	Oct-Nov	-
	Mallard	Wintering			100S	-	Feb-Mar	Oct-Nov	-
	Northern shoveler	Wintering			-	-	Feb-Mar	Oct-Nov	-
	Ring-necked duck	Wintering			-	-	Feb-Mar	Oct-Nov	-
	Ring-necked duck	Wintering			100S	-	Feb-Mar	Oct-Nov	-

BIRDS (continued)

Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Nest	Eggs	Larvae	Juveniles	Adults
						J	F	M	A	M	J	J	A	S	O	N	D					
	Scaup	Wintering			100S													-	Feb-Mar	Oct-Nov	Jul-Oct	-
	Tundra swan	Wintering			6000													-	Feb-Mar	Oct-Nov	Feb-May	-
	Tundra swan	Wintering			1000S													-	Feb-Mar	Oct-Nov	Jan-Dec	-
	Wood duck	Wintering			High													-	Feb-Mar	Oct-Nov	May-Sep	-

FISH

Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
						J	F	M	A	M	J	J	A	S	O	N	D					
	Alewife	Nursery Area			Present													-	-	May-Aug	Jul-Oct	-
	American shad	Spawning Area			Present													Apr-Jun	Apr-Jun	May-Jul	Feb-May	-
	Atlantic sturgeon	General Distribution		C	-													-	-	-	Jan-Dec	Jan-Dec
	Blueback herring	Nursery Area			Present													-	-	May-Jul	Jul-Oct	-
	Gizzard shad	Spawning Area			Abundant													Mar-May	Mar-May	Apr-Jun	May-Sep	-
	Striped bass	Nursery Area			Abundant													Apr-Jun	Apr-Jun	Apr-Jun	Jan-Dec	Jan-Dec
	Hogchoker	Spawning Area			Abundant													Apr-Oct	Apr-Oct	Apr-Oct	-	-

INVERTEBRATES

Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
						J	F	M	A	M	J	J	A	S	O	N	D					
	Eastern pondmussel	Vulnerable Occurrence		T	-													Jul-Sep	Jan-Dec	-	Jan-Dec	Jan-Dec
	Tidewater mucket	Vulnerable Occurrence		T	-													Jul-Sep	Jan-Dec	-	Jan-Dec	Jan-Dec

MARINE MAMMALS



Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Mating	Calving	Pupping	Molt
						J	F	M	A	M	J	J	A	S	O	N	D				
	Manatee	General Distribution	E	E	-													-	-	-	-

ALSO PRESENT IN MAPPED AREA (GENERAL DISTRIBUTION)




BIRDS

Subelement	Species	Monthly Presence												Nest	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	Wood duck													Mar-Jun	-	-	-	-


FISH

Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
						J	F	M	A	M	J	J	A	S	O	N	D					
	American eel																	-	-	Jan-Dec	Jan-Dec	Sep-Dec
	Hickory shad																	Apr-Jun	-	-	-	Jan-Apr
	Striped bass																	Apr-Jun	Apr-Jun	Apr-Jun	Jan-Dec	Jan-Dec
	Atlantic croaker																	-	-	Sep-Jun	Jan-Dec	Mar-Oct
	Atlantic menhaden																	-	-	-	-	Feb-Apr
	Bay anchovy																	Apr-Sep	Apr-Sep	Apr-Oct	Jan-Dec	Jan-Dec
	Red drum																	-	-	-	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					
	Southern flounder													-	-	Dec-Mar	Jan-Dec	Jan-Dec
	Striped mullet													-	-	-	May-Sep	-
	Summer flounder													-	-	Oct-May	Jan-Dec	-
	White perch													Mar-Jun	Mar-Jun	May-Aug	Jun-Oct	-
 	Inland silverside													Mar-Aug	Mar-Aug	Jun-Sep	-	-
	Black crappie													Mar-May	Mar-May	Mar-May	Jan-Dec	Jan-Dec
	Bluegill													Apr-Oct	Apr-Oct	-	Jan-Dec	Jan-Dec
	Bowfin													Mar-Jun	Mar-Jun	-	Jan-Dec	Jan-Dec
	Largemouth bass													May-Jun	May-Jun	May-Jun	-	Jan-Dec
	Threadfin shad													Apr-Jul	Apr-Jul	Apr-Jul	-	-
	Yellow perch													Jan-Mar	Jan-Mar	Jan-Mar	Apr-Dec	Apr-Dec
	Atlantic needlefish													May-Jul	May-Jul	Jun-Aug	Jun-Oct	-

INVERTEBRATES

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	Blue crab													-	-	-	Jan-Dec	Jan-Dec
	Blue crab													-	-	May-Oct	-	Jan-Dec
	Brown shrimp													-	-	Feb-Apr	Mar-Aug	-

MARINE MAMMALS

Subelement	Species	Monthly Presence												Mating	Calving	Pupping	Molt
		J	F	M	A	M	J	J	A	S	O	N	D				
	Bottlenose dolphin													Sep-Oct	Sep-Oct	-	-

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	1.92	0.00
10B	Freshwater Marshes	288.15	0.45
10C	Swamps	1,308.52	2.04
10D	Scrub and Shrub Wetlands	63.33	0.10
7	Exposed Tidal Flats	58.13	0.09

ESI SHORELINE HABITAT TYPES

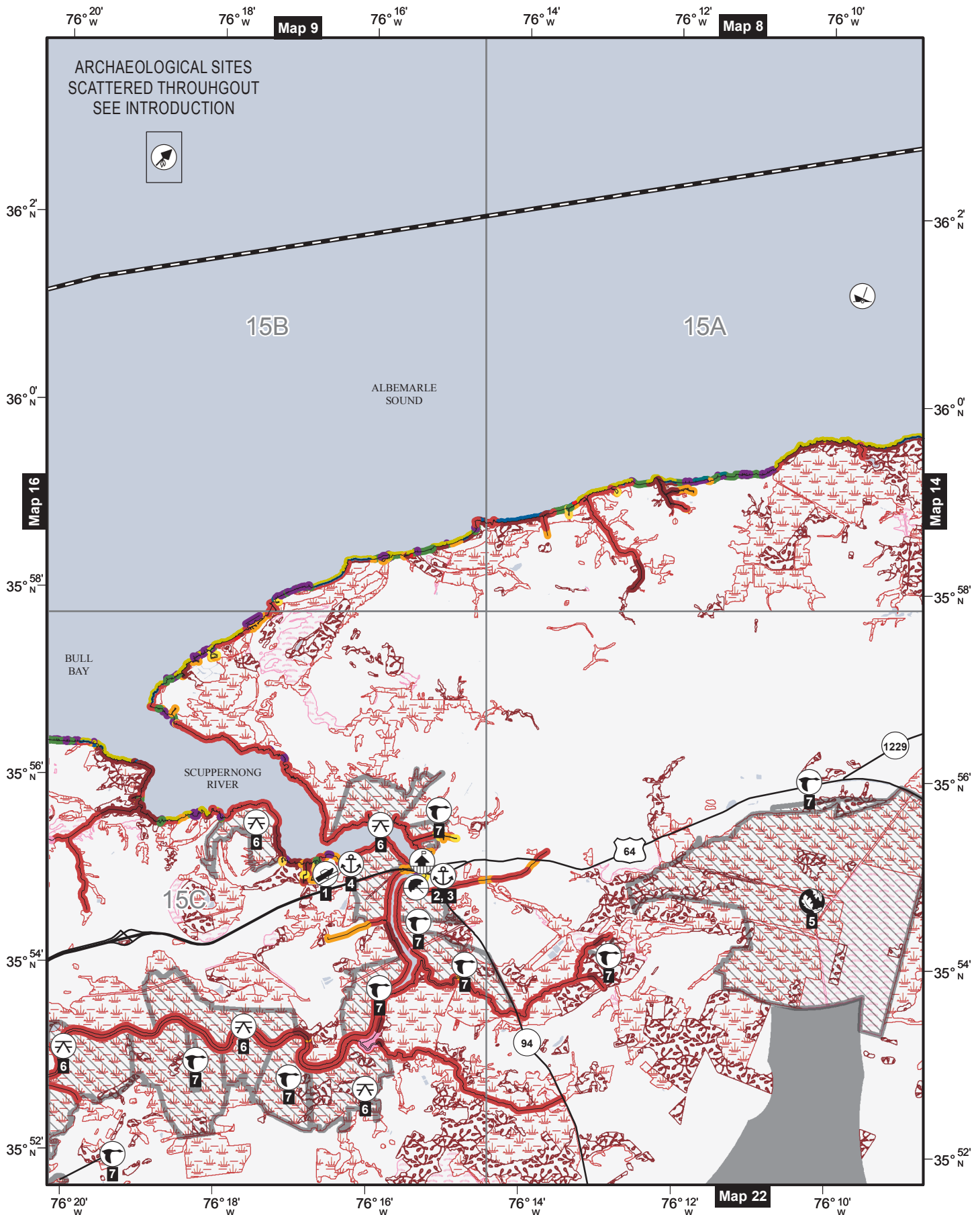
<i>ESI Rank</i>	<i>Shoreline Habitat Classification</i>	<i>Length (Meters)</i>	<i>Length (Miles)</i>	<i>% of ESI Shoreline</i>
10A	Salt- and brackish-water marshes	1,175.84	0.73	2%
10B	Freshwater marshes	915.26	0.57	1%
10C	Swamps	33,281.13	20.68	49%
10D	Scrub-shrub wetlands	1,233.50	0.77	2%
9B	Sheltered, vegetated low banks	6,756.08	4.20	10%
8B	Sheltered, solid man-made structures	26.34	0.02	< 1%
7	Exposed tidal flats	10,849.89	6.74	16%
6B	Exposed riprap	98.49	0.06	< 1%
3A	Fine- to medium-grained sand beaches	10,604.61	6.59	16%
3B	Scarps and steep slopes in sand	1,167.85	0.73	2%
1B	Exposed, solid man-made structures	1,513.32	0.94	2%

Total ESI Shoreline: 67,622.32 Total ESI Shoreline: 42.02
 Total Shoreline: 49,097.88 Total Shoreline: 30.51

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

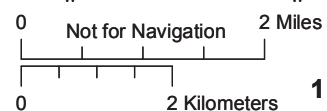




Map 15
North Carolina



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



1:100,000



Map 15
North Carolina

HUMAN USE RESOURCES

DISPLAYED ON MAP (POINTS)			
Map ID	Type	Name	Phone
1	BOAT RAMP	COLUMBIA	252-796-0062
2	MARINA	COLUMBIA MARINA	919-495-1028
3	MARINA	COLUMBIA TOWN DOCKS	252-796-2781
4	MARINA	EVERETT MARINE AT CYPRESS COVE MARINA	252-796-0435

DISPLAYED ON MAP (POLYGONS)			
Map ID	Type	Name	Phone
5	NATURE CONSERVANCY	NATURE CONSERVANCY EASEMENT	919-403-8558
6	PARK	PETTIGREW STATE PARK	252-797-4475
7	WILDLIFE REFUGE	POCOSIN LAKES NATIONAL WILDLIFE REFUGE	252-796-3004

ALSO PRESENT IN MAPPED AREA (POLYGONS)			
Type	Name	Contact	Phone
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT; CORAL	DAVID DALE, SOUTHEAST REGION	727-824-5317
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT; SNAPPER GROUPER	DAVID DALE, SOUTHEAST REGION	727-824-5317
ESSENTIAL HABITAT	HAPC; SHRIMP	DAVID DALE, SOUTHEAST REGION	727-824-5317
ESSENTIAL HABITAT	HAPC; SNAPPER GROUPER	DAVID DALE, SOUTHEAST REGION	727-824-5317
STATE PROTECTED AREA	GAME LAND	NC WILDLIFE RESOURCES COMMISSION	

JURISDICTIONS

COUNTY: PASQUOTANK, PERQUIMANS, TYRRELL
COAST GUARD: DISTRICT 5, SECTOR NORTH CAROLINA
USACE: SOUTH ATLANTIC DIVISION, WILMINGTON DISTRICT

FEMA: REGION I
EPA: REGION 4

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	3.28	0.01
10B	Freshwater Marshes	1,918.95	3.00
10C	Swamps	15,207.75	23.76
10D	Scrub and Shrub Wetlands	4,474.06	6.99
7	Exposed Tidal Flats	89.69	0.14

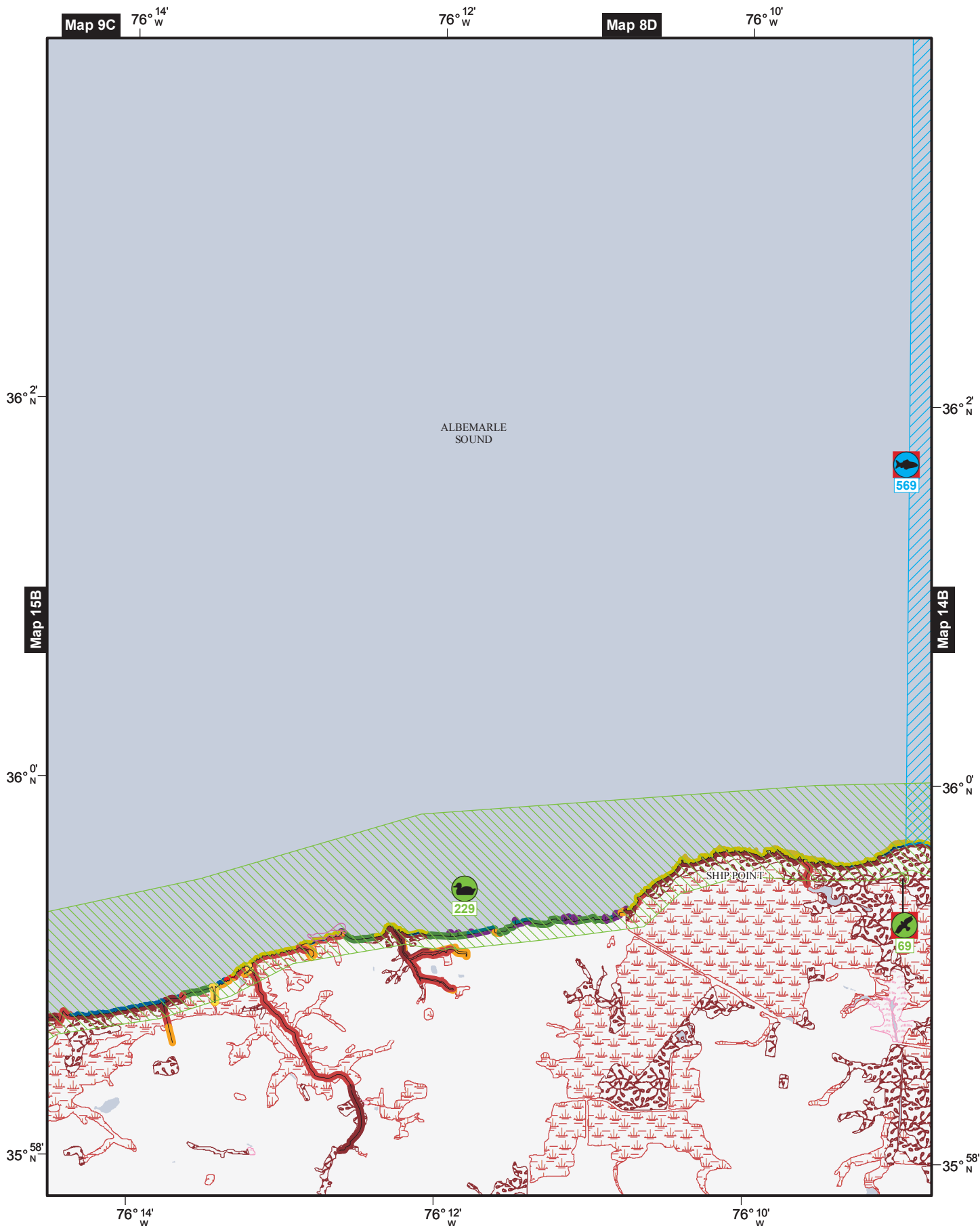
ESI SHORELINE HABITAT TYPES

<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	351.86	0.22	< 1%
10B	Freshwater marshes	1,214.22	0.75	1%
10C	Swamps	71,904.58	44.68	52%
10D	Scrub-shrub wetlands	18,139.71	11.27	13%
9B	Sheltered, vegetated low banks	10,263.72	6.38	7%
8B	Sheltered, solid man-made structures	2,589.57	1.61	2%
8C	Sheltered riprap	660.81	0.41	< 1%
7	Exposed tidal flats	16,288.03	10.12	12%
6B	Exposed riprap	6,921.00	4.30	5%
3A	Fine- to medium-grained sand beaches	4,762.59	2.96	3%
3B	Scarps and steep slopes in sand	41.61	0.03	< 1%
1B	Exposed, solid man-made structures	5,823.64	3.62	4%
Total ESI Shoreline:		138,961.34	86.35	
Total Shoreline:		116,345.60	72.29	

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 15A
North Carolina

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											
SAV	Submerged aquatic veg	High Ecological Value			Present	J	F	M	A	M	J	J	A	S	O	N	D

BIRDS


Map ID	Subelement	Species	Mapping Qualifier	Monthly Presence																			Molt
				S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N	D	Nest	Mig.(S)	Mig.(F)		
69	Raptor	Bald eagle	Nesting	T		1 Pair													Jan-Jun	-	-	-	
229	Waterfowl	American black duck	Wintering			100S													-	Feb-Mar	Oct-Nov	-	
	Waterfowl	American coot	Wintering			1000S													-	Feb-Mar	Oct-Nov	-	
	Waterfowl	American wigeon	Wintering			1000S													-	Feb-Mar	Oct-Nov	-	
	Waterfowl	Common merganser	Wintering			1000S													-	Feb-Mar	Oct-Nov	-	
	Waterfowl	Gadwall	Wintering			1000S													-	Feb-Mar	Oct-Nov	-	
	Waterfowl	Green-winged teal	Wintering			1000S													-	Feb-Mar	Oct-Nov	-	
	Waterfowl	Hooded merganser	Wintering			100S													-	Feb-Mar	Oct-Nov	-	
	Waterfowl	Mallard	Wintering			100S													-	Feb-Mar	Oct-Nov	-	
	Waterfowl	Northern pintail	Wintering			1000S													-	Feb-Mar	Oct-Nov	-	
	Waterfowl	Northern shoveler	Wintering			100S													-	Feb-Mar	Oct-Nov	-	
	Waterfowl	Ring-necked duck	Wintering			1000S													-	Feb-Mar	Oct-Nov	-	
	Waterfowl	Ruddy duck	Wintering			100S													-	Feb-Mar	Oct-Nov	-	
Waterfowl	Scaup	Wintering			100S													-	Feb-Mar	Oct-Nov	-		
Waterfowl	Tundra swan	Wintering			1000S													-	Feb-Mar	Oct-Nov	-		

FISH

Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
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569	Diadromous	Atlantic sturgeon	General Distribution	C		-																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	

WIDESPREAD IN MAPPED AREA (> 10 SQUARE KILOMETERS)


BIRDS

Subelement	Species	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							
	Waterfowl																							
	American black duck	Wintering			-															Feb-Mar	Oct-Nov	-	-	-
	American wigeon	Wintering			-															Feb-Mar	Oct-Nov	-	-	-
	Black scoter	Wintering			-															Feb-Mar	Oct-Nov	-	-	-
	Bufflehead	Wintering			-															Feb-Mar	Oct-Nov	-	-	-
	Canada goose	Wintering			-															Feb-Mar	Oct-Nov	-	-	-
	Canvasback	Wintering			-															Feb-Mar	Oct-Nov	-	-	-

BIRDS (continued)

Subelement	Species	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				
	Gadwall	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Greater scaup	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Green-winged teal	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Lesser scaup	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Long-tailed duck	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Mallard	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Northern shoveler	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Red-breasted merganser	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Redhead	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Ring-necked duck	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Snow goose	Wintering			1500													-	Feb-Mar	Oct-Nov	-
	Surf scoter	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Tundra swan	Wintering			5000													-	Feb-Mar	Oct-Nov	-
	White-winged scoter	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Wood duck	Wintering			-													-	Feb-Mar	Oct-Nov	-

FISH


Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
						J	F	M	A	M	J	J	A	S	O	N	D					
	Diadromous Alewife	Migration			Present													-	-	May-Aug	Jul-Mar	-
	Atlantic sturgeon	Concentration Area	C		Common													-	-	-	Jun-Feb	Jun-Feb
	Blueback herring	Migration			Present													-	-	May-Jul	Aug-Oct	-

MARINE MAMMALS

Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Mating	Calving	Pupping	Molt
						J	F	M	A	M	J	J	A	S	O	N	D				
	Manatee	General Distribution	E	E	-													-	-	-	-

ALSO PRESENT IN MAPPED AREA (GENERAL DISTRIBUTION)

BIRDS

Subelement	Species	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				
	Waterfowl																	Apr-May	-	-	-
	American black duck																	Mar-Jun	-	-	-
	Wood duck																		-	-	-

FISH

Monthly Presence

Subelement	Species	J	F	M	A	M	J	J	A	S	O	N	D	Spawn	Eggs	Larvae	Juveniles	Adults
	Diadromous													-	-	Jan-Jun	Jan-Dec	Aug-Dec
	American eel													-	-	Mar-Jul	May-Nov	-
	American shad													-	-	-	Oct-Mar	-
	Gizzard shad													-	-	-	-	-
	Hickory shad													-	-	-	-	Nov-Apr
	Striped bass													Apr-Jun	Apr-Jun	Apr-Jun	Jan-Dec	Jan-Dec
	Atlantic croaker													-	-	Sep-Mar	Jan-Dec	Jan-Dec
	Atlantic menhaden													-	-	Jan-Jun	Jan-Dec	-
	Bay anchovy													Apr-Sep	Apr-Sep	Apr-Oct	Jan-Dec	Jan-Dec
	Black drum													-	-	-	Jan-Dec	Jun-Nov
	Bluefish													-	-	-	May-Oct	Jun-Oct
	Hogchoker													-	-	-	Jan-Dec	Jan-Dec
	Ladyfish													-	-	-	Apr-Oct	Sep-Oct
	Pinfish													-	-	Dec-Mar	Jan-Dec	May-Oct
	Red drum													-	-	-	Jan-Dec	-
	Sheepshead													-	-	-	Jun-Sep	Jun-Sep
	Southern flounder													-	-	Dec-Mar	Jan-Dec	Jan-Dec
	Southern kingfish													-	-	-	May-Dec	Jul-Oct
	Spot													-	-	Jan-Mar	Jan-Dec	May-Oct
	Spotted seatrout													-	-	-	Jan-Dec	Jan-Dec
	Striped mullet													-	-	-	Jan-Dec	Jan-Dec
	Summer flounder													-	-	-	Jan-Dec	Jan-Dec
	Weakfish													-	-	Oct-May	Jan-Dec	-
	White mullet													Mar-Oct	Mar-Oct	-	Jan-Dec	Mar-Oct
	White perch													-	-	-	Jan-Dec	Jan-Dec
	Inland silverside													Apr-Jul	Apr-Jul	Apr-Aug	Jan-Dec	Jan-Dec
	Largemouth bass													Mar-Aug	Mar-Aug	Jun-Sep	-	-
	Longnose gar													May-Jun	May-Jun	May-Jun	-	Jan-Dec
	Yellow perch													Mar-Sep	Mar-Sep	-	Jan-Dec	Jan-Dec
	Atlantic spadefish													-	-	-	Apr-Dec	Apr-Dec
	Atlantic needlefish													-	-	-	Jun-Aug	-
	Spanish mackerel													May-Jul	May-Jul	Jun-Aug	Jun-Oct	-
														-	-	-	Jul-Nov	Jul-Oct
														-	-	-	-	-
														-	-	-	-	-
														-	-	-	-	-

INVERTEBRATES

Monthly Presence

Subelement	Species	J	F	M	A	M	J	J	A	S	O	N	D	Spawn	Eggs	Larvae	Juveniles	Adults
	Crab													-	-	-	Jan-Dec	Jan-Dec
	Blue crab													-	-	May-Oct	-	Jan-Dec
	Shrimp													-	-	Feb-Apr	Mar-Aug	-
	Brown shrimp													-	-	-	Jan-Dec	Sep-Nov
	Pink shrimp													-	-	-	Jan-Dec	Sep-Nov
	White shrimp													-	-	Jun-Dec	Dec-Feb	-
														-	-	-	-	-

MARINE MAMMALS

Subelement	Species	Monthly Presence												Calving	Pupping	Molt
Dolphin	Bottlenose dolphin	J	F	M	A	M	J	J	A	S	O	N	D	Mating Sep-Oct		

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	39.44	0.06
10C	Swamps	1,574.90	2.46
10D	Scrub and Shrub Wetlands	634.94	0.99
7	Exposed Tidal Flats	43.43	0.07

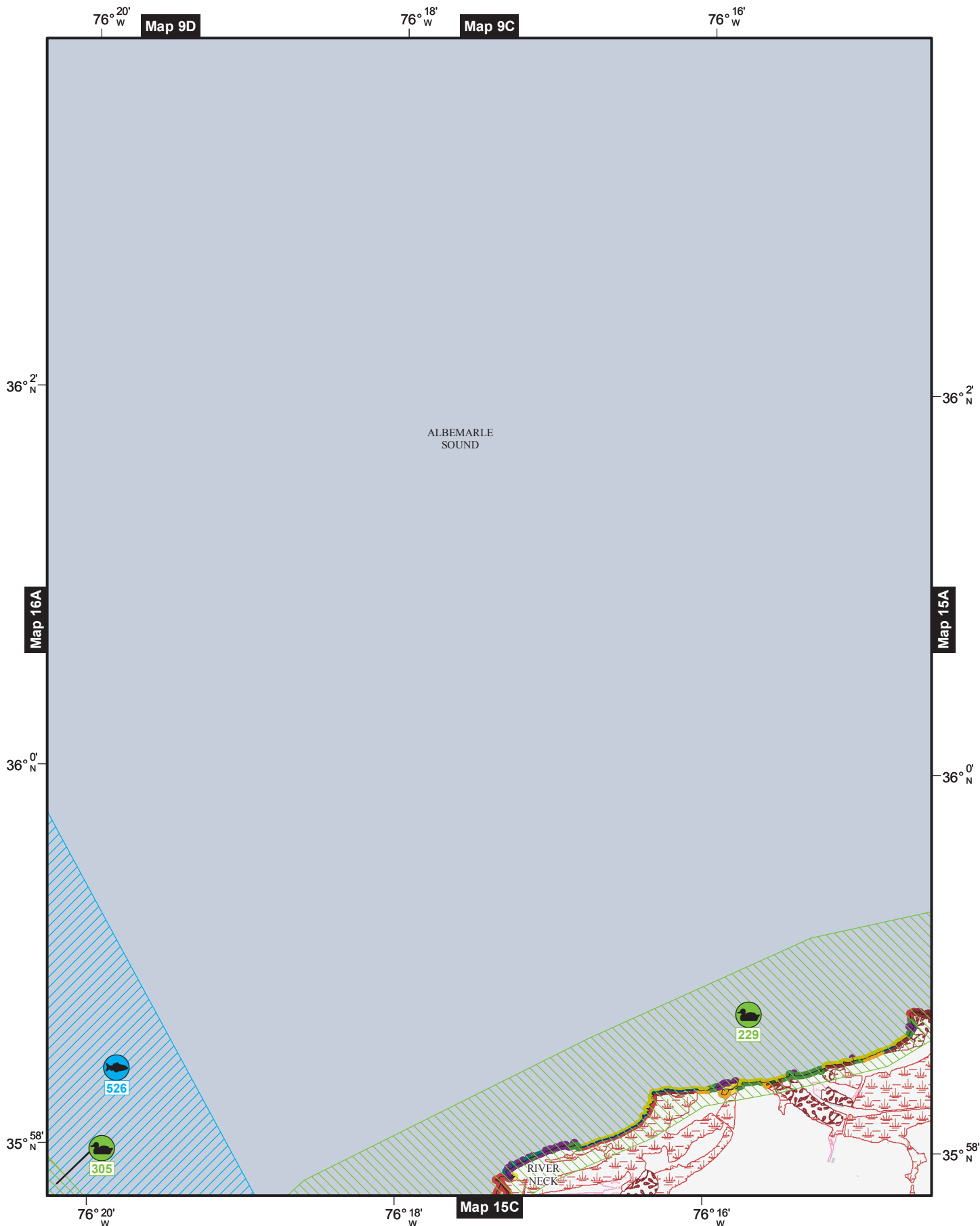
ESI SHORELINE HABITAT TYPES

ESI Rank	Shoreline Habitat Classification	Length (Meters)	Length (Miles)	% of ESI Shoreline
10A	Salt- and brackish-water marshes	109.90	0.07	< 1%
10C	Swamps	5,743.06	3.57	20%
10D	Scrub-shrub wetlands	7,969.91	4.95	28%
9B	Sheltered, vegetated low banks	1,746.88	1.09	6%
8B	Sheltered, solid man-made structures	95.44	0.06	< 1%
8C	Sheltered riprap	282.79	0.18	1%
7	Exposed tidal flats	6,544.21	4.07	23%
6B	Exposed riprap	2,872.87	1.79	10%
3A	Fine- to medium-grained sand beaches	2,093.31	1.30	7%
1B	Exposed, solid man-made structures	1,103.82	0.69	4%
Total ESI Shoreline:		28,562.19	Total ESI Shoreline:	17.75
		Total Shoreline:	Total Shoreline:	11.87

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

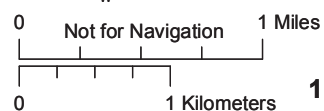




Map 15B
North Carolina



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 15B
North Carolina

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	S	F	Concentration	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Juveniles	Molt
							J	F	M	A	M	J	J	A	S	O	N	D					
229	Waterfowl	American black duck	Wintering			100S													-	Feb-Mar	Oct-Nov	-	-
	Waterfowl	American coot	Wintering			1000S													-	Feb-Mar	Oct-Nov	-	-
	Waterfowl	American wigeon	Wintering			1000S													-	Feb-Mar	Oct-Nov	-	-
	Waterfowl	Common merganser	Wintering			1000S													-	Feb-Mar	Oct-Nov	-	-
	Waterfowl	Gadwall	Wintering			1000S													-	Feb-Mar	Oct-Nov	-	-
	Waterfowl	Green-winged teal	Wintering			1000S													-	Feb-Mar	Oct-Nov	-	-
	Waterfowl	Hooded merganser	Wintering			100S													-	Feb-Mar	Oct-Nov	-	-
	Waterfowl	Mallard	Wintering			100S													-	Feb-Mar	Oct-Nov	-	-
	Waterfowl	Northern pintail	Wintering			1000S													-	Feb-Mar	Oct-Nov	-	-
	Waterfowl	Northern shoveler	Wintering			100S													-	Feb-Mar	Oct-Nov	-	-
	Waterfowl	Ring-necked duck	Wintering			1000S													-	Feb-Mar	Oct-Nov	-	-
	Waterfowl	Ruddy duck	Wintering			100S													-	Feb-Mar	Oct-Nov	-	-
	Waterfowl	Scaup	Wintering			100S													-	Feb-Mar	Oct-Nov	-	-
	Waterfowl	Tundra swan	Wintering			1000S													-	Feb-Mar	Oct-Nov	-	-
	Waterfowl	American coot	Wintering			100S													-	Feb-Mar	Oct-Nov	-	-
	Waterfowl	Bufflehead	Wintering			100S													-	Feb-Mar	Oct-Nov	-	-
	Waterfowl	Canada goose	Wintering			1000S													-	Feb-Mar	Oct-Nov	-	-
	Waterfowl	Canvasback	Wintering			100S													-	Feb-Mar	Oct-Nov	-	-
	Waterfowl	Gadwall	Wintering			100S													-	Feb-Mar	Oct-Nov	-	-
	Waterfowl	Hooded merganser	Wintering			100S													-	Feb-Mar	Oct-Nov	-	-
	Waterfowl	Redhead	Wintering			100S													-	Feb-Mar	Oct-Nov	-	-
	Waterfowl	Ring-necked duck	Wintering			100S													-	Feb-Mar	Oct-Nov	-	-
	Waterfowl	Ruddy duck	Wintering			1000S													-	Feb-Mar	Oct-Nov	-	-
	Waterfowl	Scaup	Wintering			1000S													-	Feb-Mar	Oct-Nov	-	-
	Waterfowl	Tundra swan	Wintering			100S													-	Feb-Mar	Oct-Nov	-	-


FISH

Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
							J	F	M	A	M	J	J	A	S	O	N	D					
526	Diadromous	Alewife	Nursery Area			Present													-	-	May-Aug	Jul-Oct	-
	Diadromous	American shad	Spawning Area			Present													Apr-Jun	Apr-Jun	May-Jul	Feb-May	-
	Diadromous	Blueback herring	Nursery Area			Present													-	-	May-Jul	Jul-Oct	-

BIRDS

Subelement	Species	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				
	American black duck	Wintering	-	-	-													-	Feb-Mar	Oct-Nov	-
	American wigeon	Wintering	-	-	-													-	Feb-Mar	Oct-Nov	-
	Black scoter	Wintering	-	-	-													-	Feb-Mar	Oct-Nov	-
	Bufflehead	Wintering	-	-	-													-	Feb-Mar	Oct-Nov	-
	Canada goose	Wintering	-	-	-													-	Feb-Mar	Oct-Nov	-
	Canvasback	Wintering	-	-	-													-	Feb-Mar	Oct-Nov	-
	Gadwall	Wintering	-	-	-													-	Feb-Mar	Oct-Nov	-
	Greater scaup	Wintering	-	-	-													-	Feb-Mar	Oct-Nov	-
	Green-winged teal	Wintering	-	-	-													-	Feb-Mar	Oct-Nov	-
	Lesser scaup	Wintering	-	-	-													-	Feb-Mar	Oct-Nov	-
	Long-tailed duck	Wintering	-	-	-													-	Feb-Mar	Oct-Nov	-
	Mallard	Wintering	-	-	-													-	Feb-Mar	Oct-Nov	-
	Northern shoveler	Wintering	-	-	-													-	Feb-Mar	Oct-Nov	-
	Red-breasted merganser	Wintering	-	-	-													-	Feb-Mar	Oct-Nov	-
	Redhead	Wintering	-	-	-													-	Feb-Mar	Oct-Nov	-
	Ring-necked duck	Wintering	-	-	-													-	Feb-Mar	Oct-Nov	-

FISH


Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
						J	F	M	A	M	J	J	A	S	O	N	D					
	Alewife	Migration	-	-	Present													-	-	May-Aug	Jul-Mar	-
	Atlantic sturgeon	Concentration Area	C	-	Common													-	-	-	Jun-Feb	Jun-Feb
	Blueback herring	Migration	-	-	Present													-	-	May-Jul	Aug-Oct	-

MARINE MAMMALS




Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Mating	Calving	Pupping	Molt
						J	F	M	A	M	J	J	A	S	O	N	D				
	West Indian manatee	General Distribution	E	-	-													-	-	-	-

ALSO PRESENT IN MAPPED AREA (GENERAL DISTRIBUTION)



BIRDS

Subelement	Species	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				
	American black duck		-	-	-													Apr-May	-	-	-
	Wood duck		-	-	-													Mar-Jun	-	-	-

FISH

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	Diadromous													-	-	Jan-Jun	Jan-Dec	Aug-Dec
	American shad													-	-	Mar-Jul	May-Nov	-
	Gizzard shad													-	-	-	Oct-Mar	-
	Hickory shad													-	-	-	-	Nov-Apr
	Estuarine Nursery																	
	Striped bass													Apr-Jun	Apr-Jun	Apr-Jun	Jan-Dec	Jan-Dec
	Atlantic croaker													-	-	Sep-Mar	Jan-Dec	Jan-Dec
	Atlantic menhaden													-	-	Jan-Jun	Jan-Dec	-
	Bay anchovy													Apr-Sep	Apr-Sep	Apr-Oct	Jan-Dec	Jan-Dec
	Black drum													-	-	-	Jan-Dec	Jun-Nov
	Bluefish													-	-	-	May-Oct	Jun-Oct
	Hogchoker													-	-	-	Jan-Dec	Jan-Dec
	Ladyfish													-	-	-	Apr-Oct	Sep-Oct
	Pinfish													-	-	Dec-Mar	Jan-Dec	May-Oct
	Red drum													-	-	-	Jan-Dec	-
	Sheepshead													-	-	-	Jun-Sep	Jun-Sep
	Southern flounder													-	-	Dec-Mar	Jan-Dec	Jan-Dec
	Southern kingfish													-	-	-	May-Dec	Jul-Oct
	Spot													-	-	Jan-Mar	Jan-Dec	May-Oct
	Spotted seatrout													-	-	-	Jan-Dec	Jan-Dec
	Striped mullet													-	-	-	Jan-Dec	Jan-Dec
	Summer flounder													-	-	-	Jan-Dec	Jan-Dec
	Weakfish													Mar-Oct	Mar-Oct	Oct-May	Jan-Dec	-
	White mullet													-	-	-	Jan-Dec	Mar-Oct
	White perch													Apr-Jul	Apr-Jul	Apr-Aug	Jan-Dec	Jan-Dec
	Estuarine Resident													Mar-Aug	Mar-Aug	Jun-Sep	-	-
	Freshwater													May-Jun	May-Jun	May-Jun	-	Jan-Dec
	Inland silverside													Mar-Sep	Mar-Sep	-	Jan-Dec	Jan-Dec
	Largemouth bass													-	-	-	Apr-Dec	Apr-Dec
	Longnose gar													-	-	-	Jun-Aug	-
	Yellow perch													-	-	-	Jun-Oct	-
	Marine Benthic													May-Jul	May-Jul	Jun-Aug	Jan-Dec	-
	Atlantic spadefish													-	-	-	Jul-Nov	-
	Marine Pelagic													-	-	-	-	Jul-Oct
	Spanish mackerel													-	-	-	-	-

INVERTEBRATES

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	Crab													-	-	-	Jan-Dec	Jan-Dec
	Blue crab													-	-	May-Oct	-	Jan-Dec
	Shrimp													-	-	Feb-Apr	Mar-Aug	-
	Brown shrimp													-	-	-	Jan-Dec	Sep-Nov
	Pink shrimp													-	-	-	Dec-Feb	-
	White shrimp													-	-	Jun-Dec	-	-

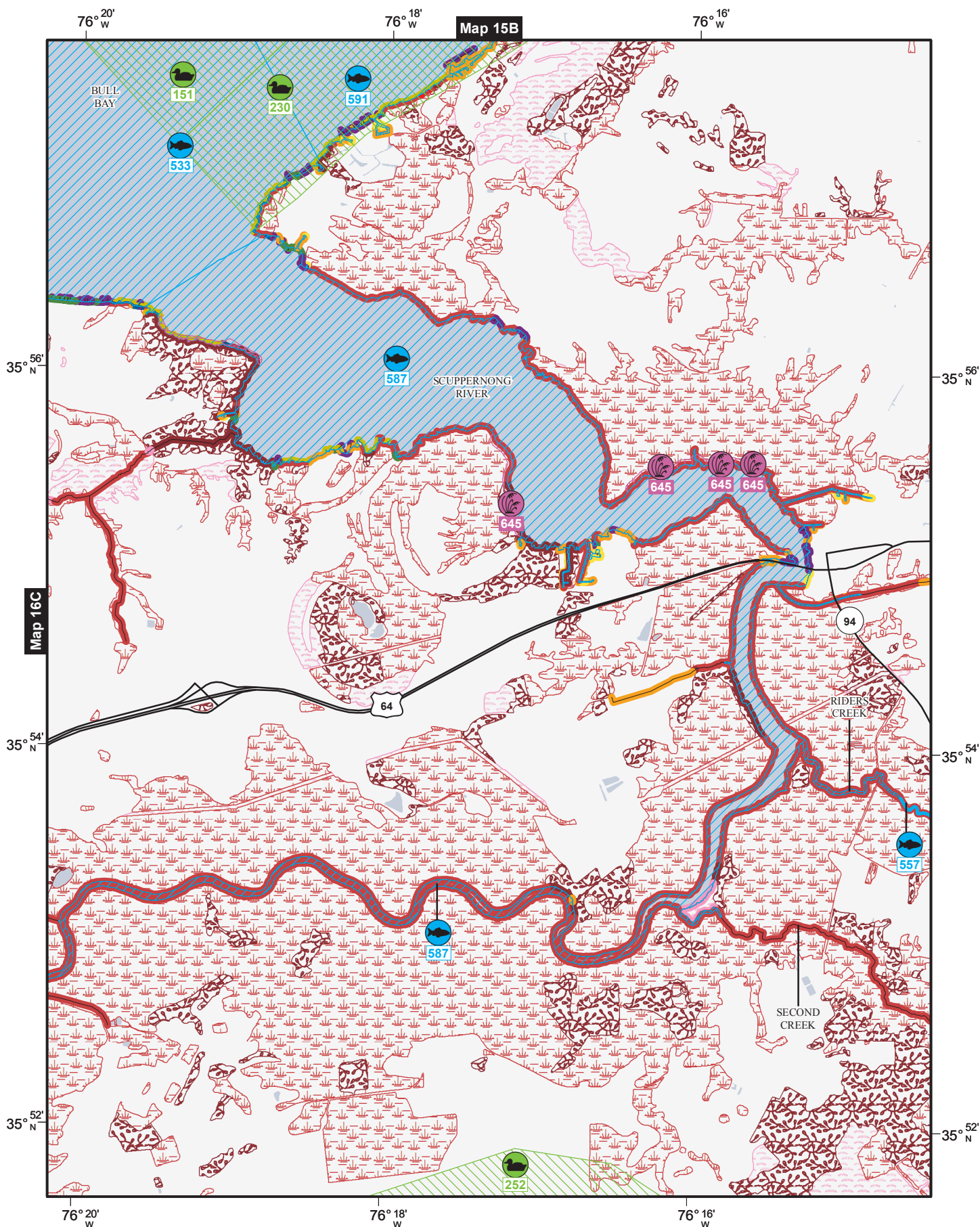
Subelement	Species	Monthly Presence												Mating	Calving	Pupping	Molt	
		J	F	M	A	M	J	J	A	S	O	N	D					
 Dolphin	Bottlenose dolphin														Sep-Oct	Sep-Oct	-	-

SHORELINE RESOURCES

ESI Shoreline Habitat Types			
ESI Rank	Shoreline Habitat Classification	Length (Meters)	Length (Miles)
10A	Salt- and brackish-water marshes	112.59	0.07
10C	Swamps	2,014.56	1.25
10D	Scrub-shrub wetlands	1,383.06	0.86
9B	Sheltered, vegetated low banks	454.25	0.28
8B	Sheltered, solid man-made structures	334.02	0.21
8C	Sheltered riprap	101.39	0.06
7	Exposed tidal flats	3,455.00	2.15
6B	Exposed riprap	2,325.51	1.45
3A	Fine- to medium-grained sand beaches	1,504.18	0.93
1B	Exposed, solid man-made structures	1,176.26	0.73
			% of ESI Shoreline
			1%
			16%
			11%
			4%
			3%
			1%
			27%
			18%
			12%
			9%

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%





Map 15C
North Carolina

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											
SAV	Submerged aquatic veg	High Ecological Value			Present	J	F	M	A	M	J	J	A	S	O	N	D

BIRDS

Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N	D	Nest	Mig.(S)	Mig.(F)	Molt
151	Waterfowl	Black scoter	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Waterfowl	Canvasback	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Waterfowl	Long-tailed duck	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Waterfowl	Red-breasted merganser	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Waterfowl	Redhead	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Waterfowl	Snow goose	Wintering			1500													-	Feb-Mar	Oct-Nov	-
	Waterfowl	Surf scoter	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Waterfowl	Tundra swan	Wintering			5000													-	Feb-Mar	Oct-Nov	-
	Waterfowl	White-winged scoter	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Waterfowl	American black duck	Wintering			100S													-	Feb-Mar	Oct-Nov	-
230	Waterfowl	American coot	Wintering			1000S													-	Feb-Mar	Oct-Nov	-
	Waterfowl	American wigeon	Wintering			1000S													-	Feb-Mar	Oct-Nov	-
	Waterfowl	Common merganser	Wintering			1000S													-	Feb-Mar	Oct-Nov	-
	Waterfowl	Gadwall	Wintering			1000S													-	Feb-Mar	Oct-Nov	-
	Waterfowl	Green-winged teal	Wintering			1000S													-	Feb-Mar	Oct-Nov	-
	Waterfowl	Mallard	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	Waterfowl	Northern pintail	Wintering			1000S													-	Feb-Mar	Oct-Nov	-
	Waterfowl	Northern shoveler	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	Waterfowl	Ring-necked duck	Wintering			1000S													-	Feb-Mar	Oct-Nov	-
	Waterfowl	Ruddy duck	Wintering			100S													-	Feb-Mar	Oct-Nov	-
252	Waterfowl	Scaup	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	Waterfowl	Tundra swan	Wintering			1000S													-	Feb-Mar	Oct-Nov	-
	Waterfowl	American wigeon	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	Waterfowl	Common merganser	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	Waterfowl	Northern pintail	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	Waterfowl	Red-breasted merganser	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	Waterfowl	Snow goose	Wintering			10000S													-	Feb-Mar	Oct-Nov	-
	Waterfowl	Tundra swan	Wintering			1000S													-	Feb-Mar	Oct-Nov	-
																			-			
																			-			

FISH

Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Larvae	Juveniles	Adults
							J	F	M	A	M	J	J	A	S	O	N	D			
533	Diadromous	Alewife	Nursery Area			Present													May-Aug	Jul-Oct	-
	Diadromous	Blueback herring	Nursery Area			Present													May-Jul	Jul-Oct	-
557	Diadromous	Alewife	Spawning Area			Present													May-Aug	-	-
	Diadromous	American shad	Spawning Area			Present													May-Jul	Feb-May	-
587	Diadromous	Blueback herring	Spawning Area			Present													May-Jul	-	-
	Diadromous	Alewife	Spawning Area			Present													May-Aug	-	-
591	Diadromous	Blueback herring	Spawning Area			Present													May-Jul	-	-
	Diadromous	Alewife	Migration			Present													May-Aug	Jul-Mar	-
	Diadromous	Blueback herring	Migration			Present													May-Jul	Aug-Oct	-

HABITATS & RARE PLANTS

Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence											
							J	F	M	A	M	J	J	A	S	O	N	D
645	Plant	Narrowleaf evening primrose	Vulnerable Occurrence			Current												


WIDESPREAD IN MAPPED AREA (> 10 SQUARE KILOMETERS)

BIRDS

Subelement	Species	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				
Waterfowl	American black duck	Wintering			-													-	Feb-Mar	Oct-Nov	-
	American coot	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	American wigeon	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Bufflehead	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Bufflehead	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	Canada goose	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Canada goose	Wintering			1000S													-	Feb-Mar	Oct-Nov	-
	Canvasback	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	Gadwall	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	Gadwall	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Greater scaup	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Green-winged teal	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Hooded merganser	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	Lesser scaup	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Mallard	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Northern shoveler	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Redhead	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	Ring-necked duck	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	Ring-necked duck	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Ruddy duck	Wintering			1000S													-	Feb-Mar	Oct-Nov	-
	Scaup	Wintering			1000S													-	Feb-Mar	Oct-Nov	-
	Tundra swan	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	Tundra swan	Wintering			Extremely High													-	Feb-Mar	Oct-Nov	-
	Wood duck	Wintering			-													-	Feb-Mar	Oct-Nov	-

North Carolina: Map 15C

FISH

Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Eggs	Larvae	Juveniles	Adults
						J	F	M	A	M	J	J	A	S	O	N	D				
	Diadromous	American shad			Present													Apr-Jun	May-Jul	Feb-May	-
	Atlantic sturgeon	Concentration Area	C		Common													-	-	Jun-Feb	Jun-Feb

REPTILES & AMPHIBIANS

Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Hatch	Interest	Juveniles	Adults
						J	F	M	A	M	J	J	A	S	O	N	D				
	Alligator	American alligator			-													May-Jul	Jul-Sep	Jan-Dec	Jan-Dec
		Vulnerable Occurrence																			

MARINE MAMMALS



Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Mating	Calving	Pupping	Molt
						J	F	M	A	M	J	J	A	S	O	N	D				
	Manatee	West Indian manatee			-													-	-	-	-
		General Distribution	E	E																	

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				
	Waterfowl													Apr-May	-	-	-
	American black duck													Mar-Jun	-	-	-
	Wood duck																

FISH

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	Diadromous													-	-	Jan-Jun	Jan-Dec	Aug-Dec
	American shad													-	-	Mar-Jul	May-Nov	-
	Gizzard shad													-	-	-	Oct-Mar	-
	Hickory shad													-	-	-	-	Nov-Apr
	Striped bass													Apr-Jun	Apr-Jun	Apr-Jun	Jan-Dec	Jan-Dec
	Atlantic croaker													-	-	Sep-Mar	Jan-Dec	Jan-Dec
	Atlantic menhaden													-	-	Jan-Jun	Jan-Dec	-
	Bay anchovy													Apr-Sep	Apr-Sep	Apr-Oct	Jan-Dec	Jan-Dec
	Black drum													-	-	-	Jan-Dec	Jun-Nov
	Bluefish													-	-	-	May-Oct	Jun-Oct
	Hogchoker													-	-	-	Jan-Dec	Jan-Dec
	Ladyfish													-	-	-	Apr-Oct	Sep-Oct
	Pinfish													-	-	Dec-Mar	Jan-Dec	May-Oct
	Red drum													-	-	-	Jan-Dec	-
	Sheepshead													-	-	-	Jun-Sep	Jun-Sep
	Southern flounder													-	-	Dec-Mar	Jan-Dec	Jan-Dec
	Southern kingfish													-	-	-	May-Dec	Jul-Oct
	Spot													-	-	Jan-Mar	Jan-Dec	May-Oct
	Spotted seatrout													-	-	-	Jan-Dec	Jan-Dec
	Striped mullet													-	-	-	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					
<div> <div></div> <div></div> </div>	Summer flounder													-	-	Oct-May	Jan-Dec	-
	Weakfish													Mar-Oct	Mar-Oct	-	Jan-Dec	Mar-Oct
	White mullet													-	-	-	Jan-Dec	Jan-Dec
	White perch													Apr-Jul	Apr-Jul	Apr-Aug	Jan-Dec	Jan-Dec
	Estuarine Resident													Mar-Aug	Mar-Aug	Jun-Sep	-	-
	Freshwater													May-Jun	May-Jun	May-Jun	-	Jan-Dec
	Largemouth bass													Mar-Sep	Mar-Sep	-	Jan-Dec	Jan-Dec
	Longnose gar													-	-	-	Apr-Dec	Apr-Dec
	Yellow perch													Jan-Mar	Jan-Mar	Jan-Mar	Apr-Dec	Apr-Dec
	Yellow perch													-	-	-	Jun-Aug	-
<div> <div></div> <div></div> </div>	Atlantic spadefish													May-Jul	May-Jul	Jun-Aug	Jun-Oct	-
	Atlantic needlefish													-	-	-	Jul-Nov	Jul-Oct
	Spanish mackerel													-	-	-	-	Jul-Oct

INVERTEBRATES

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
<div> <div></div> <div></div> </div>	Crab													-	-	-	Jan-Dec	Jan-Dec
	Blue crab													-	-	May-Oct	-	Jan-Dec
<div> <div></div> <div></div> </div>	Shrimp													-	-	Feb-Apr	Mar-Aug	-
	Brown shrimp													-	-	-	Jan-Dec	Sep-Nov
	Pink shrimp													-	-	-	Jan-Dec	Sep-Nov
	White shrimp													-	-	Jun-Dec	Dec-Feb	-

MARINE MAMMALS

Subelement	Species	Monthly Presence												Mating	Calving	Pupping	Molt
		J	F	M	A	M	J	J	A	S	O	N	D				
<div> <div></div> </div>	Dolphin													Sep-Oct	Sep-Oct	-	-
	Bottlenose dolphin													Sep-Oct	Sep-Oct	-	-

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	0.73	0.00
10B	Freshwater Marshes	592.08	0.93
10C	Swamps	8,435.24	13.18
10D	Scrub and Shrub Wetlands	1,644.67	2.57
7	Exposed Tidal Flats	33.03	0.05

ESI SHORELINE HABITAT TYPES

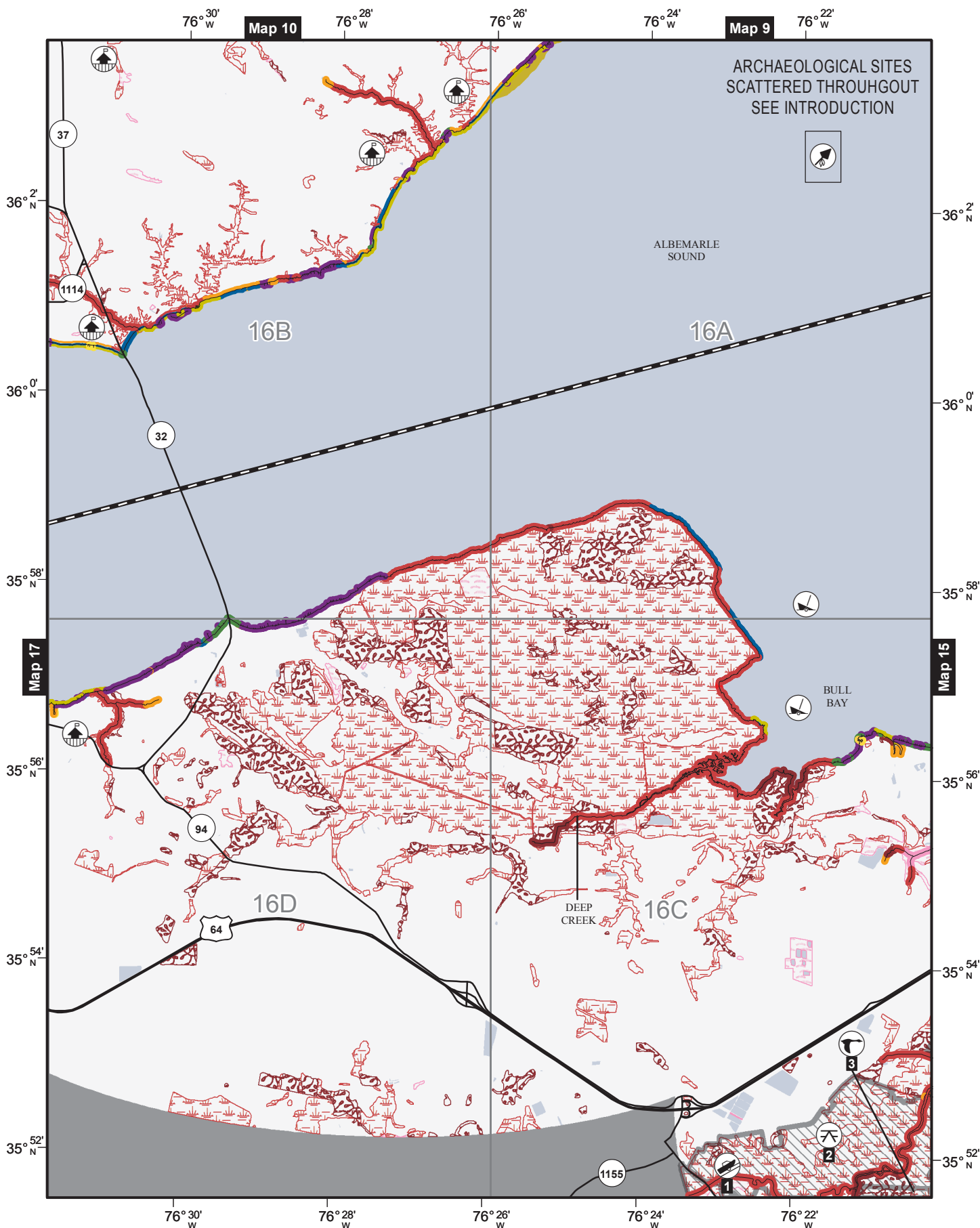
<i>ESI Rank</i>	<i>Shoreline Habitat Classification</i>	<i>Length (Meters)</i>	<i>Length (Miles)</i>	<i>% of ESI Shoreline</i>
10A	Salt- and brackish-water marshes	129.37	0.08	< 1%
10B	Freshwater marshes	1,166.34	0.72	1%
10C	Swamps	57,718.82	35.86	64%
10D	Scrub-shrub wetlands	8,301.10	5.16	9%
9B	Sheltered, vegetated low banks	7,596.63	4.72	8%
8B	Sheltered, solid man-made structures	2,160.10	1.34	2%
8C	Sheltered riprap	276.63	0.17	< 1%
7	Exposed tidal flats	6,289.09	3.91	7%
6B	Exposed riprap	1,722.31	1.07	2%
3A	Fine- to medium-grained sand beaches	1,165.10	0.72	1%
3B	Scarps and steep slopes in sand	41.61	0.03	< 1%
1B	Exposed, solid man-made structures	3,543.56	2.20	4%

Total ESI Shoreline: 90,110.67 Total ESI Shoreline: 55.99
 Total Shoreline: 82,476.53 Total Shoreline: 51.25

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 RESOURCES

DISPLAYED ON MAP (POINTS)			
Map ID	Type	Name	Phone
1	BOAT RAMP	CRESWELL, SPRUILLS BRIDGE	252-796-0062

DISPLAYED ON MAP (POLYGONS)			
Map ID	Type	Name	Phone
2	PARK	PETTIGREW STATE PARK	252-797-4475
3	WILDLIFE REFUGE	POCOSIN LAKES NATIONAL WILDLIFE REFUGE	252-796-3004

ALSO PRESENT IN MAPPED AREA (POLYGONS)			
Type	Name	Contact	Phone
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT; CORAL	DAVID DALE, SOUTHEAST REGION	727-824-5317
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT; SHRIMP	DAVID DALE, SOUTHEAST REGION	727-824-5317
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT; SNAPPER GROUPER	DAVID DALE, SOUTHEAST REGION	727-824-5317
ESSENTIAL HABITAT	HAPC; SHRIMP	DAVID DALE, SOUTHEAST REGION	727-824-5317
ESSENTIAL HABITAT	HAPC; SNAPPER GROUPER	DAVID DALE, SOUTHEAST REGION	727-824-5317

JURISDICTIONS

COUNTY: CHOWAN, PERQUIMANS, TYRRELL, WASHINGTON
COAST GUARD: DISTRICT 5, SECTOR NORTH CAROLINA
USACE: SOUTH ATLANTIC DIVISION, WILMINGTON DISTRICT















FEMA: REGION I
EPA: REGION 4

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	1.12	0.00
	10B	Freshwater Marshes	436.97	0.68
	10C	Swamps	12,846.68	20.07
	10D	Scrub and Shrub Wetlands	3,379.34	5.28
	9A	Sheltered Tidal Flats	3.54	0.01
	7	Exposed Tidal Flats	178.32	0.28

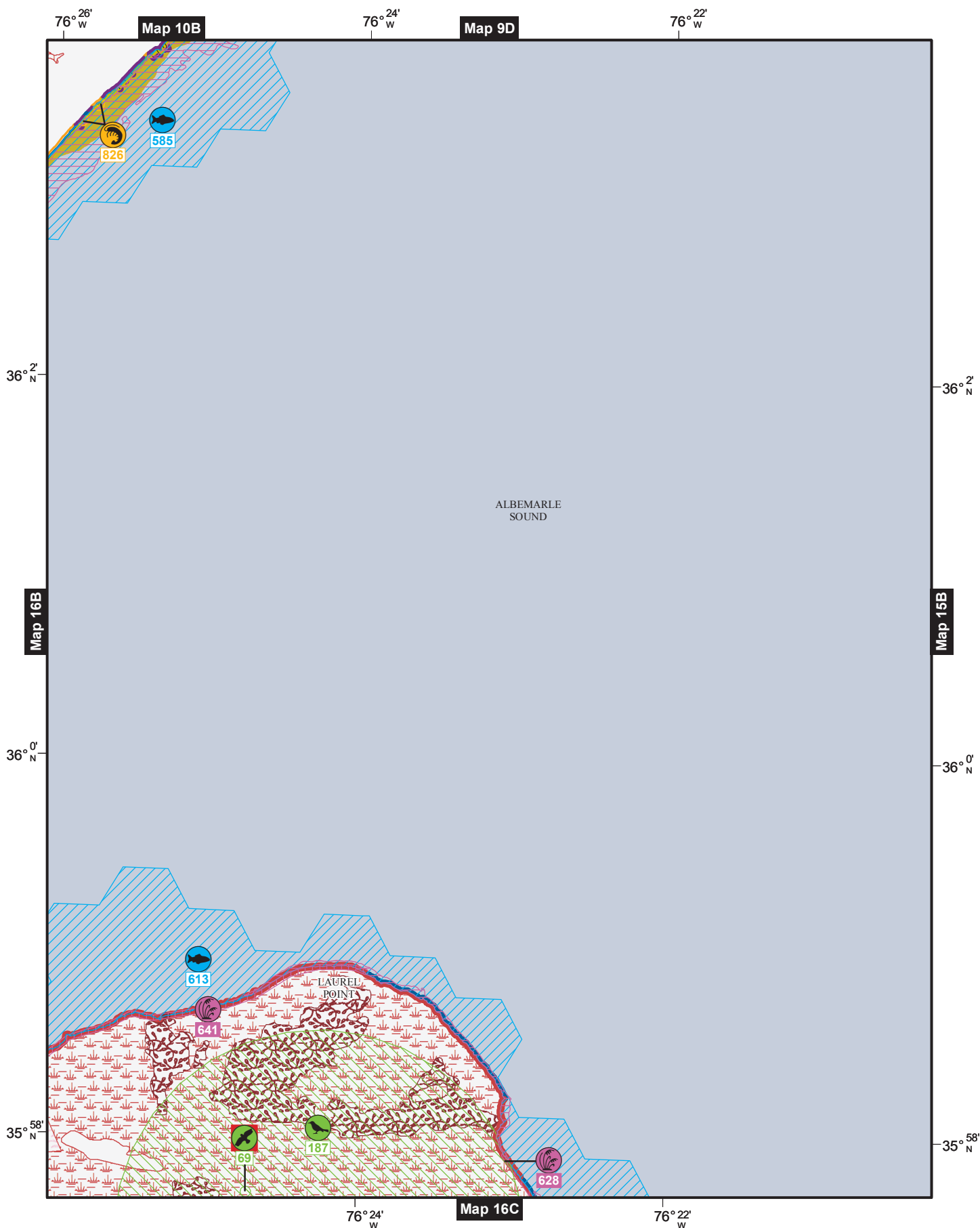
ESI SHORELINE HABITAT TYPES

	<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	174.34	0.11	< 1%
	10B	Freshwater marshes	973.32	0.60	1%
	10C	Swamps	55,934.37	34.76	50%
	10D	Scrub-shrub wetlands	5,252.95	3.26	5%
	9A	Sheltered tidal flats	1,019.03	0.63	1%
	9B	Sheltered, vegetated low banks	6,591.88	4.10	6%
	8B	Sheltered, solid man-made structures	507.57	0.32	< 1%
	8C	Sheltered riprap	98.64	0.06	< 1%
	7	Exposed tidal flats	13,135.26	8.16	12%
	6B	Exposed riprap	2,835.13	1.76	3%
	3A	Fine- to medium-grained sand beaches	10,602.68	6.59	10%
	3B	Scarps and steep slopes in sand	159.31	0.10	< 1%
	1B	Exposed, solid man-made structures	14,110.78	8.77	13%
Total ESI Shoreline:			111,395.25	69.22	
Total Shoreline:			88,029.42	54.70	

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
North Carolina

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
SAV	Submerged aquatic veg	High Ecological Value			Present	J F M A M J J A S O N D

BIRDS

Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	Nest	Mig.(S)	Mig.(F)	Juveniles	Adults
69	Raptor	Bald eagle	Nesting	T		1 Pair	Jan-Jun	-	-	-	-
187	Passerine	Black-throated green warbler	Nesting			-	Apr-Aug	-	-	-	-

FISH

Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	Spawn	Eggs	Larvae	Juveniles	Adults
585	Diadromous	Striped bass	Nursery Area			Medium	Apr-Jun	Apr-Jun	Apr-Jun	Jan-Dec	Jan-Dec
613	Diadromous	Striped bass	Nursery Area			High	Apr-Jun	Apr-Jun	Apr-Jun	Jan-Dec	Jan-Dec

HABITATS & RARE PLANTS

Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence
628	Plant	Virginia wildrye	Vulnerable Occurrence			Current	J F M A M J J A S O N D
641	Wetland	Carolina grasswort	Vulnerable Occurrence			Current	J F M A M J J A S O N D

INVERTEBRATES

Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	Spawn	Eggs	Larvae	Juveniles	Adults
826	Shrimp	Brown shrimp	Nursery Area			-	-	-	Feb-Apr	Mar-Aug	-

WIDESPREAD IN MAPPED AREA (> 10 SQUARE KILOMETERS)


BIRDS

Subelement	Species	Mapping Qualifier	S	F	Concentration	Nest	Mig.(S)	Mig.(F)	Molt
Waterfowl	American black duck	Wintering			-	-	Feb-Mar	Oct-Nov	-
	American coot	Wintering			100S	-	Feb-Mar	Oct-Nov	-
	American wigeon	Wintering			-	-	Feb-Mar	Oct-Nov	-
	Black scoter	Wintering			-	-	Feb-Mar	Oct-Nov	-
	Bufflehead	Wintering			100S	-	Feb-Mar	Oct-Nov	-
	Bufflehead	Wintering			-	-	Feb-Mar	Oct-Nov	-
	Canada goose	Wintering			-	-	Feb-Mar	Oct-Nov	-

BIRDS (continued)

Subelement	Species	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				
	Canada goose	Wintering			1000S													-	Feb-Mar	Oct-Nov	-
	Canvasback	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Canvasback	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	Gadwall	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Gadwall	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	Greater scaup	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Green-winged teal	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Hooded merganser	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	Lesser scaup	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Long-tailed duck	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Mallard	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Northern shoveler	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Red-breasted merganser	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Redhead	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Redhead	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	Ring-necked duck	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Ring-necked duck	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	Ruddy duck	Wintering			1000S													-	Feb-Mar	Oct-Nov	-
	Scaup	Wintering			1000S													-	Feb-Mar	Oct-Nov	-
	Snow goose	Wintering			1500													-	Feb-Mar	Oct-Nov	-
	Surf scoter	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Tundra swan	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	Tundra swan	Wintering			5000													-	Feb-Mar	Oct-Nov	-
	White-winged scoter	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Wood duck	Wintering			-													-	Feb-Mar	Oct-Nov	-

FISH


Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
						J	F	M	A	M	J	J	A	S	O	N	D					
	Diadromous	Migration			Present													-	-	May-Aug	Jul-Mar	-
	Alewife	Nursery Area			Present													-	-	May-Aug	Jul-Oct	-
	American shad	Spawning Area			Present													Apr-Jun	Apr-Jun	May-Jul	Feb-May	-
	Atlantic sturgeon	Concentration Area	C		Common													-	-	-	Jun-Feb	Jun-Feb
	Blueback herring	Migration			Present													-	-	May-Jul	Aug-Oct	-
	Blueback herring	Nursery Area			Present													-	-	May-Jul	Jul-Oct	-
	Gizzard shad	Spawning Area			Highly Abundant													Mar-May	Mar-May	Apr-Jun	May-Sep	-

MARINE MAMMALS

Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Mating	Calving	Pupping	Molt
						J	F	M	A	M	J	J	A	S	O	N	D				
	Manatee	General Distribution	E	E	-													-	-	-	-

ALSO PRESENT IN MAPPED AREA (GENERAL DISTRIBUTION)

BENTHIC

Subelement
SAV  **Species**
Submerged aquatic veg




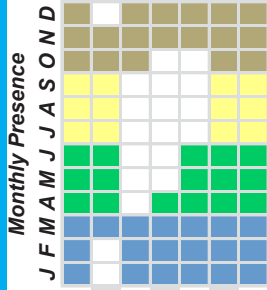
BIRDS

Subelement
Waterfowl  **Species**
Wood duck

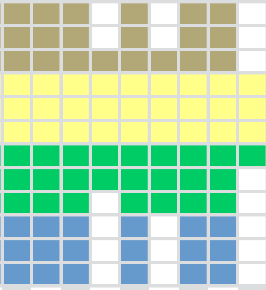



FISH

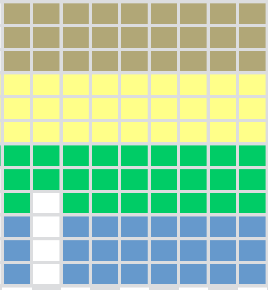
Subelement
Diadromous  **Species**
American eel
American shad
Gizzard shad
Hickory shad
Hickory shad
Striped bass
Atlantic croaker
Atlantic menhaden
Bay anchovy
Black drum
Bluefish
Hogchoker
Ladyfish
Pinfish
Red drum
Sheepshead
Southern flounder
Southern kingfish
Spot
Spotted seatrout
Striped mullet
Summer flounder
Weakfish
White mullet
White perch




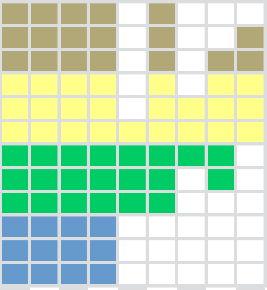
Subelement
Estuarine Nursery  **Species**
American eel
American shad
Gizzard shad
Hickory shad
Hickory shad
Striped bass
Atlantic croaker
Atlantic menhaden
Bay anchovy
Black drum
Bluefish
Hogchoker
Ladyfish
Pinfish
Red drum
Sheepshead
Southern flounder
Southern kingfish
Spot
Spotted seatrout
Striped mullet
Summer flounder
Weakfish
White mullet
White perch



Subelement
Estuarine Resident  **Species**
Inland silverside
Bluegill
Largemouth bass
Longnose gar
Threadfin shad
Yellow perch
Atlantic spadefish
Atlantic needlefish
Spanish mackerel



Subelement
Freshwater  **Species**
Inland silverside
Bluegill
Largemouth bass
Longnose gar
Threadfin shad
Yellow perch
Atlantic spadefish
Atlantic needlefish
Spanish mackerel



INVERTEBRATES

Subelement	Species	Monthly Presence												Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D				
Crab	Blue crab													-	-	Jan-Dec	Jan-Dec
	Blue crab													-	May-Oct	-	Jan-Dec
Shrimp	Brown shrimp													-	Feb-Apr	Mar-Aug	-
	Pink shrimp													-	-	Jan-Dec	Sep-Nov
	White shrimp													-	Jun-Dec	Dec-Feb	-

MARINE MAMMALS

Subelement	Species	Monthly Presence												Mating	Calving	Pupping	Molt
		J	F	M	A	M	J	J	A	S	O	N	D				
Dolphin	Bottlenose dolphin													Sep-Oct	Sep-Oct	-	-

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	5.37	0.01
10C	Swamps	1,559.44	2.44
10D	Scrub and Shrub Wetlands	454.93	0.71
7	Exposed Tidal Flats	77.36	0.12

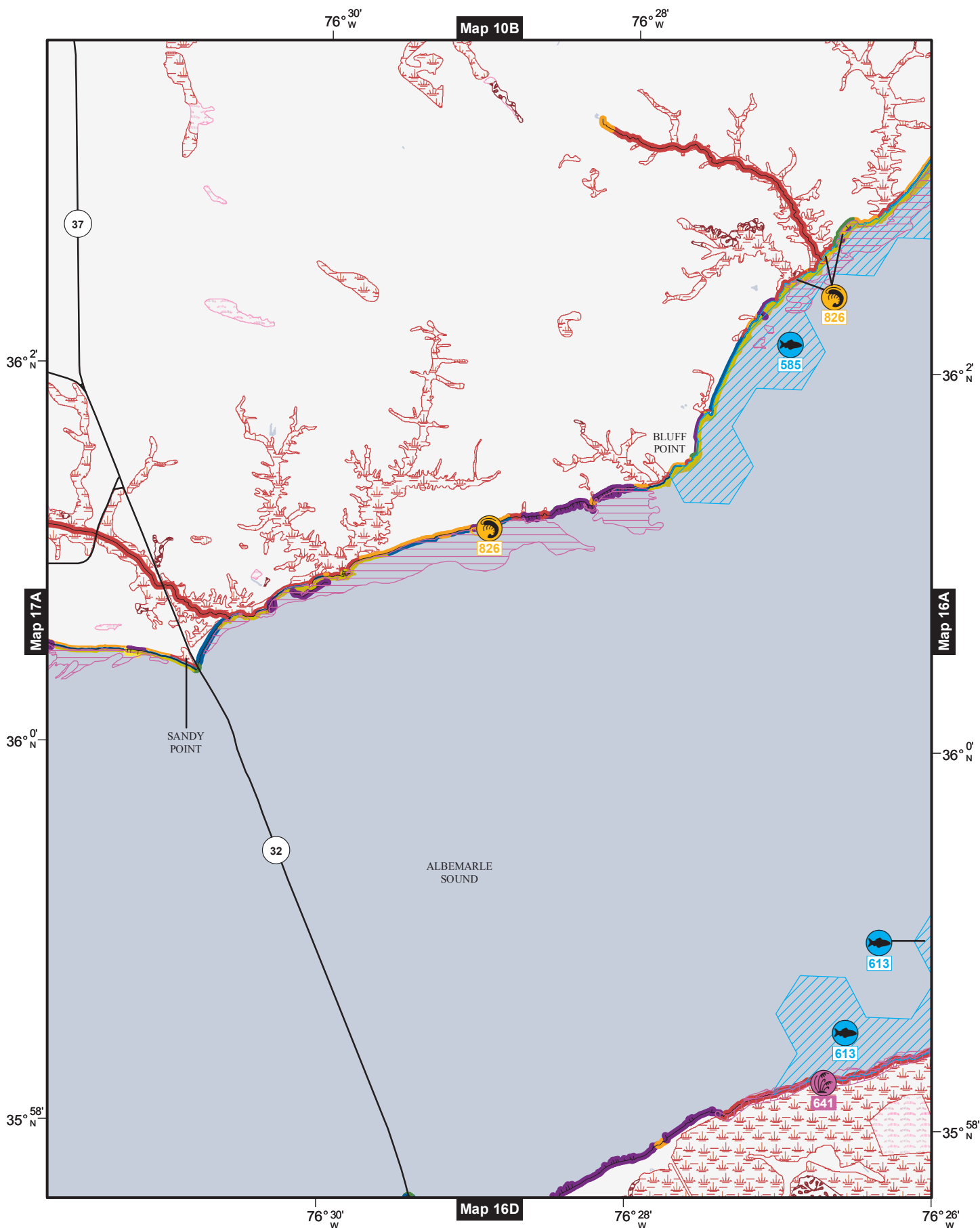
ESI SHORELINE HABITAT TYPES

ESI Rank	Shoreline Habitat Classification	Length (Meters)	Length (Miles)	% of ESI Shoreline
10C	Swamps	6,701.48	4.16	50%
10D	Scrub-shrub wetlands	128.24	0.08	1%
9B	Sheltered, vegetated low banks	605.98	0.38	5%
7	Exposed tidal flats	1,719.56	1.07	13%
3A	Fine- to medium-grained sand beaches	2,876.36	1.79	21%
1B	Exposed, solid man-made structures	1,382.69	0.86	10%
Total ESI Shoreline:		13,414.31	8.34	
Total Shoreline:		8,860.27	5.51	

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 16B
North Carolina

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
SAV	Submerged aquatic veg	High Ecological Value			Present	J F M A M J J A S O N D

FISH

Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence	Spawn	Eggs	Larvae	Juveniles	Adults
585	Diadromous	Striped bass	Nursery Area			Medium	J F M A M J J A S O N D	Apr-Jun	Apr-Jun	Apr-Jun	Jan-Dec	Jan-Dec
613	Diadromous	Striped bass	Nursery Area			High	J F M A M J J A S O N D	Apr-Jun	Apr-Jun	Apr-Jun	Jan-Dec	Jan-Dec

HABITATS & RARE PLANTS

Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence
641	Wetland	Carolina grasswort	Vulnerable Occurrence			Current	J F M A M J J A S O N D

INVERTEBRATES

Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence	Spawn	Eggs	Larvae	Juveniles	Adults
826	Shrimp	Brown shrimp	Nursery Area			-	J F M A M J J A S O N D	-	-	Feb-Apr	Mar-Aug	-

WIDESPREAD IN MAPPED AREA (> 10 SQUARE KILOMETERS)


BIRDS

Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence	Nest	Mig.(S)	Mig.(F)	Molt
Waterfowl	American black duck	Wintering			-	J F M A M J J A S O N D	-	Feb-Mar	Oct-Nov	-
	American coot	Wintering			100S	J F M A M J J A S O N D	-	Feb-Mar	Oct-Nov	-
	American wigeon	Wintering			-	J F M A M J J A S O N D	-	Feb-Mar	Oct-Nov	-
	Black scoter	Wintering			-	J F M A M J J A S O N D	-	Feb-Mar	Oct-Nov	-
	Bufflehead	Wintering			100S	J F M A M J J A S O N D	-	Feb-Mar	Oct-Nov	-
	Bufflehead	Wintering			-	J F M A M J J A S O N D	-	Feb-Mar	Oct-Nov	-
	Canada goose	Wintering			1000S	J F M A M J J A S O N D	-	Feb-Mar	Oct-Nov	-
	Canada goose	Wintering			-	J F M A M J J A S O N D	-	Feb-Mar	Oct-Nov	-
	Canvasback	Wintering			-	J F M A M J J A S O N D	-	Feb-Mar	Oct-Nov	-
	Canvasback	Wintering			100S	J F M A M J J A S O N D	-	Feb-Mar	Oct-Nov	-
	Gadwall	Wintering			-	J F M A M J J A S O N D	-	Feb-Mar	Oct-Nov	-
	Gadwall	Wintering			100S	J F M A M J J A S O N D	-	Feb-Mar	Oct-Nov	-
	Greater scaup	Wintering			-	J F M A M J J A S O N D	-	Feb-Mar	Oct-Nov	-
	Green-winged teal	Wintering			-	J F M A M J J A S O N D	-	Feb-Mar	Oct-Nov	-

BIRDS (continued)

Subelement	Species	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				
	Hooded merganser	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	Lesser scaup	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Long-tailed duck	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Mallard	Wintering			High													-	Feb-Mar	Oct-Nov	-
	Mallard	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Northern shoveler	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Red-breasted merganser	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Redhead	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Redhead	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	Ring-necked duck	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Ring-necked duck	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	Ruddy duck	Wintering			1000S													-	Feb-Mar	Oct-Nov	-
	Scaup	Wintering			1000S													-	Feb-Mar	Oct-Nov	-
	Snow goose	Wintering			1500													-	Feb-Mar	Oct-Nov	-
	Surf scoter	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Tundra swan	Wintering			5000													-	Feb-Mar	Oct-Nov	-
	Tundra swan	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	Tundra swan	Wintering			6000													-	Feb-Mar	Oct-Nov	-
	White-winged scoter	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Wood duck	Wintering			High													-	Feb-Mar	Oct-Nov	-
	Wood duck	Wintering			-													-	Feb-Mar	Oct-Nov	-

FISH


Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
						J	F	M	A	M	J	J	A	S	O	N	D					
	Alewife	Nursery Area			Present													-	-	May-Aug	Jul-Oct	-
	American shad	Spawning Area			Present													Apr-Jun	Apr-Jun	May-Jul	Jun-May	-
	Atlantic sturgeon	Concentration Area	C		Common													-	-	-	Jun-Feb	Jun-Feb
	Blueback herring	Nursery Area			Present													-	-	May-Jul	Jul-Oct	-
	Gizzard shad	Spawning Area			Highly Abundant													Mar-May	Mar-May	Apr-Jun	May-Sep	-
	Striped bass	Nursery Area			Abundant													Apr-Jun	Apr-Jun	Apr-Jun	Jan-Dec	Jan-Dec

MARINE MAMMALS

Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Mating	Calving	Pupping	Molt
						J	F	M	A	M	J	J	A	S	O	N	D				
	West Indian manatee	General Distribution	E		-													-	-	-	-

ALSO PRESENT IN MAPPED AREA (GENERAL DISTRIBUTION)

BENTHIC

Subelement	Species	Monthly Presence											
		J	F	M	A	M	J	J	A	S	O	N	D
	Submerged aquatic veg												

BIRDS

Monthly Presence



Subelement	Species	J	F	M	A	M	J	J	A	S	O	N	D	Nest	Mig.(S)	Mig.(F)	Molt
Waterfowl	Wood duck													Mar-Jun	-	-	-

FISH

Monthly Presence

Subelement	Species	J	F	M	A	M	J	J	A	S	O	N	D	Spawn	Eggs	Larvae	Juveniles	Adults
Diadromous	American eel													-	-	Jan-Jun	Jan-Dec	Aug-Dec
	American shad													-	-	Mar-Jul	May-Nov	-
	Hickory shad													Apr-Jun	-	-	-	Nov-Apr
Estuarine Nursery	Striped bass													Apr-Jun	Apr-Jun	Apr-Jun	Jan-Dec	Jan-Dec
	Atlantic croaker													-	-	Sep-Mar	Jan-Dec	Jan-Dec
	Atlantic menhaden													-	-	Jan-Jun	Jan-Dec	-
	Bay anchovy													Apr-Sep	Apr-Sep	Apr-Oct	Jan-Dec	Jan-Dec
	Black drum													-	-	-	Jan-Dec	Jun-Nov
	Bluefish													-	-	-	May-Oct	Jun-Oct
	Hogchoker													-	-	-	Jan-Dec	Jan-Dec
	Ladyfish													-	-	-	Apr-Oct	Sep-Oct
	Pinfish													-	-	Dec-Mar	Jan-Dec	May-Oct
	Red drum													-	-	-	Jan-Dec	-
	Sheepshead													-	-	-	Jun-Sep	Jun-Sep
	Southern flounder													-	-	Dec-Mar	Jan-Dec	Jan-Dec
	Southern kingfish													-	-	-	May-Dec	Jul-Oct
	Spot													-	-	Jan-Mar	Jan-Dec	May-Oct
	Spotted seatrout													-	-	-	Jan-Dec	Jan-Dec
	Striped mullet													-	-	-	Jan-Dec	Jan-Dec
	Summer flounder													-	-	Oct-May	Jan-Dec	-
	Weakfish													Mar-Oct	Mar-Oct	-	Jan-Dec	Mar-Oct
	White mullet													-	-	-	Jan-Dec	Jan-Dec
	White perch													Apr-Jul	Apr-Jul	Apr-Aug	Jan-Dec	Jan-Dec
Estuarine Resident	Inland silverside													Mar-Aug	Mar-Aug	Jun-Sep	-	-
Freshwater	Bluegill													Apr-Oct	Apr-Oct	-	Jan-Dec	Jan-Dec
	Largemouth bass													May-Jun	May-Jun	May-Jun	-	Jan-Dec
	Longnose gar													Mar-Sep	Mar-Sep	-	Jan-Dec	Jan-Dec
	Threadfin shad													Apr-Jul	Apr-Jul	Apr-Jul	-	-
Marine Benthic	Yellow perch													-	-	-	Apr-Dec	Apr-Dec
	Atlantic spadefish													-	-	-	Jun-Aug	-
	Atlantic needlefish													May-Jul	May-Jul	Jun-Aug	Jun-Oct	-
	Spanish mackerel													-	-	-	Jul-Nov	Jul-Oct

INVERTEBRATES

Subelement	Species	Monthly Presence												Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D				
 Crab	Blue crab													-	-	Jan-Dec	Jan-Dec
	Blue crab													-	May-Oct	-	Jan-Dec
 Shrimp	Brown shrimp													-	Feb-Apr	Mar-Aug	-
	Pink shrimp													-	-	Jan-Dec	Sep-Nov
	White shrimp													-	Jun-Dec	Dec-Feb	-

MARINE MAMMALS

Subelement	Species	Monthly Presence												Mating	Calving	Pupping	Molt
		J	F	M	A	M	J	J	A	S	O	N	D				
 Dolphin	Bottlenose dolphin													Sep-Oct	Sep-Oct	-	-

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	106.83	0.17
10C	Swamps	1,398.31	2.18
10D	Scrub and Shrub Wetlands	45.74	0.07
7	Exposed Tidal Flats	84.41	0.13

ESI SHORELINE HABITAT TYPES

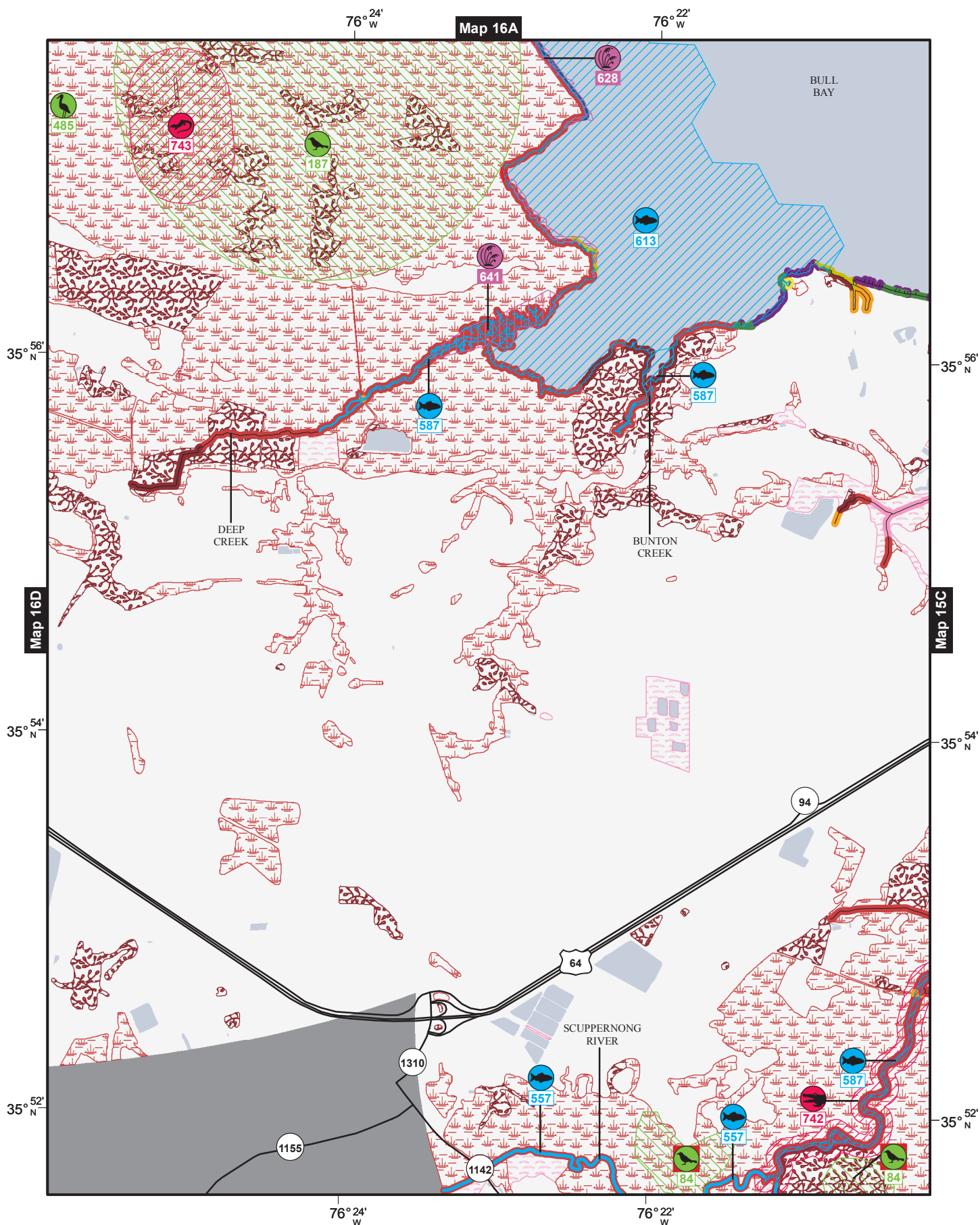
ESI Rank	Shoreline Habitat Classification	Length (Meters)	Length (Miles)	% of ESI Shoreline
10B	Freshwater marshes	11.55	0.01	< 1%
10C	Swamps	12,130.84	7.54	32%
9B	Sheltered, vegetated low banks	4,011.85	2.49	11%
8B	Sheltered, solid man-made structures	98.01	0.06	< 1%
7	Exposed tidal flats	8,863.65	5.51	23%
6B	Exposed riprap	718.86	0.45	2%
3A	Fine- to medium-grained sand beaches	6,047.41	3.76	16%
1B	Exposed, solid man-made structures	6,067.47	3.77	16%

Total ESI Shoreline: 37,949.65
Total Shoreline: 24,249.53
Total ESI Shoreline: 23.58
Total Shoreline: 15.07

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 16C
North Carolina



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

0 1 Miles
Not for Navigation
0 1 Kilometers

1:50,000



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											
SAV	Submerged aquatic veg	High Ecological Value			Present	J	F	M	A	M	J	J	A	S	O	N	D

BIRDS

Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence											
84	Passerine	Red-cockaded woodpecker	Vulnerable Occurrence	E	E	-	J	F	M	A	M	J	J	A	S	O	N	D
187	Passerine	Black-throated green warbler	Nesting			-												
485	Wading	Great blue heron	Nesting			22 Pairs												

FISH

Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence											
557	Diadromous	Alewife	Spawning Area			Present												
	Diadromous	American shad	Spawning Area			Present												
	Diadromous	Blueback herring	Spawning Area			Present												
587	Diadromous	Alewife	Spawning Area			Present												
	Diadromous	Blueback herring	Spawning Area			Present												
613	Diadromous	Striped bass	Nursery Area			High												


HABITATS & RARE PLANTS

Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence											
628	Plant	Virginia wildrye	Vulnerable Occurrence			Current												
641	Wetland	Carolina grasswort	Vulnerable Occurrence			Current												


REPTILES & AMPHIBIANS

Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence											
742	Alligator	American alligator	Vulnerable Occurrence			-												
743	Snake	Rainbow snake	Vulnerable Occurrence			-												

BIRDS

Subelement	Species	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				
	Waterfowl	American black duck			-													-	Feb-Mar	Oct-Nov	-
		American coot			100S													-	Feb-Mar	Oct-Nov	-
		American wigeon			-													-	Feb-Mar	Oct-Nov	-
		Bufflehead			100S													-	Feb-Mar	Oct-Nov	-
		Bufflehead			-													-	Feb-Mar	Oct-Nov	-
		Canada goose			1000S													-	Feb-Mar	Oct-Nov	-
		Canada goose			-													-	Feb-Mar	Oct-Nov	-
		Canvasback			100S													-	Feb-Mar	Oct-Nov	-
		Gadwall			100S													-	Feb-Mar	Oct-Nov	-
		Gadwall			-													-	Feb-Mar	Oct-Nov	-
		Greater scaup			-													-	Feb-Mar	Oct-Nov	-
		Green-winged teal			-													-	Feb-Mar	Oct-Nov	-
		Hooded merganser			100S													-	Feb-Mar	Oct-Nov	-
		Lesser scaup			-													-	Feb-Mar	Oct-Nov	-
		Mallard			-													-	Feb-Mar	Oct-Nov	-
		Northern shoveler			-													-	Feb-Mar	Oct-Nov	-
		Redhead			100S													-	Feb-Mar	Oct-Nov	-
		Ring-necked duck			100S													-	Feb-Mar	Oct-Nov	-
		Ring-necked duck			-													-	Feb-Mar	Oct-Nov	-

FISH

Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
						J	F	M	A	M	J	J	A	S	O	N	D					
	Diadromous	Alewife			Present													-	-	May-Aug	Jul-Oct	-
		American shad			Present													Apr-Jun	Apr-Jun	May-Jul	Feb-May	-
		Atlantic sturgeon		C	Common													-	-	-	Jun-Feb	Jun-Feb
		Blueback herring			Present													-	-	May-Jul	Jul-Oct	-





MARINE MAMMALS

Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Mating	Calving	Pupping	Molt
						J	F	M	A	M	J	J	A	S	O	N	D				
	Manatee	General Distribution	E	E	-													-	-	-	-

BIRDS

Subelement	Species	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt
		J	F	M	A	M	J	J	A	S	O	N	D				
 Waterfowl	Wood duck													Mar-Jun	-	-	-

FISH

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	American eel													-	-	Jan-Jun	Jan-Dec	Aug-Dec
	American shad													-	-	Mar-Jul	May-Nov	-
	Gizzard shad													-	-	-	Oct-Mar	-
	Hickory shad													-	-	-	-	Nov-Apr
	Striped bass													Apr-Jun	Apr-Jun	Apr-Jun	Jan-Dec	Jan-Dec
	Atlantic croaker													-	-	Sep-Mar	Jan-Dec	Jan-Dec
	Atlantic menhaden													-	-	Jan-Jun	Jan-Dec	-
	Bay anchovy													Apr-Sep	Apr-Sep	Apr-Oct	Jan-Dec	Jan-Dec
	Black drum													-	-	-	Jan-Dec	Jun-Nov
	Bluefish													-	-	-	May-Oct	Jun-Oct
	Hogchoker													-	-	-	Jan-Dec	Jan-Dec
	Ladyfish													-	-	-	Apr-Oct	Sep-Oct
	Pinfish													-	-	Dec-Mar	Jan-Dec	May-Oct
	Red drum													-	-	-	Jan-Dec	-
	Sheepshead													-	-	-	Jun-Sep	Jun-Sep
	Southern flounder													-	-	Dec-Mar	Jan-Dec	Jan-Dec
	Southern kingfish													-	-	-	May-Dec	Jul-Oct
	Spot													-	-	Jan-Mar	Jan-Dec	May-Oct
	Spotted seatrout													-	-	-	Jan-Dec	Jan-Dec
	Striped mullet													-	-	-	Jan-Dec	Jan-Dec
	Summer flounder													-	-	-	Jan-Dec	Jan-Dec
	Weakfish													-	-	Oct-May	Jan-Dec	-
	White mullet													Mar-Oct	Mar-Oct	-	Jan-Dec	Mar-Oct
	White perch													-	-	-	Jan-Dec	Jan-Dec
	Inland silverside													Apr-Jul	Apr-Jul	Apr-Aug	Jan-Dec	Jan-Dec
	Largemouth bass													Mar-Aug	Mar-Aug	Jun-Sep	-	-
	Longnose gar													May-Jun	May-Jun	May-Jun	-	Jan-Dec
	Yellow perch													Mar-Sep	Mar-Sep	-	Jan-Dec	Jan-Dec
	Yellow perch													-	-	-	Apr-Dec	Apr-Dec
	Atlantic spadefish													Jan-Mar	Jan-Mar	Jan-Mar	Apr-Dec	Apr-Dec
	Atlantic needlefish													-	-	-	Jun-Aug	-
	Spanish mackerel													May-Jul	May-Jul	Jun-Aug	Jun-Oct	-
														-	-	-	Jul-Nov	Jul-Oct

INVERTEBRATES

Subelement	Species	Monthly Presence												Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D				
Crab	Blue crab													-	-	Jan-Dec	Jan-Dec
	Blue crab													-	May-Oct	-	Jan-Dec
Shrimp	Brown shrimp													-	Feb-Apr	Mar-Aug	-
	Pink shrimp													-	-	Jan-Dec	Sep-Nov
	White shrimp													-	Jun-Dec	Dec-Feb	-

MARINE MAMMALS

Subelement	Species	Monthly Presence												Mating	Calving	Pupping	Molt
		J	F	M	A	M	J	J	A	S	O	N	D				
Dolphin	Bottlenose dolphin													Sep-Oct	Sep-Oct	-	-

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	1.12	0.00
10B	Freshwater Marshes	269.33	0.42
10C	Swamps	6,593.51	10.30
10D	Scrub and Shrub Wetlands	1,342.25	2.10
9A	Sheltered Tidal Flats	3.54	0.01
7	Exposed Tidal Flats	2.69	0.00

ESI SHORELINE HABITAT TYPES

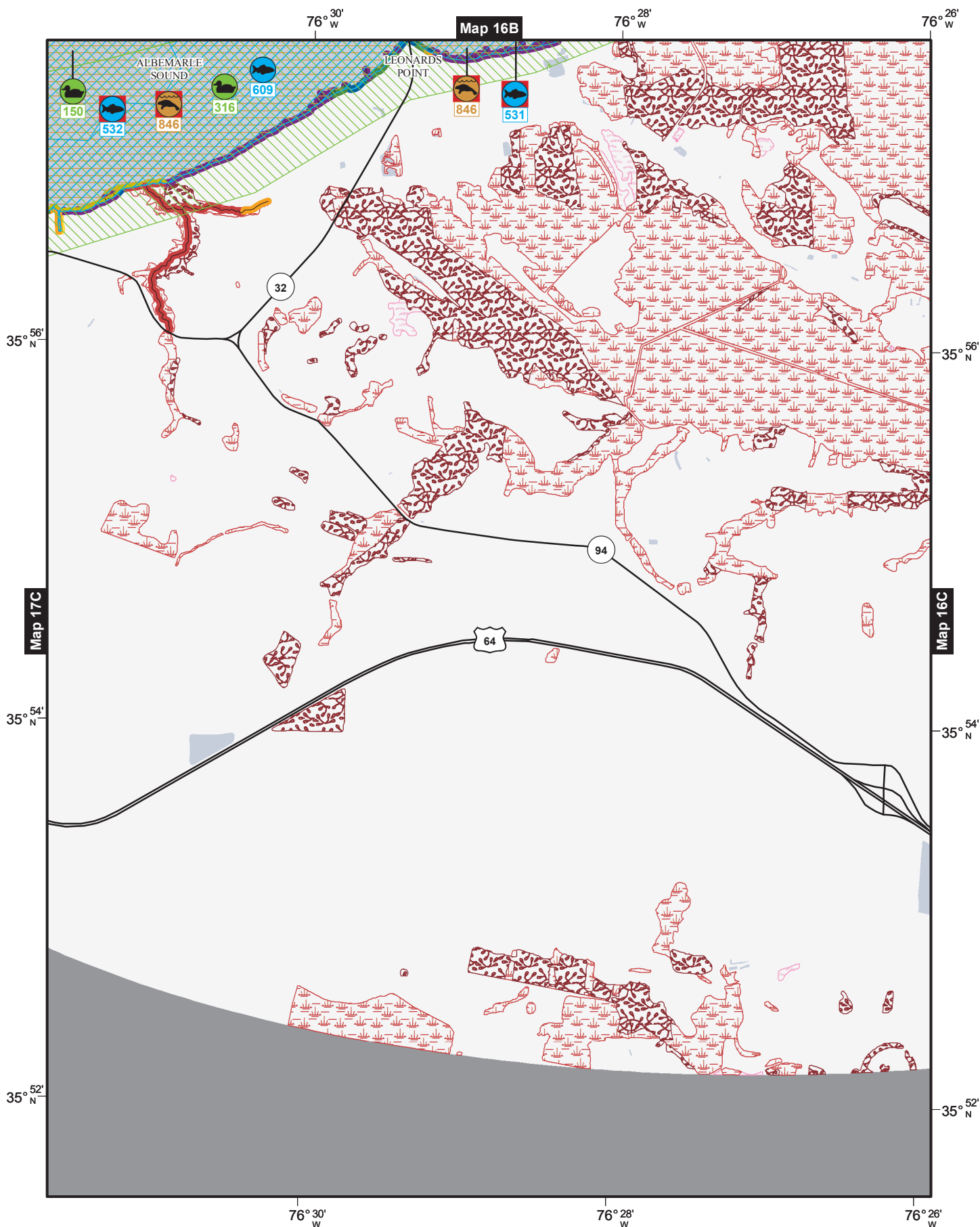
ESI Rank	Shoreline Habitat Classification	Length (Meters)	Length (Miles)	% of ESI Shoreline
10A	Salt- and brackish-water marshes	174.34	0.11	< 1%
10B	Freshwater marshes	961.81	0.60	2%
10C	Swamps	34,012.24	21.13	71%
10D	Scrub-shrub wetlands	5,123.96	3.18	11%
9A	Sheltered tidal flats	1,019.03	0.63	2%
9B	Sheltered, vegetated low banks	1,260.14	0.78	3%
8B	Sheltered, solid man-made structures	163.35	0.10	< 1%
8C	Sheltered riprap	98.64	0.06	< 1%
7	Exposed tidal flats	1,257.74	0.78	3%
6B	Exposed riprap	1,263.56	0.79	3%
3A	Fine- to medium-grained sand beaches	1,032.33	0.64	2%
1B	Exposed, solid man-made structures	1,597.50	0.99	3%

Total ESI Shoreline: 47,964.64
Total Shoreline: 44,580.19
Total ESI Shoreline: 29.80
Total Shoreline: 27.70

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

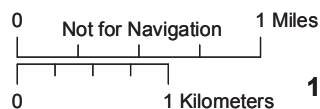




Map 16D
North Carolina



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 16D
North Carolina

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	S	F	Concentration	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt
							J	F	M	A	M	J	J	A	S	O	N	D				
150	Waterfowl	Black scoter	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Waterfowl	Canvasback	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Waterfowl	Long-tailed duck	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Waterfowl	Mallard	Wintering			High													-	Feb-Mar	Oct-Nov	-
	Waterfowl	Red-breasted merganser	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Waterfowl	Redhead	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Waterfowl	Surf scoter	Wintering			-													-	Feb-Mar	Oct-Nov	-
316	Waterfowl	Tundra swan	Wintering			6000													-	Feb-Mar	Oct-Nov	-
	Waterfowl	White-winged scoter	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Waterfowl	Wood duck	Wintering			High													-	Feb-Mar	Oct-Nov	-
	Waterfowl	American coot	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	Waterfowl	Bufflehead	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	Waterfowl	Redhead	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	Waterfowl	Ruddy duck	Wintering			1000S													-	Feb-Mar	Oct-Nov	-
	Waterfowl	Scaup	Wintering			1000S													-	Feb-Mar	Oct-Nov	-
	Waterfowl	Tundra swan	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	Waterfowl																					

FISH


Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
							J	F	M	A	M	J	J	A	S	O	N	D					
531	Diadromous	Alewife	Nursery Area			Present													-	-	May-Aug	Jul-Oct	-
	Diadromous	American shad	Spawning Area			Present													Apr-Jun	Apr-Jun	May-Jul	Feb-May	-
	Diadromous	Atlantic sturgeon	Concentration Area	C		Common													-	-	-	Jun-Feb	Jun-Feb
	Diadromous	Blueback herring	Nursery Area			Present													-	-	May-Jul	Jul-Oct	-
	Diadromous	Gizzard shad	Spawning Area			Highly Abundant													Mar-May	Mar-May	Apr-Jun	May-Sep	-
532	Diadromous	Striped bass	Nursery Area			Abundant													Apr-Jun	Apr-Jun	Apr-Jun	Jan-Dec	Jan-Dec
	Diadromous	Alewife	Nursery Area			Present													-	-	May-Aug	Jul-Oct	-
	Diadromous	American shad	Spawning Area			Present													Apr-Jun	Apr-Jun	May-Jul	Feb-May	-
	Diadromous	Atlantic sturgeon	Concentration Area	C		Common													-	-	-	Jun-Feb	Jun-Feb
	Diadromous	Blueback herring	Nursery Area			Present													-	-	May-Jul	Jul-Oct	-
609	Diadromous	Gizzard shad	Spawning Area			Highly Abundant													Mar-May	Mar-May	Apr-Jun	May-Sep	-
	Diadromous	Striped bass	Nursery Area			Abundant													Apr-Jun	Apr-Jun	Apr-Jun	Jan-Dec	Jan-Dec

MARINE MAMMALS

Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Mating	Calving	Pupping	Molt
							J	F	M	A	M	J	J	A	S	O	N	D				
846	Manatee	West Indian manatee	General Distribution	E	E	-													-	-	-	-

WIDESPREAD IN MAPPED AREA (> 10 SQUARE KILOMETERS)

BIRDS



Subelement	Species	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				
	American black duck	Wintering			-													-	Feb-Mar	Oct-Nov	-
	American wigeon	Wintering			-													-	Feb-Mar	Oct-Nov	-
	American wigeon	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	Bufflehead	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Canada goose	Wintering			1000S													-	Feb-Mar	Oct-Nov	-
	Canada goose	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Canvasback	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	Common merganser	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	Gadwall	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Gadwall	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	Greater scaup	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Green-winged teal	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Hooded merganser	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	Lesser scaup	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Mallard	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Northern pintail	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	Northern shoveler	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Red-breasted merganser	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	Ring-necked duck	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Ring-necked duck	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	Snow goose	Wintering			10000S													-	Feb-Mar	Oct-Nov	-
	Tundra swan	Wintering			1000S													-	Feb-Mar	Oct-Nov	-
	Tundra swan	Wintering			Extremely High													-	Feb-Mar	Oct-Nov	-
	Wood duck	Wintering			-													-	Feb-Mar	Oct-Nov	-

ALSO PRESENT IN MAPPED AREA (GENERAL DISTRIBUTION)





BIRDS

Subelement	Species	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt
	Wood duck													Mar-Jun	-	-	-



FISH

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	American eel													-	-	Jan-Jun	Jan-Dec	Aug-Dec
	American shad													-	-	Mar-Jul	May-Nov	-
	Hickory shad													Apr-Jun	-	-	-	Nov-Apr
	Striped bass													Apr-Jun	Apr-Jun	Apr-Jun	Jan-Dec	Jan-Dec
	Atlantic croaker													-	-	Sep-Mar	Jan-Dec	Jan-Dec
	Atlantic menhaden													-	-	Jan-Jun	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													Apr-Sep	Apr-Sep	Apr-Oct	Jan-Dec	Jan-Dec
	Black drum													-	-	-	Jan-Dec	Jun-Nov
	Bluefish													-	-	-	Jan-Dec	Jan-Dec
	Hogchoker													-	-	-	Jan-Dec	Jan-Dec
	Ladyfish													-	-	-	Apr-Oct	Sep-Oct
	Pinfish													-	-	Dec-Mar	Jan-Dec	May-Oct
	Red drum													-	-	-	Jan-Dec	-
	Sheepshead													-	-	-	Jun-Sep	Jun-Sep
	Southern flounder													-	-	Dec-Mar	Jan-Dec	Jan-Dec
	Southern kingfish													-	-	-	May-Dec	Jul-Oct
	Spot													-	-	Jan-Mar	Jan-Dec	May-Oct
	Spotted seatrout													-	-	-	Jan-Dec	Jan-Dec
	Striped mullet													-	-	-	Jan-Dec	Jan-Dec
	Summer flounder													-	-	Oct-May	Jan-Dec	-
	Weakfish													Mar-Oct	Mar-Oct	-	Jan-Dec	Mar-Oct
	White mullet													-	-	-	Jan-Dec	Jan-Dec
	White perch													Apr-Jul	Apr-Jul	Apr-Aug	Jan-Dec	Jan-Dec
 	Inland silverside													Mar-Aug	Mar-Aug	Jun-Sep	-	-
	Bluegill													Apr-Oct	Apr-Oct	-	Jan-Dec	Jan-Dec
	Largemouth bass													May-Jun	May-Jun	May-Jun	-	Jan-Dec
	Longnose gar													Mar-Sep	Mar-Sep	-	Jan-Dec	Jan-Dec
	Threadfin shad													Apr-Jul	Apr-Jul	Apr-Jul	-	-
	Yellow perch													-	-	-	Apr-Dec	Apr-Dec
 	Atlantic spadefish													-	-	-	Jun-Aug	-
	Atlantic needlefish													May-Jul	May-Jul	Jun-Aug	Jun-Oct	-
	Spanish mackerel													-	-	-	Jul-Nov	Jul-Oct

INVERTEBRATES

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	Blue crab													-	-	-	Jan-Dec	Jan-Dec
	Blue crab													-	-	May-Oct	-	Jan-Dec
	Brown shrimp													-	-	Feb-Apr	Mar-Aug	-
	Pink shrimp													-	-	-	Jan-Dec	Sep-Nov
	White shrimp													-	-	Jun-Dec	Dec-Feb	-

MARINE MAMMALS

Subelement	Species	Monthly Presence												Mating	Calving	Pupping	Molt
		J	F	M	A	M	J	J	A	S	O	N	D				
	Bottlenose dolphin													Sep-Oct	Sep-Oct	-	-

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	55.28	0.09
10C	Swamps	3,295.00	5.15
10D	Scrub and Shrub Wetlands	1,536.31	2.40
7	Exposed Tidal Flats	13.87	0.02



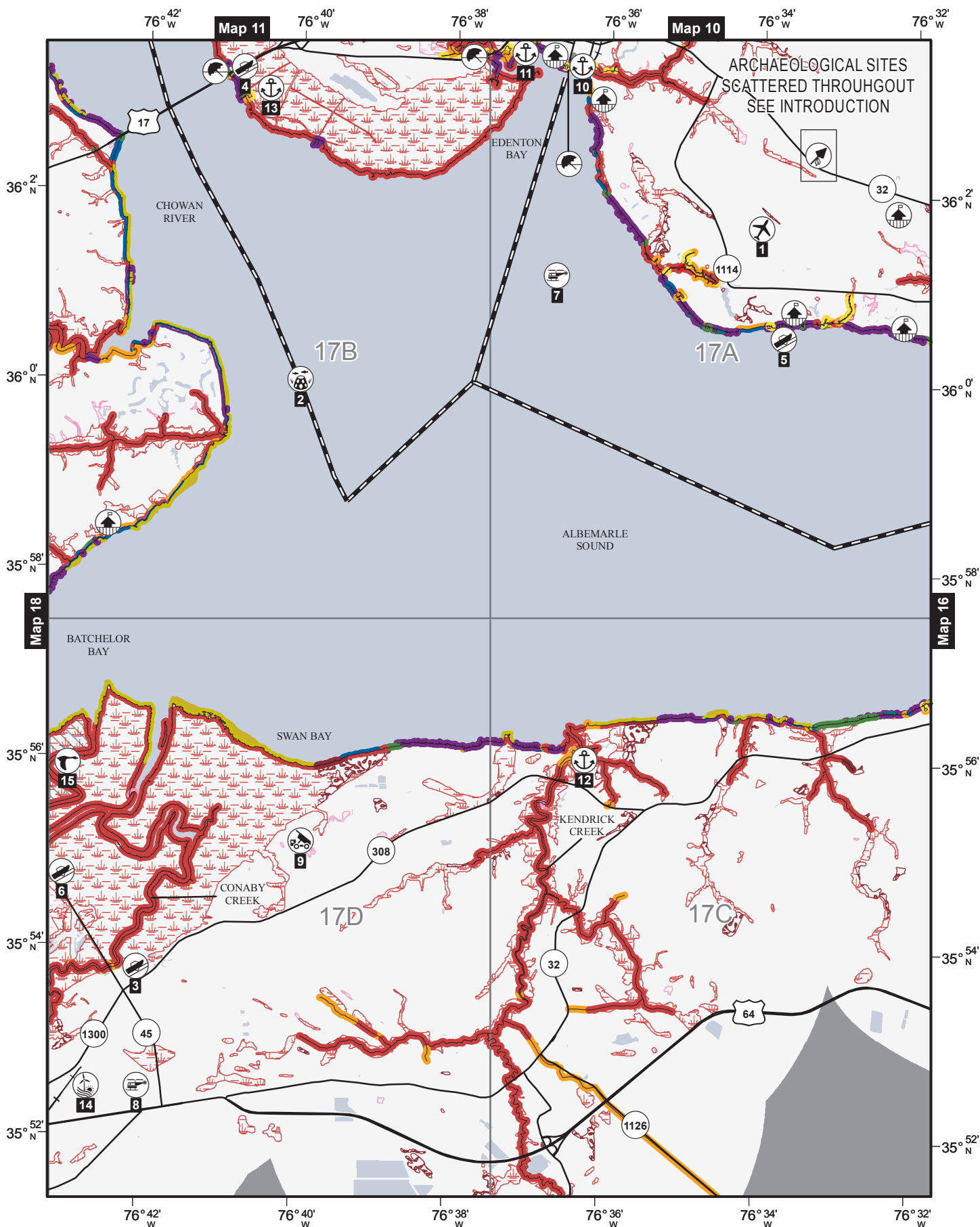
ESI SHORELINE HABITAT TYPES

ESI Rank	Shoreline Habitat Classification	Length (Meters)	Length (Miles)	% of ESI Shoreline
10C	Swamps	3,086.85	1.92	26%
9B	Sheltered, vegetated low banks	713.91	0.44	6%
8B	Sheltered, solid man-made structures	246.21	0.15	2%
7	Exposed tidal flats	1,294.07	0.80	11%
6B	Exposed riprap	852.40	0.53	7%
3A	Fine- to medium-grained sand beaches	646.34	0.40	5%
3B	Scarps and steep slopes in sand	159.31	0.10	1%
1B	Exposed, solid man-made structures	5,060.98	3.14	42%
Total ESI Shoreline:		12,060.07	7.49	
Total Shoreline:		10,333.33	6.42	

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





HUMAN USE RESOURCES

DISPLAYED ON MAP (POINTS)			
Map ID	Type	Name	Phone
1	AIRPORT	NORTHEASTERN RGNL	252-482-4664
2	ARTIFICIAL REEF	AR-191 BLACK WALNUT POINT REEF	
3	BOAT RAMP	CONABY CREEK	252-792-3868
4	BOAT RAMP	EDENHOUSE BRIDGE, EDENTON	252-482-7701
5	BOAT RAMP	MIDWAY DRIVE, EDENTON	252-482-7701
6	BOAT RAMP	PLYMOUTH, HWY 45 BRIDGE	252-792-3868
7	HELIPORT	CHOWAN HOSPITAL	252-482-6482
8	HELIPORT	WASHINGTON COUNTY HOSPITAL	252-793-4135
9	LANDFILL	WASHINGTON COUNTY C&D LANDFILL	252-793-5615
10	MARINA	EDENTON HARBOR (CITY DOCKS)	252-482-0300
11	MARINA	EDENTON MARINA	252-482-7421
12	MARINA	MACKEYS FERRY MARINA	252-793-5031
13	MARINA	WHARF LANDING MARINA	252-482-1601
14	RENEWABLE ENERGY	PLYMOUTH SOLAR LLC	SUNENERGY1

DISPLAYED ON MAP (POLYGONS)			
Map ID	Type	Name	Phone
15	WILDLIFE REFUGE	ROANOKE RIVER NATIONAL WILDLIFE REFUGE	252-794-3808

ALSO PRESENT IN MAPPED AREA (POLYGONS)			
Type	Name	Contact	Phone
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT; SHRIMP	DAVID DALE, SOUTHEAST REGION	727-824-5317
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT; SNAPPER GROUPER	DAVID DALE, SOUTHEAST REGION	727-824-5317
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT; SPINY LOBSTER	DAVID DALE, SOUTHEAST REGION	727-824-5317
ESSENTIAL HABITAT	HAPC; SHRIMP	DAVID DALE, SOUTHEAST REGION	727-824-5317
ESSENTIAL HABITAT	HAPC; SNAPPER GROUPER	DAVID DALE, SOUTHEAST REGION	727-824-5317
STATE PROTECTED AREA	BLACK BEAR SANCTUARY	THE NATURE CONSERVANCY	

JURISDICTIONS			
COUNTY:	BERTIE, CHOWAN, WASHINGTON	FEMA:	REGION 1
COAST GUARD:	DISTRICT 5, SECTOR NORTH CAROLINA	EPA:	REGION 4
USACE:	SOUTH ATLANTIC DIVISION, WILMINGTON DISTRICT		

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	5.99	0.01
10B	Freshwater Marshes	199.12	0.31
10C	Swamps	10,006.31	15.63
10D	Scrub and Shrub Wetlands	551.45	0.86
9A	Sheltered Tidal Flats	0.19	0.00
7	Exposed Tidal Flats	396.41	0.62

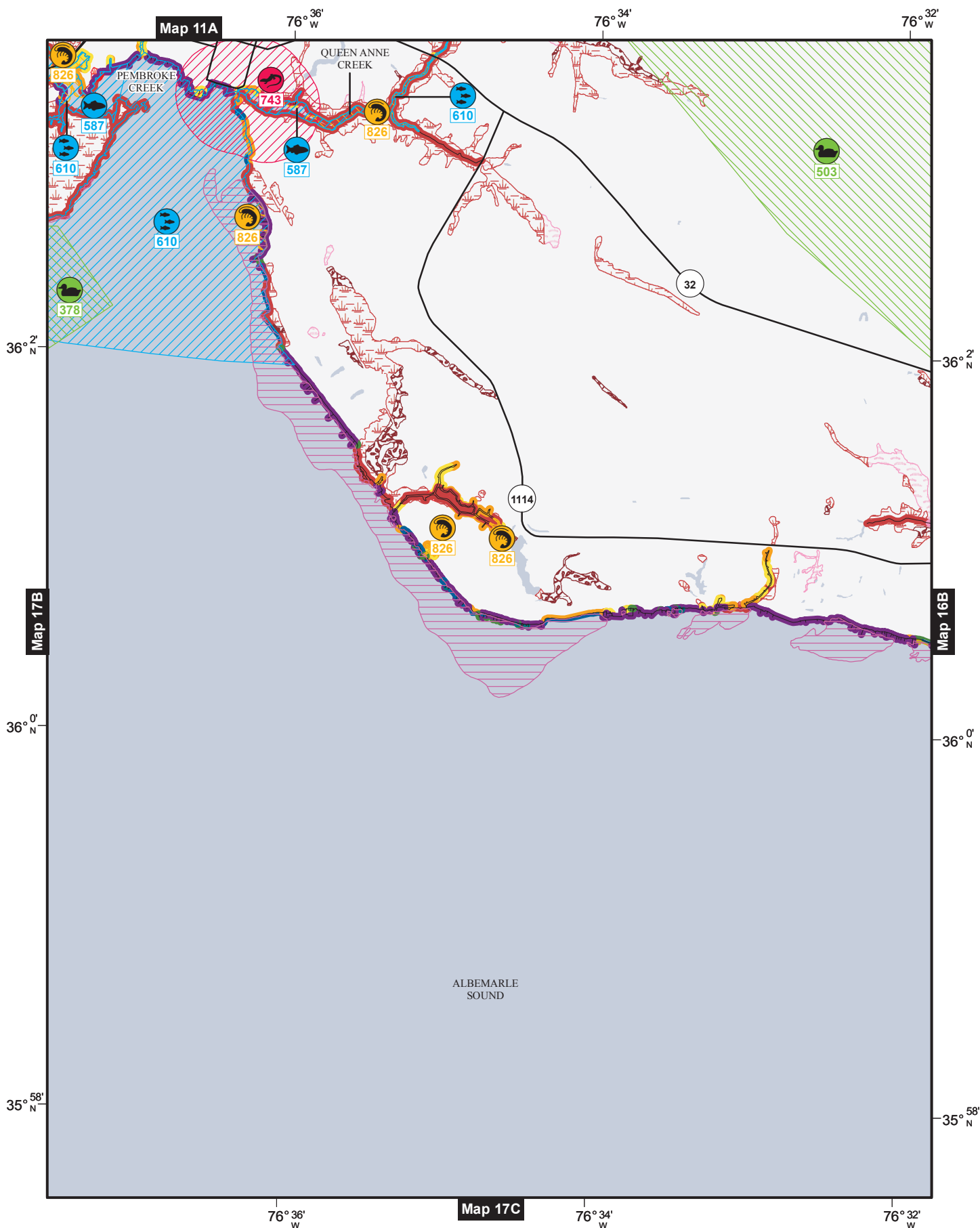
ESI SHORELINE HABITAT TYPES

<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	727.23	0.45	< 1%
10B	Freshwater marshes	465.18	0.29	< 1%
10C	Swamps	148,723.28	92.41	58%
10D	Scrub-shrub wetlands	1,743.91	1.08	1%
9A	Sheltered tidal flats	80.48	0.05	< 1%
9B	Sheltered, vegetated low banks	20,195.15	12.55	8%
8B	Sheltered, solid man-made structures	6,074.09	3.77	2%
7	Exposed tidal flats	28,607.05	17.78	11%
6B	Exposed riprap	3,989.03	2.48	2%
3A	Fine- to medium-grained sand beaches	14,675.78	9.12	6%
3B	Scarps and steep slopes in sand	43.94	0.03	< 1%
1B	Exposed, solid man-made structures	29,008.13	18.02	11%
Total ESI Shoreline:		254,333.25	158.04	
Total Shoreline:		212,889.56	132.28	

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

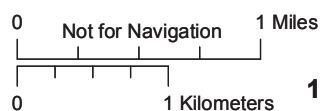




Map 17A North Carolina



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 17A
North Carolina

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											
SAV	Submerged aquatic veg	High Ecological Value			Present	J	F	M	A	M	J	J	A	S	O	N	D

BIRDS

Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Juveniles	Molt
378	Waterfowl	Mallard	Wintering			100S													-	Feb-Mar	Oct-Nov	-	-
	Waterfowl	Scaup	Wintering			100S													-	Feb-Mar	Oct-Nov	-	-
	Waterfowl	Tundra swan	Wintering			1000S													-	Feb-Mar	Oct-Nov	-	-
503	Waterfowl	Mallard	Wintering			-													-	Feb-Mar	Oct-Nov	-	-
	Waterfowl	Snow goose	Wintering			1500													-	Feb-Mar	Oct-Nov	-	-
	Waterfowl	Tundra swan	Wintering			5000													-	Feb-Mar	Oct-Nov	-	-
	Waterfowl	Wood duck	Wintering			-													-	Feb-Mar	Oct-Nov	-	-

FISH

Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
587	Diadromous	Alewife	Spawning Area			Present													Mar-Jul	Mar-Jul	May-Aug	-	-
610	Diadromous	Blueback herring	Spawning Area			Present													Mar-Jul	Mar-Jul	May-Jul	-	-
	Estuarine Nursery	Hogchoker	Spawning Area			Abundant													Apr-Oct	Apr-Oct	Apr-Oct	-	-



REPTILES & AMPHIBIANS

Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Nest	Hatch	Internet	Juveniles	Adults
743	Snake	Rainbow snake	Vulnerable Occurrence			-													May-Sep	Aug-Nov	-	Jan-Dec	Jan-Dec


INVERTEBRATES

Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
826	Shrimp	Brown shrimp	Nursery Area			-													-	-	Feb-Apr	Mar-Aug	-

BIRDS

Subelement	Species	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				
	American black duck	Wintering	-	-	-													-	Feb-Mar	Oct-Nov	-
	American coot	Wintering	100S	-	-													-	Feb-Mar	Oct-Nov	-
	American wigeon	Wintering	-	-	-													-	Feb-Mar	Oct-Nov	-
	Black scoter	Wintering	-	-	-													-	Feb-Mar	Oct-Nov	-
	Bufflehead	Wintering	100S	-	-													-	Feb-Mar	Oct-Nov	-
	Bufflehead	Wintering	-	-	-													-	Feb-Mar	Oct-Nov	-
	Canada goose	Wintering	-	-	-													-	Feb-Mar	Oct-Nov	-
	Canada goose	Wintering	1000S	-	-													-	Feb-Mar	Oct-Nov	-
	Canvasback	Wintering	100S	-	-													-	Feb-Mar	Oct-Nov	-
	Canvasback	Wintering	-	-	-													-	Feb-Mar	Oct-Nov	-
	Gadwall	Wintering	100S	-	-													-	Feb-Mar	Oct-Nov	-
	Gadwall	Wintering	-	-	-													-	Feb-Mar	Oct-Nov	-
	Greater scaup	Wintering	-	-	-													-	Feb-Mar	Oct-Nov	-
	Green-winged teal	Wintering	-	-	-													-	Feb-Mar	Oct-Nov	-
	Hooded merganser	Wintering	100S	-	-													-	Feb-Mar	Oct-Nov	-
	Lesser scaup	Wintering	-	-	-													-	Feb-Mar	Oct-Nov	-
	Long-tailed duck	Wintering	-	-	-													-	Feb-Mar	Oct-Nov	-
	Mallard	Wintering	High	-	-													-	Feb-Mar	Oct-Nov	-
	Northern shoveler	Wintering	-	-	-													-	Feb-Mar	Oct-Nov	-
	Red-breasted merganser	Wintering	-	-	-													-	Feb-Mar	Oct-Nov	-
	Redhead	Wintering	-	-	-													-	Feb-Mar	Oct-Nov	-
	Redhead	Wintering	100S	-	-													-	Feb-Mar	Oct-Nov	-
	Ring-necked duck	Wintering	100S	-	-													-	Feb-Mar	Oct-Nov	-
	Ring-necked duck	Wintering	-	-	-													-	Feb-Mar	Oct-Nov	-
	Ruddy duck	Wintering	1000S	-	-													-	Feb-Mar	Oct-Nov	-
	Scaup	Wintering	1000S	-	-													-	Feb-Mar	Oct-Nov	-
	Surf scoter	Wintering	-	-	-													-	Feb-Mar	Oct-Nov	-
	Tundra swan	Wintering	6000	-	-													-	Feb-Mar	Oct-Nov	-
	Tundra swan	Wintering	100S	-	-													-	Feb-Mar	Oct-Nov	-
	White-winged scoter	Wintering	-	-	-													-	Feb-Mar	Oct-Nov	-
	Wood duck	Wintering	High	-	-													-	Feb-Mar	Oct-Nov	-

FISH

Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
						J	F	M	A	M	J	J	A	S	O	N	D					
	Alewife	Nursery Area			Present													-	-	May-Aug	Jul-Oct	-
	American shad	Spawning Area			Present													Apr-Jun	Apr-Jun	May-Jul	Feb-May	-
	Atlantic sturgeon	Concentration Area	C		Common													-	-	-	Jan-Dec	Jan-Dec
	Atlantic sturgeon	Concentration Area	C		Common													-	-	-	Jun-Feb	Jun-Feb
	Blueback herring	Nursery Area			Present													-	-	May-Jul	Jul-Oct	-
	Gizzard shad	Spawning Area			Highly Abundant													Mar-May	Mar-May	Apr-Jun	May-Sep	-
	Striped bass	Nursery Area			Abundant													Apr-Jun	Apr-Jun	Apr-Jun	Jan-Dec	Jan-Dec

MARINE MAMMALS


Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Mating	Calving	Pupping	Molt
						J	F	M	A	M	J	J	A	S	O	N	D				

	Manatee	West Indian manatee																-	-	-	-
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ALSO PRESENT IN MAPPED AREA (GENERAL DISTRIBUTION)

BENTHIC

Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Mating	Calving	Pupping	Molt
						J	F	M	A	M	J	J	A	S	O	N	D				

	SAV	Submerged aquatic veg																-	-	-	-
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BIRDS

Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Mating	Calving	Pupping	Molt
						J	F	M	A	M	J	J	A	S	O	N	D				

	Waterfowl	Wood duck																Mar-Jun	-	-	-
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FISH

Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
						J	F	M	A	M	J	J	A	S	O	N	D					

	Diadromous	American eel																-	-	Jan-Jun	Jan-Dec	Aug-Dec
		American shad																-	-	Mar-Jul	May-Nov	-
		Hickory shad																Apr-Jun	-	-	-	Nov-Apr

	Estuarine Nursery	Striped bass																Apr-Jun	Apr-Jun	Apr-Jun	Jan-Dec	Jan-Dec
		Atlantic croaker																-	-	Sep-Mar	Jan-Dec	Jan-Dec
		Atlantic menhaden																-	-	Jan-Jun	Jan-Dec	-

		Bay anchovy																Apr-Sep	Apr-Sep	Apr-Oct	Jan-Dec	Jan-Dec
		Black drum																-	-	-	Jan-Dec	Jun-Nov
		Bluefish																-	-	-	May-Oct	Jun-Oct

		Hogchoker																-	-	-	Jan-Dec	Jan-Dec
		Ladyfish																-	-	-	Apr-Oct	Sep-Oct
		Pinfish																-	-	Dec-Mar	Jan-Dec	May-Oct

		Red drum																-	-	-	Jan-Dec	-
		Sheepshead																-	-	-	Jun-Sep	Jun-Sep
		Southern flounder																-	-	Dec-Mar	Jan-Dec	Jan-Dec



		Southern kingfish																-	-	-	May-Dec	Jul-Oct
		Spot																-	-	Jan-Mar	Jan-Dec	May-Oct
		Spotted seatrout																-	-	-	Jan-Dec	Jan-Dec

		Striped mullet																-	-	-	Jan-Dec	Jan-Dec
		Summer flounder																-	-	Oct-May	Jan-Dec	-
		Weakfish																Mar-Oct	Mar-Oct	-	Jan-Dec	Mar-Oct



		White mullet																-	-	-	Jan-Dec	Jan-Dec
		White perch																Apr-Jul	Apr-Jul	Apr-Aug	Jan-Dec	Jan-Dec

	Estuarine Resident	Inland silverside																Mar-Aug	Mar-Aug	Jun-Sep	-	-
	Freshwater	Bluegill																Apr-Oct	Apr-Oct	-	Jan-Dec	Jan-Dec
		Largemouth bass																May-Jun	May-Jun	May-Jun	-	Jan-Dec
		Longnose gar																Mar-Sep	Mar-Sep	-	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				
	Threadfin shad													Apr-Jul	Apr-Jul	-	-
	Yellow perch													Jan-Mar	Jan-Mar	Apr-Dec	Apr-Dec
	Yellow perch													-	-	Apr-Dec	Apr-Dec
	Atlantic spadefish													-	-	Jun-Aug	-
	Atlantic needlefish													May-Jul	Jun-Aug	Jun-Oct	-
	Spanish mackerel													-	-	Jul-Nov	Jul-Oct

INVERTEBRATES

Subelement	Species	Monthly Presence												Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D				
	Blue crab													-	-	Jan-Dec	Jan-Dec
	Blue crab													-	May-Oct	-	Jan-Dec
	Brown shrimp													-	Feb-Apr	Mar-Aug	-
	Pink shrimp													-	-	Jan-Dec	Sep-Nov
	White shrimp													-	Jun-Dec	Dec-Feb	-

MARINE MAMMALS

Subelement	Species	Monthly Presence												Mating	Calving	Pupping	Molt
		J	F	M	A	M	J	J	A	S	O	N	D				
	Bottlenose dolphin													Sep-Oct	Sep-Oct	-	-

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	2.84	0.00
10B	Freshwater Marshes	54.43	0.09
10C	Swamps	604.93	0.95
10D	Scrub and Shrub Wetlands	98.53	0.15
7	Exposed Tidal Flats	1.99	0.00

ESI SHORELINE HABITAT TYPES

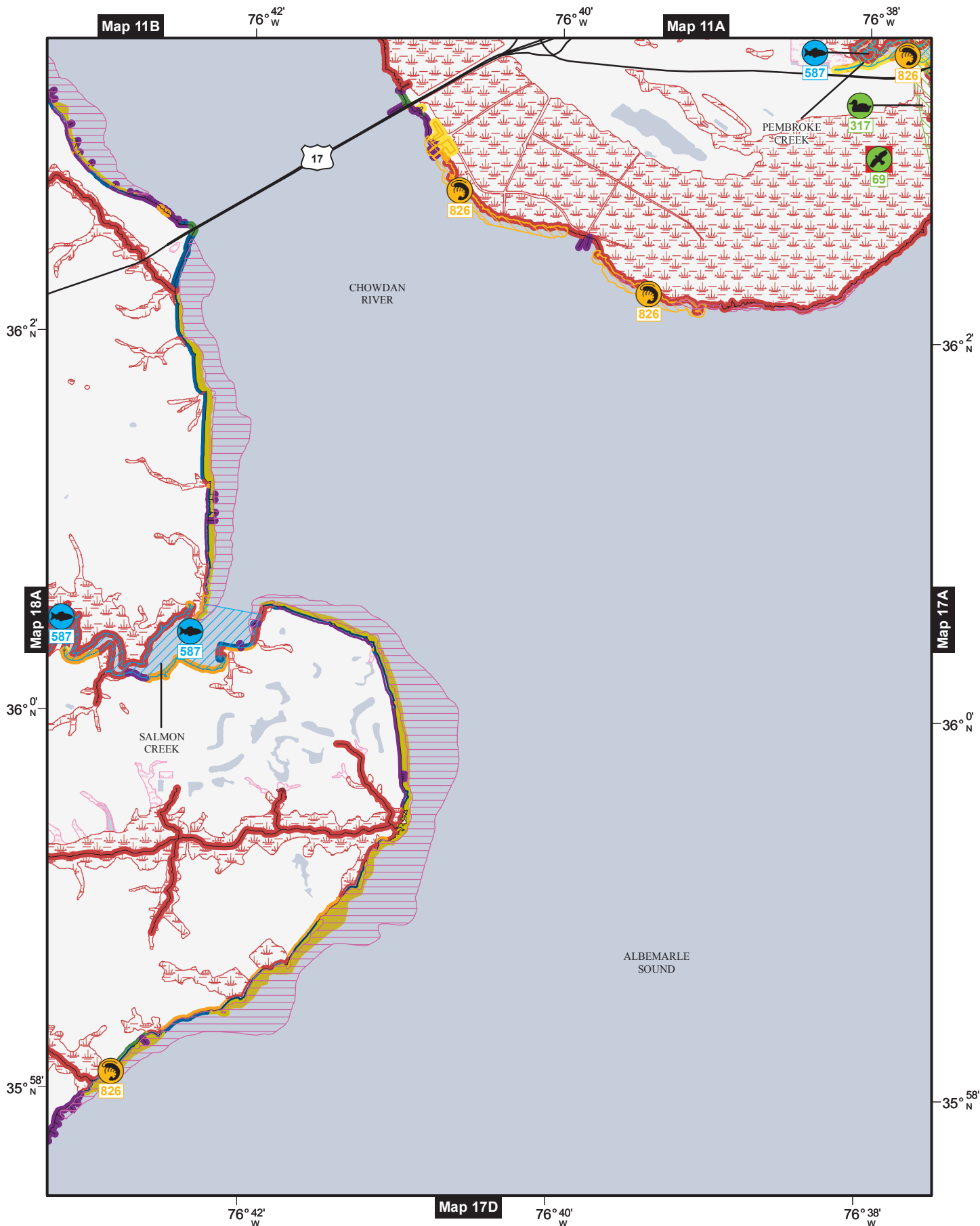
<i>ESI Rank</i>	<i>Shoreline Habitat Classification</i>	<i>Length (Meters)</i>	<i>Length (Miles)</i>	<i>% of ESI Shoreline</i>
10A	Salt- and brackish-water marshes	352.52	0.22	1%
10B	Freshwater marshes	25.89	0.02	< 1%
10C	Swamps	18,752.14	11.65	41%
10D	Scrub-shrub wetlands	103.25	0.06	< 1%
9B	Sheltered, vegetated low banks	5,541.52	3.44	12%
8B	Sheltered, solid man-made structures	3,763.45	2.34	8%
7	Exposed tidal flats	240.80	0.15	1%
6B	Exposed riprap	1,071.96	0.67	2%
3A	Fine- to medium-grained sand beaches	2,797.07	1.74	6%
1B	Exposed, solid man-made structures	12,736.21	7.91	28%

Total ESI Shoreline: 45,384.79 Total ESI Shoreline: 28.20
 Total Shoreline: 41,780.57 Total Shoreline: 25.96

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



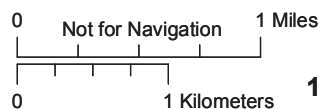


Map 17B

North Carolina



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



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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
SAV	Submerged aquatic veg	High Ecological Value			Present	J F M A M J J A S O N D

BIRDS

Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence	Nest	Mig.(S)	Mig.(F)	Molt
69	Raptor	Bald eagle	Nesting	T		1 Pair	J F M A M J J A S O N D	Jan-Jun	-	-	-
317	Waterfowl	Bufflehead	Wintering			100S	J F M A M J J A S O N D	-	Feb-Mar	Oct-Nov	-
	Waterfowl	Canvasback	Wintering			100S	J F M A M J J A S O N D	-	Feb-Mar	Oct-Nov	-
	Waterfowl	Redhead	Wintering			100S	J F M A M J J A S O N D	-	Feb-Mar	Oct-Nov	-
	Waterfowl	Ruddy duck	Wintering			1000S	J F M A M J J A S O N D	-	Feb-Mar	Oct-Nov	-
	Waterfowl	Scaup	Wintering			1000S	J F M A M J J A S O N D	-	Feb-Mar	Oct-Nov	-
	Waterfowl	Tundra swan	Wintering			100S	J F M A M J J A S O N D	-	Feb-Mar	Oct-Nov	-

FISH

Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence	Spawn	Eggs	Larvae	Juveniles	Adults
587	Diadromous	Alewife	Spawning Area			Present	J F M A M J J A S O N D	Mar-Jul	Mar-Jul	May-Aug	-	-
	Diadromous	Blueback herring	Spawning Area			Present	J F M A M J J A S O N D	Mar-Jul	Mar-Jul	May-Jul	-	-

INVERTEBRATES

Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence	Spawn	Eggs	Larvae	Juveniles	Adults
826	Shrimp	Brown shrimp	Nursery Area			-	J F M A M J J A S O N D	-	-	Feb-Apr	Mar-Aug	-

WIDESPREAD IN MAPPED AREA (> 10 SQUARE KILOMETERS)



BIRDS

Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence	Nest	Mig.(S)	Mig.(F)	Molt
826	Waterfowl	American black duck	Wintering			-	J F M A M J J A S O N D	-	Feb-Mar	Oct-Nov	-
		American coot	Wintering			100S	J F M A M J J A S O N D	-	Feb-Mar	Oct-Nov	-
		American wigeon	Wintering			-	J F M A M J J A S O N D	-	Feb-Mar	Oct-Nov	-
		Black scoter	Wintering			-	J F M A M J J A S O N D	-	Feb-Mar	Oct-Nov	-
		Bufflehead	Wintering			-	J F M A M J J A S O N D	-	Feb-Mar	Oct-Nov	-
		Canada goose	Wintering			1000S	J F M A M J J A S O N D	-	Feb-Mar	Oct-Nov	-
		Canada goose	Wintering			-	J F M A M J J A S O N D	-	Feb-Mar	Oct-Nov	-
		Canvasback	Wintering			-	J F M A M J J A S O N D	-	Feb-Mar	Oct-Nov	-

BIRDS (continued)

Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Molt
						J	F	M	A	M	J	J	A	S	O	N	D	
	Gadwall	Wintering			-													-
	Gadwall	Wintering			100S													-
	Greater scaup	Wintering			-													-
	Green-winged teal	Wintering			-													-
	Hooded merganser	Wintering			100S													-
	Lesser scaup	Wintering			-													-
	Long-tailed duck	Wintering			-													-
	Mallard	Wintering			High													-
	Mallard	Wintering			100S													-
	Northern shoveler	Wintering			-													-
	Red-breasted merganser	Wintering			-													-
	Redhead	Wintering			-													-
	Ring-necked duck	Wintering			100S													-
	Ring-necked duck	Wintering			-													-
	Scaup	Wintering			100S													-
	Surf scoter	Wintering			-													-
	Tundra swan	Wintering			1000S													-
	Tundra swan	Wintering			6000													-
	White-winged scoter	Wintering			-													-
	Wood duck	Wintering			High													-

FISH

Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Adults
						J	F	M	A	M	J	J	A	S	O	N	D	
	Diadromous Alewife	Nursery Area			Present													-
	American shad	Spawning Area			Present													-
	Atlantic sturgeon	Concentration Area	C		Common													-
	Atlantic sturgeon	General Distribution	C		-													-
	Blueback herring	Nursery Area			Present													-
	Gizzard shad	Spawning Area			Highly Abundant													-
	Gizzard shad	Spawning Area			Abundant													-
	Striped bass	Nursery Area			Abundant													-
	Estuarine Nursery Hogchoker	Spawning Area			Abundant													-

INVERTEBRATES

Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Adults
						J	F	M	A	M	J	J	A	S	O	N	D	
	Bivalve Alewife floater	Vulnerable Occurrence	T		-													-
	Eastern pondmussel	Vulnerable Occurrence	T		-													-

MARINE MAMMALS

Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Molt
						J	F	M	A	M	J	J	A	S	O	N	D	
	Manatee	General Distribution	E		-													-

ALSO PRESENT IN MAPPED AREA (GENERAL DISTRIBUTION)

BENTHIC

	Subelement	Species	Monthly Presence
	SAV	Submerged aquatic veg	J F M A M J J A S O N D

BIRDS

<div></div> Subelement	Species	Monthly Presence												Nest Mar-Jun	Mig.(S)	Mig.(F)	Molt
		J	F	M	A	M	J	J	A	S	O	N	D				
Waterfowl	Wood duck															-	-

FISH

	Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
			J	F	M	A	M	J	J	A	S	O	N	D					
	Diadromous	American eel													-	-	Jan-Dec	Jan-Dec	Sep-Dec
		American eel													-	-	Jan-Jun	Jan-Dec	Aug-Dec
		American shad													-	-	Mar-Jul	May-Nov	-
		Hickory shad													Apr-Jun		-	-	Nov-Apr
		Hickory shad													Apr-Jun		-	-	Jan-Apr
	Estuarine Nursery	Striped bass													Apr-Jun	Apr-Jun	Apr-Jun	Jan-Dec	Jan-Dec
		Atlantic croaker													-	-	Sep-Jun	Jan-Dec	Mar-Oct
		Atlantic croaker													-	-	Sep-Mar	Jan-Dec	Jan-Dec
		Atlantic menhaden													-	-	Jan-Jun	Jan-Dec	-
		Atlantic menhaden													-	-	-	-	Feb-Apr
		Bay anchovy													Apr-Sep	Apr-Sep	Apr-Oct	Jan-Dec	Jan-Dec
		Black drum													-	-	-	Jan-Dec	Jun-Nov
		Bluefish													-	-	-	May-Oct	Jun-Oct
		Hogchoker													-	-	-	Jan-Dec	Jan-Dec
		Ladyfish													-	-	-	Apr-Oct	Sep-Oct
		Pinfish													-	-	Dec-Mar	Jan-Dec	May-Oct
		Red drum													-	-	-	Jan-Dec	Jan-Dec
		Red drum													-	-	-	Jan-Dec	-
		Sheepshead													-	-	-	Jun-Sep	Jun-Sep
		Southern flounder													-	-	Dec-Mar	Jan-Dec	Jan-Dec
		Southern kingfish													-	-	-	May-Dec	Jul-Oct
			Spot													-	-	Jan-Mar	Jan-Dec
Spotted seatrout														-	-	-	Jan-Dec	Jan-Dec	
Striped mullet														-	-	-	May-Sep	-	
Striped mullet														-	-	-	Jan-Dec	Jan-Dec	
Summer flounder														-	-	Oct-May	Jan-Dec	-	
Weakfish														Mar-Oct	Mar-Oct	-	Jan-Dec	Mar-Oct	
White mullet														-	-	-	Jan-Dec	Jan-Dec	
White perch														Mar-Jun	Mar-Jun	May-Aug	Jun-Oct	-	
White perch														Apr-Jul	Apr-Jul	Apr-Aug	Jan-Dec	Jan-Dec	
Inland silverside														Mar-Aug	Mar-Aug	Jun-Sep	-	-	
Black crappie														Mar-May	Mar-May	Mar-May	Jan-Dec	Jan-Dec	

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FISH (continued)

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	Bluegill													Apr-Oct	Apr-Oct	-	Jan-Dec	Jan-Dec
	Bowfin													Mar-Jun	Mar-Jun	-	Jan-Dec	Jan-Dec
	Largemouth bass													May-Jun	May-Jun	May-Jun	-	Jan-Dec
	Longnose gar													Mar-Sep	Mar-Sep	-	Jan-Dec	Jan-Dec
	Threadfin shad													Apr-Jul	Apr-Jul	Apr-Jul	-	-
Marine Benthic	Yellow perch													-	-	-	Apr-Dec	Apr-Dec
	Yellow perch													Jan-Mar	Jan-Mar	Jan-Mar	Apr-Dec	Apr-Dec
	Atlantic spadefish													-	-	-	Jun-Aug	-
	Atlantic needlefish													May-Jul	May-Jul	Jun-Aug	Jun-Oct	-
	Spanish mackerel													-	-	-	Jul-Nov	Jul-Oct

INVERTEBRATES

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
Crab	Blue crab													-	-	May-Oct	-	Jan-Dec
	Blue crab													-	-	-	Jan-Dec	Jan-Dec
Shrimp	Brown shrimp													-	-	Feb-Apr	Mar-Aug	-
	Pink shrimp													-	-	-	Jan-Dec	Sep-Nov
	White shrimp													-	-	Jun-Dec	Dec-Feb	-

MARINE MAMMALS

Subelement	Species	Monthly Presence												Mating	Calving	Pupping	Molt
		J	F	M	A	M	J	J	A	S	O	N	D				
Dolphin	Bottlenose dolphin													Sep-Oct	Sep-Oct	-	-

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>
10B	Freshwater Marshes	57.34	0.09
10C	Swamps	2,580.66	4.03
10D	Scrub and Shrub Wetlands	1.20	0.00
7	Exposed Tidal Flats	189.98	0.30



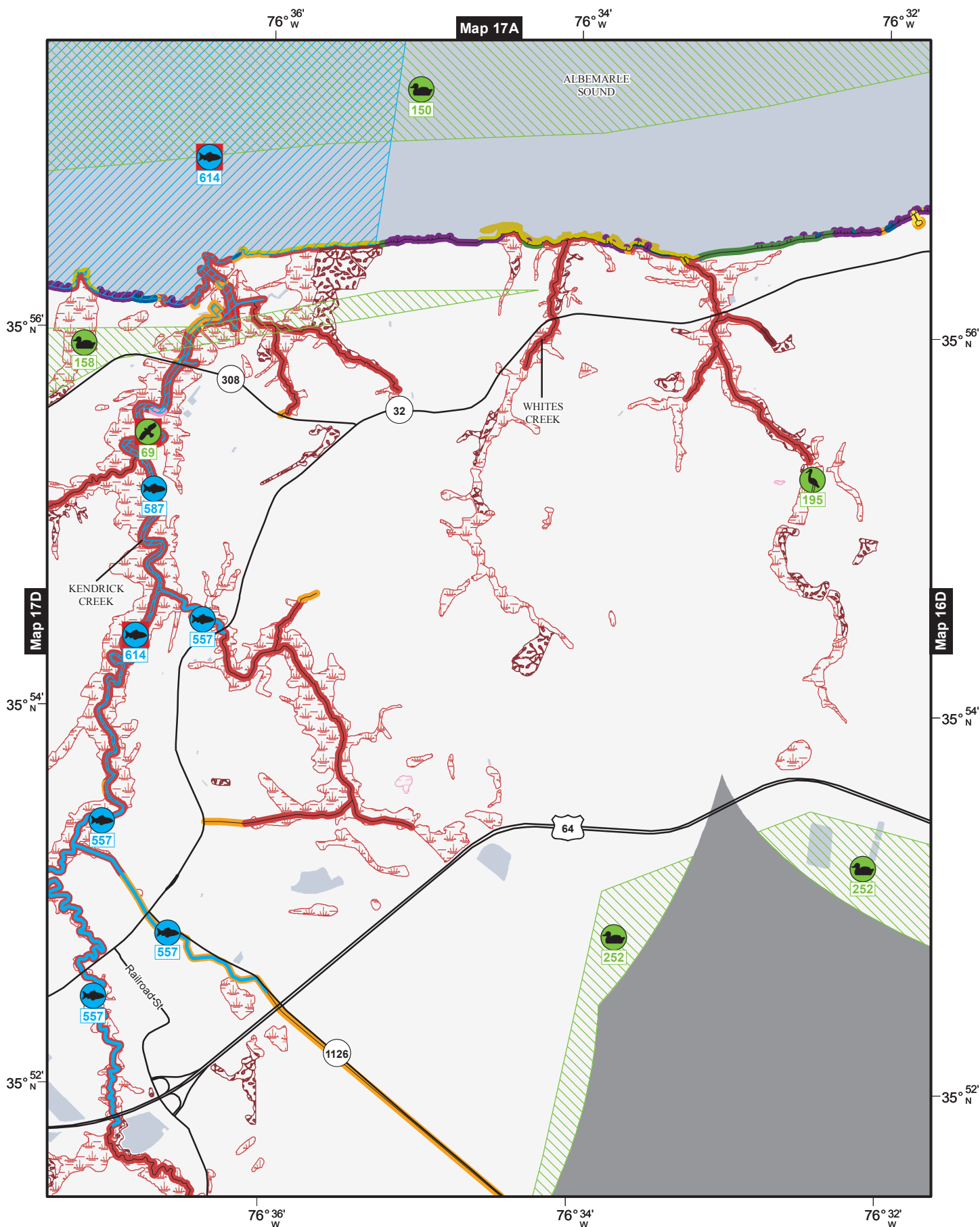
ESI SHORELINE HABITAT TYPES

<i>ESI Rank</i>	<i>Shoreline Habitat Classification</i>	<i>Length (Meters)</i>	<i>Length (Miles)</i>	<i>% of ESI Shoreline</i>
10C	Swamps	29,680.98	18.44	43%
10D	Scrub-shrub wetlands	42.25	0.03	< 1%
9B	Sheltered, vegetated low banks	5,370.60	3.34	8%
8B	Sheltered, solid man-made structures	2,045.45	1.27	3%
7	Exposed tidal flats	12,972.89	8.06	19%
6B	Exposed riprap	793.90	0.49	1%
3A	Fine- to medium-grained sand beaches	10,038.83	6.24	14%
3B	Scarps and steep slopes in sand	43.94	0.03	< 1%
1B	Exposed, solid man-made structures	8,774.85	5.45	13%
Total ESI Shoreline:		69,763.68	43.35	
Total Shoreline:		49,467.12	30.74	

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 17C
North Carolina



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 17C
North Carolina

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	S	F	Concentration	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt
							J	F	M	A	M	J	J	A	S	O	N	D				
69	Raptor	Bald eagle	Nesting	S	T	1 Pair													Jan-Jun	-	-	-
150	Waterfowl	Black scoter	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Waterfowl	Canvasback	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Waterfowl	Long-tailed duck	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Waterfowl	Mallard	Wintering			High													-	Feb-Mar	Oct-Nov	-
	Waterfowl	Red-breasted merganser	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Waterfowl	Redhead	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Waterfowl	Surf scoter	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Waterfowl	Tundra swan	Wintering			6000													-	Feb-Mar	Oct-Nov	-
	Waterfowl	White-winged scoter	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Waterfowl	Wood duck	Wintering			High													-	Feb-Mar	Oct-Nov	-
158	Waterfowl	Canvasback	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Waterfowl	Mallard	Wintering			High													-	Feb-Mar	Oct-Nov	-
	Waterfowl	Tundra swan	Wintering			6000													-	Feb-Mar	Oct-Nov	-
	Waterfowl	Wood duck	Wintering			High													-	Feb-Mar	Oct-Nov	-
195	Wading	Great blue heron	Nesting			17 Pairs													Mar-Aug	-	-	-
	Wading	Great egret	Nesting			17 Pairs													Mar-Aug	-	-	-
252	Waterfowl	American wigeon	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	Waterfowl	Common merganser	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	Waterfowl	Northern pintail	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	Waterfowl	Red-breasted merganser	Wintering			100S													-	Feb-Mar	Oct-Nov	-
	Waterfowl	Snow goose	Wintering			10000S													-	Feb-Mar	Oct-Nov	-
	Waterfowl	Tundra swan	Wintering			1000S													-	Feb-Mar	Oct-Nov	-


FISH

Map ID	Subelement	Species	Mapping Qualifier	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			Present													Mar-Jul	Mar-Jul	May-Aug	-	-
	Diadromous	American shad	Spawning Area			Present													Apr-Jun	Apr-Jun	May-Jul	Feb-May	-
	Diadromous	Blueback herring	Spawning Area			Present													Mar-Jul	Mar-Jul	May-Jul	-	-
587	Diadromous	Alewife	Spawning Area			Present													Mar-Jul	Mar-Jul	May-Aug	-	-
614	Diadromous	Blueback herring	Spawning Area			Present													Mar-Jul	Mar-Jul	May-Jul	-	-
	Diadromous	Atlantic sturgeon	Concentration Area	C		Common													-	-	-	Jan-Dec	Jan-Dec

BIRDS

Subelement	Species	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				
	American black duck	Wintering	-	-	-													-	Feb-Mar	Oct-Nov	-
	American coot	Wintering	100S	-	-													-	Feb-Mar	Oct-Nov	-
	American wigeon	Wintering	-	-	-													-	Feb-Mar	Oct-Nov	-
	Bufflehead	Wintering	-	-	-													-	Feb-Mar	Oct-Nov	-
	Bufflehead	Wintering	100S	-	-													-	Feb-Mar	Oct-Nov	-
	Canada goose	Wintering	-	-	-													-	Feb-Mar	Oct-Nov	-
	Canada goose	Wintering	1000S	-	-													-	Feb-Mar	Oct-Nov	-
	Canvasback	Wintering	100S	-	-													-	Feb-Mar	Oct-Nov	-
	Gadwall	Wintering	-	-	-													-	Feb-Mar	Oct-Nov	-
	Gadwall	Wintering	100S	-	-													-	Feb-Mar	Oct-Nov	-
	Greater scaup	Wintering	-	-	-													-	Feb-Mar	Oct-Nov	-
	Green-winged teal	Wintering	-	-	-													-	Feb-Mar	Oct-Nov	-
	Hooded merganser	Wintering	100S	-	-													-	Feb-Mar	Oct-Nov	-
	Lesser scaup	Wintering	-	-	-													-	Feb-Mar	Oct-Nov	-
	Mallard	Wintering	-	-	-													-	Feb-Mar	Oct-Nov	-
	Northern shoveler	Wintering	-	-	-													-	Feb-Mar	Oct-Nov	-
	Redhead	Wintering	100S	-	-													-	Feb-Mar	Oct-Nov	-
	Ring-necked duck	Wintering	-	-	-													-	Feb-Mar	Oct-Nov	-
	Ring-necked duck	Wintering	100S	-	-													-	Feb-Mar	Oct-Nov	-
	Ruddy duck	Wintering	1000S	-	-													-	Feb-Mar	Oct-Nov	-
	Scaup	Wintering	1000S	-	-													-	Feb-Mar	Oct-Nov	-
	Tundra swan	Wintering	Extremely High	-	-													-	Feb-Mar	Oct-Nov	-
	Tundra swan	Wintering	100S	-	-													-	Feb-Mar	Oct-Nov	-
	Wood duck	Wintering	-	-	-													-	Feb-Mar	Oct-Nov	-

FISH

Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
						J	F	M	A	M	J	J	A	S	O	N	D					
	Diadromous Alewife	Nursery Area	-	-	Present													-	-	May-Aug	Jul-Oct	-
	American shad	Spawning Area	-	-	Present													Apr-Jun	Apr-Jun	May-Jul	Feb-May	-
	Atlantic sturgeon	Concentration Area	C	-	Common													-	-	-	Jun-Feb	Jun-Feb
	Blueback herring	Nursery Area	-	-	Present													-	-	May-Jul	Jul-Oct	-
	Gizzard shad	Spawning Area	-	-	Highly Abundant													Mar-May	Mar-May	Apr-Jun	May-Sep	-
	Striped bass	Nursery Area	-	-	Abundant													Apr-Jun	Apr-Jun	Apr-Jun	Jan-Dec	Jan-Dec

MARINE MAMMALS

Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Mating	Calving	Pupping	Molt
						J	F	M	A	M	J	J	A	S	O	N	D				
	Manatee	General Distribution	E	E	-													-	-	-	-

Monthly Presence

FISH

Monthly Presence

312

INVERTEBRATES

Subelement	Species	Monthly Presence												Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D				
 Crab	Blue crab													-	-	Jan-Dec	Jan-Dec
	Blue crab													-	May-Oct	-	Jan-Dec
 Shrimp	Brown shrimp													-	Feb-Apr	Mar-Aug	-
	Pink shrimp													-	-	Jan-Dec	Sep-Nov
	White shrimp													-	Jun-Dec	Dec-Feb	-

MARINE MAMMALS

Subelement	Species	Monthly Presence												Mating	Calving	Pupping	Molt
		J	F	M	A	M	J	J	A	S	O	N	D				
 Dolphin	Bottlenose dolphin													Sep-Oct	Sep-Oct	-	-

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	3.15	0.00
10B	Freshwater Marshes	11.72	0.02
10C	Swamps	1,874.44	2.93
10D	Scrub and Shrub Wetlands	258.62	0.40
7	Exposed Tidal Flats	55.49	0.09

ESI SHORELINE HABITAT TYPES

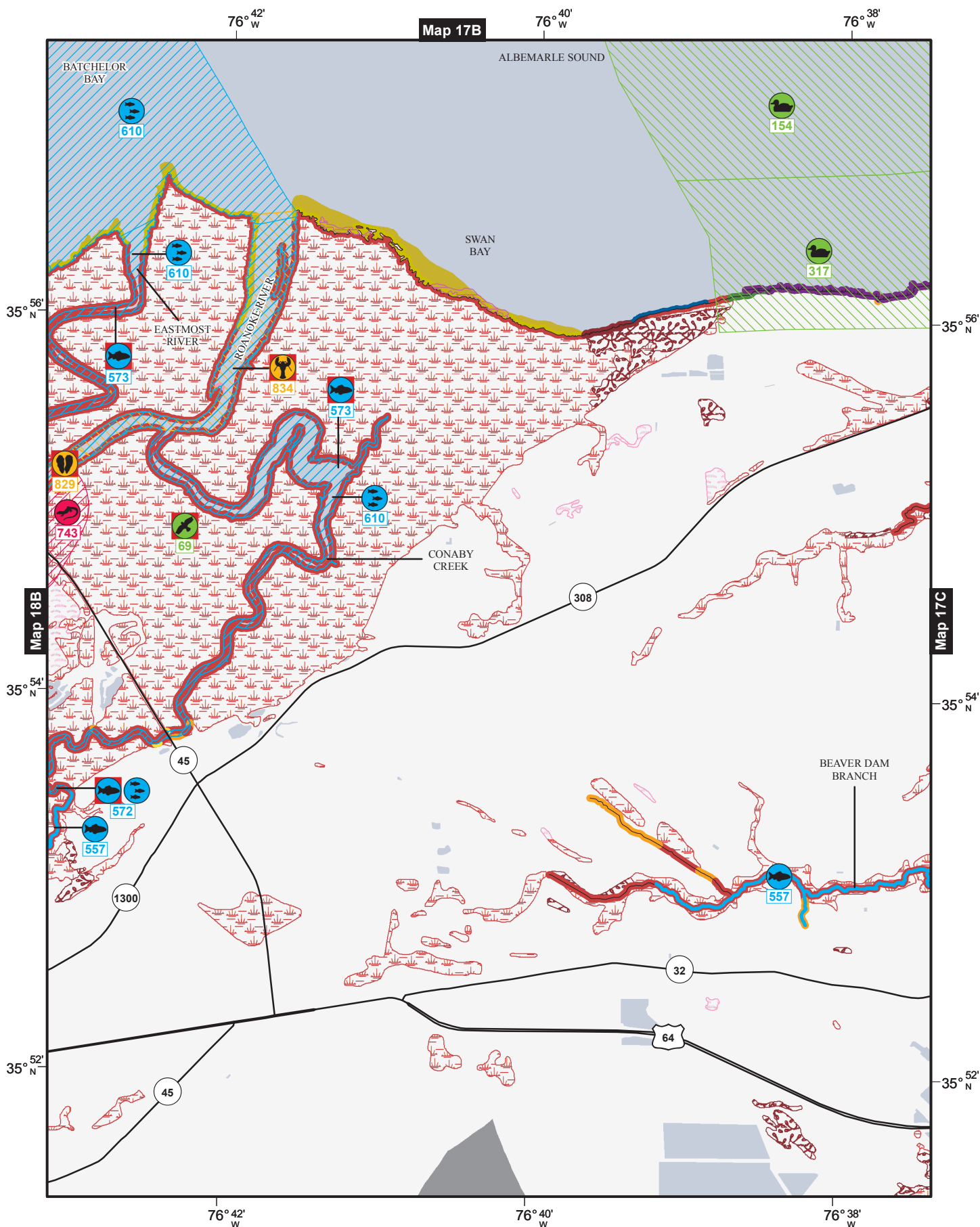
ESI Rank	Shoreline Habitat Classification	Length (Meters)	Length (Miles)	% of ESI Shoreline
10A	Salt- and brackish-water marshes	374.71	0.23	1%
10B	Freshwater marshes	167.25	0.10	< 1%
10C	Swamps	45,199.32	28.09	68%
10D	Scrub-shrub wetlands	865.96	0.54	1%
9B	Sheltered, vegetated low banks	7,627.00	4.74	11%
8B	Sheltered, solid man-made structures	205.67	0.13	< 1%
7	Exposed tidal flats	4,809.57	2.99	7%
6B	Exposed riprap	1,722.64	1.07	3%
3A	Fine- to medium-grained sand beaches	1,031.24	0.64	2%
1B	Exposed, solid man-made structures	4,751.21	2.95	7%

Total ESI Shoreline: 66,754.56
Total ESI Shoreline: 41.48
Total Shoreline: 60,985.26
Total Shoreline: 37.89

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

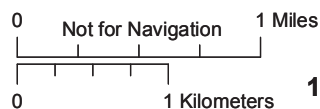




Map 17D
North Carolina



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



1:50,000



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											
SAV	Submerged aquatic veg	High Ecological Value				J	F	M	A	M	J	J	A	S	O	N	D

BIRDS

Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Juveniles	Molt
69	Raptor	Bald eagle	Nesting	T		1 Pair													Jan-Jun	-	-	-	-
154	Waterfowl	Black scoter	Wintering			-													-	Feb-Mar	Oct-Nov	-	-
	Waterfowl	Long-tailed duck	Wintering			-													-	Feb-Mar	Oct-Nov	-	-
	Waterfowl	Red-breasted merganser	Wintering			-													-	Feb-Mar	Oct-Nov	-	-
	Waterfowl	Redhead	Wintering			-													-	Feb-Mar	Oct-Nov	-	-
	Waterfowl	Surf scoter	Wintering			-													-	Feb-Mar	Oct-Nov	-	-
	Waterfowl	White-winged scoter	Wintering			-													-	Feb-Mar	Oct-Nov	-	-
317	Waterfowl	Bufflehead	Wintering			100S													-	Feb-Mar	Oct-Nov	-	-
	Waterfowl	Canvasback	Wintering			100S													-	Feb-Mar	Oct-Nov	-	-
	Waterfowl	Redhead	Wintering			100S													-	Feb-Mar	Oct-Nov	-	-
	Waterfowl	Ruddy duck	Wintering			1000S													-	Feb-Mar	Oct-Nov	-	-
	Waterfowl	Scaup	Wintering			1000S													-	Feb-Mar	Oct-Nov	-	-
	Waterfowl	Tundra swan	Wintering			100S													-	Feb-Mar	Oct-Nov	-	-

FISH

Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
557	Diadromous	Alewife	Spawning Area			Present													Mar-Jul	Mar-Jul	May-Aug	-	-
	Diadromous	American shad	Spawning Area			Present													Apr-Jun	Apr-Jun	May-Jul	Feb-May	-
	Diadromous	Blueback herring	Spawning Area			Present													Mar-Jul	Mar-Jul	May-Jul	-	-
572	Diadromous	Alewife	Spawning Area			Present													Mar-Jul	Mar-Jul	May-Aug	-	-
	Diadromous	Atlantic sturgeon	General Distribution	C		-													-	-	-	Jan-Dec	Jan-Dec
	Diadromous	Atlantic sturgeon	Spawning Area	C		-													Sep-May*	Sep-May*	Sep-May*	-	-
	Diadromous	Blueback herring	Spawning Area			Present													Mar-Jul	Mar-Jul	May-Jul	-	-
	Diadromous	Gizzard shad	Spawning Area			Present													Mar-May	Mar-May	Apr-Jun	May-Sep	-
	Diadromous	Striped bass	Spawning Area			Abundant													Apr-Jun	Apr-Jun	Apr-Jun	Jan-Dec	Jan-Dec
	Estuarine Nursery	Hogchoker	Spawning Area			Abundant													Apr-Oct	Apr-Oct	Apr-Oct	-	-
573	Diadromous	Alewife	Spawning Area			Present													Mar-Jul	Mar-Jul	May-Aug	-	-
	Diadromous	Atlantic sturgeon	General Distribution	C		-													-	-	-	Jan-Dec	Jan-Dec
	Diadromous	Atlantic sturgeon	Spawning Area	C		-													Sep-May*	Sep-May*	Sep-May*	-	-
	Diadromous	Blueback herring	Spawning Area			Present													Mar-Jul	Mar-Jul	May-Jul	May-Sep	-
	Diadromous	Gizzard shad	Spawning Area			Present													Mar-May	Mar-May	Apr-Jun	May-Sep	-

FISH (continued)

Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Eggs	Larvae	Juveniles	Adults
							J	F	M	A	M	J	J	A	S	O	N	D				
610	Diadromous	Striped bass	Spawning Area			Abundant													Apr-Jun	Apr-Jun	Jan-Dec	Jan-Dec
	Estuarine Nursery	Hogchoker	Spawning Area			Abundant													Apr-Oct	Apr-Oct	-	-

REPTILES & AMPHIBIANS


Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Hatch	Internest	Juveniles	Adults	
							J	F	M	A	M	J	J	A	S	O	N	D					
743	Snake	Rainbow snake	Vulnerable Occurrence			-													May-Sep	Aug-Nov	-	Jan-Dec	Jan-Dec

INVERTEBRATES

Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Eggs	Larvae	Juveniles	Adults
							J	F	M	A	M	J	J	A	S	O	N	D				
829	Bivalve	Alewite floater	Vulnerable Occurrence	T	T	-													Aug-Jun	-	Jan-Dec	Jan-Dec
	Bivalve	Eastern pondmussel	Vulnerable Occurrence	T	T	-													Jul-Sep	Jan-Dec	Jan-Dec	Jan-Dec
	Bivalve	Tidewater mucket	Vulnerable Occurrence	T	T	-													Jul-Sep	Jan-Dec	Jan-Dec	Jan-Dec
834	Crayfish	Chowanoke crayfish	Vulnerable Occurrence	C		-													Mar	-	Jan-Dec	Jan-Dec

WIDESPREAD IN MAPPED AREA (> 10 SQUARE KILOMETERS)

BIRDS

<div></div>	Subelement	Species	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				
	Waterfowl	American black duck	Wintering			-													-	Feb-Mar	Oct-Nov	-
		American coot	Wintering			1000S													-	Feb-Mar	Oct-Nov	-
		American coot	Wintering			100S													-	Feb-Mar	Oct-Nov	-
		American wigeon	Wintering			-													-	Feb-Mar	Oct-Nov	-
		Bufflehead	Wintering			-													-	Feb-Mar	Oct-Nov	-
		Canada goose	Wintering			-													-	Feb-Mar	Oct-Nov	-
		Canada goose	Wintering			1000S													-	Feb-Mar	Oct-Nov	-
		Canvasback	Wintering			-													-	Feb-Mar	Oct-Nov	-
		Gadwall	Wintering			100S													-	Feb-Mar	Oct-Nov	-
		Gadwall	Wintering			-													-	Feb-Mar	Oct-Nov	-
		Greater scaup	Wintering			-													-	Feb-Mar	Oct-Nov	-
		Green-winged teal	Wintering			-													-	Feb-Mar	Oct-Nov	-
		Hooded merganser	Wintering			100S													-	Feb-Mar	Oct-Nov	-
		Lesser scaup	Wintering			-													-	Feb-Mar	Oct-Nov	-
		Mallard	Wintering			High													-	Feb-Mar	Oct-Nov	-
		Mallard	Wintering			-													-	Feb-Mar	Oct-Nov	-
		Mallard	Wintering			100S													-	Feb-Mar	Oct-Nov	-
		Northern shoveler	Wintering			-													-	Feb-Mar	Oct-Nov	-
		Ring-necked duck	Wintering			100S													-	Feb-Mar	Oct-Nov	-
		Ring-necked duck	Wintering			-													-	Feb-Mar	Oct-Nov	-
		Scaup	Wintering			100S													-	Feb-Mar	Oct-Nov	-
		Tundra swan	Wintering			Extremely High													-	Feb-Mar	Oct-Nov	-
		Tundra swan	Wintering			1000S													-	Feb-Mar	Oct-Nov	-

North Carolina: Map 17D

BIRDS (continued)

Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Nest	Eggs	Larvae	Juveniles	Adults
						J	F	M	A	M	J	J	A	S	O	N	D					
	Tundra swan	Wintering			6000													-	Feb-Mar	Oct-Nov	Jul-Oct	-
	Wood duck	Wintering			High													-	Feb-Mar	Oct-Nov	Jul-Oct	-
	Wood duck	Wintering			-													-	Feb-Mar	Oct-Nov	Jul-Oct	-

FISH

Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
						J	F	M	A	M	J	J	A	S	O	N	D					
	Alewife	Nursery Area			Present													-	-	May-Aug	Jul-Oct	-
	American shad	Spawning Area			Present													Apr-Jun	Apr-Jun	May-Jul	Feb-May	-
	Atlantic sturgeon	Concentration Area	C		Common													-	-	-	Jan-Dec	Jan-Dec
	Blueback herring	Nursery Area			Present													-	-	May-Jul	Jul-Oct	-
	Gizzard shad	Spawning Area			Highly Abundant													Mar-May	Mar-May	Apr-Jun	May-Sep	-
	Striped bass	Nursery Area			Abundant													Apr-Jun	Apr-Jun	Apr-Jun	Jan-Dec	Jan-Dec

MARINE MAMMALS

Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Mating	Calving	Pupping	Molt
						J	F	M	A	M	J	J	A	S	O	N	D				
	Manatee	General Distribution	E	E	-													-	-	-	-

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				
	Waterfowl													Mar-Jun	-	-	-

FISH

Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
						J	F	M	A	M	J	J	A	S	O	N	D					
	American eel																	-	-	Jan-Dec	Jan-Dec	Sep-Dec
	American eel																	-	-	Jan-Jun	Jan-Dec	Aug-Dec
	American shad																	-	-	Mar-Jul	May-Nov	-
	Hickory shad																	Apr-Jun	-	-	-	Nov-Apr
	Striped bass																	Apr-Jun	Apr-Jun	Apr-Jun	Jan-Dec	Jan-Dec
	Atlantic croaker																	-	-	Sep-Jun	Jan-Dec	-
	Atlantic croaker																	-	-	Sep-Mar	Jan-Dec	Jan-Dec
	Atlantic menhaden																	-	-	Jan-Jun	Jan-Dec	-
	Bay anchovy																	Apr-Sep	Apr-Sep	Apr-Oct	Jan-Dec	Jan-Dec
	Black drum																	-	-	-	Jan-Dec	Jun-Nov
	Bluefish																	-	-	-	Jan-Dec	Jun-Oct
	Hogchoker																	-	-	-	May-Oct	Jan-Dec
	Ladyfish																	-	-	-	Apr-Oct	Sep-Oct
	Pinfish																	-	-	Dec-Mar	Jan-Dec	May-Oct
	Red drum																	-	-	-	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					
	Sheepshead													-	-	-	Jun-Sep	Jun-Sep
	Southern flounder													-	-	Dec-Mar	Jan-Dec	Jan-Dec
	Southern kingfish													-	-	-	May-Dec	Jul-Oct
	Spot													-	-	Jan-Mar	Jan-Dec	May-Oct
	Spotted seatrout													-	-	-	Jan-Dec	Jan-Dec
	Striped mullet													-	-	-	Mar-Jun*	-
	Striped mullet													-	-	-	Jan-Dec	Jan-Dec
	Summer flounder													-	-	-	Jan-Dec	Jan-Dec
	Weakfish													Mar-Oct	Mar-Oct	Oct-May	Jan-Dec	-
	White mullet													-	-	-	Jan-Dec	Mar-Oct
	White perch													Mar-Jun	Mar-Jun	May-Aug	Jun-Oct	-
	White perch													Apr-Jul	Apr-Jul	Apr-Aug	Jan-Dec	Jan-Dec
	Inland silverside													Mar-Aug	Mar-Aug	Jun-Sep	-	-
	Black crappie													Mar-May	Mar-May	Mar-May	Jan-Dec	Jan-Dec
	Bluegill													Apr-Oct	Apr-Oct	-	Jan-Dec	Jan-Dec
	Bowfin													Mar-Jun	Mar-Jun	-	Jan-Dec	Jan-Dec
	Largemouth bass													May-Jun	May-Jun	May-Jun	-	Jan-Dec
	Longnose gar													Mar-Sep	Mar-Sep	-	Jan-Dec	Jan-Dec
	Threadfin shad													Apr-Jul	Apr-Jul	Apr-Jul	-	-
	Yellow perch													Jan-Mar	Jan-Mar	Jan-Mar	Apr-Dec	Apr-Dec
	Yellow perch													-	-	-	Apr-Dec	Apr-Dec
	Atlantic spadefish													May-Jul	May-Jul	Jun-Aug	Jun-Oct	-
	Atlantic needlefish													-	-	-	Jul-Nov	Jul-Oct
	Spanish mackerel													-	-	-	-	Jul-Oct

INVERTEBRATES

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	Blue crab													-	-	May-Oct	-	Jan-Dec
	Blue crab													-	-	-	Jan-Dec	Jan-Dec
	Brown shrimp													-	-	Feb-Apr	Mar-Aug	-
	Pink shrimp													-	-	-	Jan-Dec	Sep-Nov
	White shrimp													-	-	Jun-Dec	Dec-Feb	-

MARINE MAMMALS

Subelement	Species	Monthly Presence												Mating	Calving	Pupping	Molt
		J	F	M	A	M	J	J	A	S	O	N	D				
	Bottlenose dolphin													Sep-Oct	Sep-Oct	-	-

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	75.64	0.12
10C	Swamps	4,945.74	7.73
10D	Scrub and Shrub Wetlands	192.94	0.30
9A	Sheltered Tidal Flats	0.19	0.00
7	Exposed Tidal Flats	148.95	0.23



ESI SHORELINE HABITAT TYPES

ESI Rank	Shoreline Habitat Classification	Length (Meters)	Length (Miles)	% of ESI Shoreline
10B	Freshwater marshes	272.23	0.17	< 1%
10C	Swamps	55,083.03	34.23	76%
10D	Scrub-shrub wetlands	732.46	0.46	1%
9A	Sheltered tidal flats	80.48	0.05	< 1%
9B	Sheltered, vegetated low banks	1,652.85	1.03	2%
8B	Sheltered, solid man-made structures	59.94	0.04	< 1%
7	Exposed tidal flats	10,583.66	6.58	15%
6B	Exposed riprap	401.15	0.25	1%
3A	Fine- to medium-grained sand beaches	808.85	0.50	1%
1B	Exposed, solid man-made structures	2,747.23	1.71	4%
Total ESI Shoreline:		72,421.88	45.00	
Total Shoreline:		60,648.16	37.69	

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



HUMAN USE RESOURCES

DISPLAYED ON MAP (POINTS)			
Map ID	Type	Name	Phone
1	BOAT RAMP	SANS SOUCI FERRY	252-792-3868
2	BOAT RAMP	WATER STREET LANDING	252-792-3868
3	EPA FACILITY	DOMTAR PAPER COMPANY LLC	252-793-8611
4	MARINA	PLYMOUTH LANDING MARINA (CITY DOCKS)	252-793-9101

DISPLAYED ON MAP (POLYGONS)			
Map ID	Type	Name	Phone
5	NATURE CONSERVANCY	ROANOKE RIVER PRESERVE	919-403-8558
6	WILDLIFE REFUGE	ROANOKE RIVER NATIONAL WILDLIFE REFUGE	252-794-3808

ALSO PRESENT IN MAPPED AREA (POLYGONS)			
Type	Name	Contact	Phone
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT; SHRIMP	DAVID DALE, SOUTHEAST REGION	727-824-5317
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT; SNAPPER GROUPER	DAVID DALE, SOUTHEAST REGION	727-824-5317
ESSENTIAL HABITAT	HAPC; SHRIMP	DAVID DALE, SOUTHEAST REGION	727-824-5317
ESSENTIAL HABITAT	HAPC; SNAPPER GROUPER	DAVID DALE, SOUTHEAST REGION	727-824-5317
STATE PROTECTED AREA	BLACK BEAR SANCTUARY	THE NATURE CONSERVANCY	

JURISDICTIONS			
COUNTY:	BERTIE, MARTIN, WASHINGTON	FEMA:	REGION I
COAST GUARD:	DISTRICT 5, SECTOR NORTH CAROLINA	EPA:	REGION 4
USACE:	SOUTH ATLANTIC DIVISION, WILMINGTON DISTRICT		

SHORELINE RESOURCES

ESI POLYGON HABITAT TYPES

ESI Rank	Habitat Classification	Area (Acres)	Area (Sq. Miles)
10B	Freshwater Marshes	435.08	0.68
10C	Swamps	22,085.42	34.51
10D	Scrub and Shrub Wetlands	433.11	0.68
9A	Sheltered Tidal Flats	146.49	0.23
7	Exposed Tidal Flats	84.84	0.13



ESI SHORELINE HABITAT TYPES

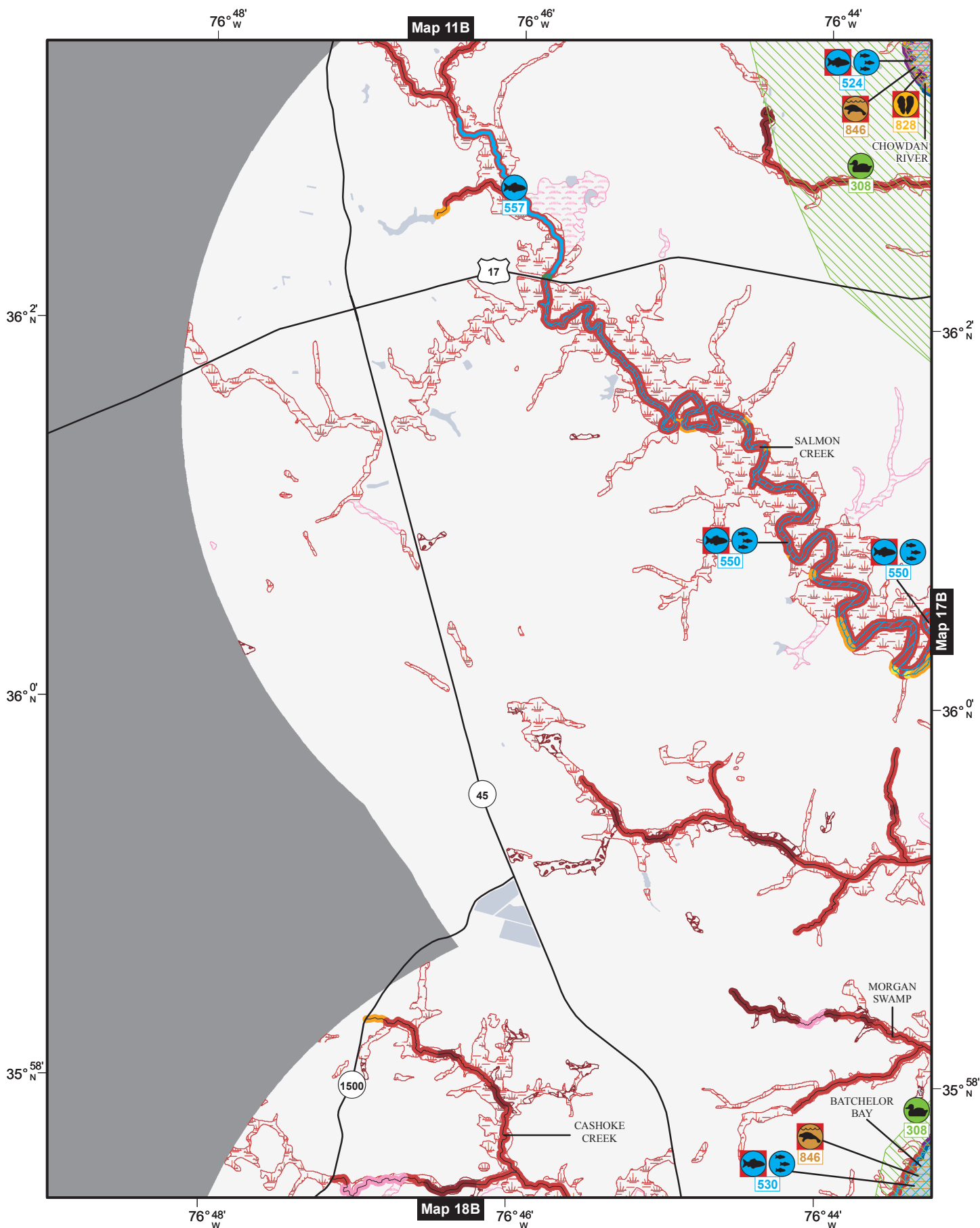
ESI Rank	Shoreline Habitat Classification	Length (Meters)	Length (Miles)	% of ESI Shoreline
10A	Salt- and brackish-water marshes	2,256.90	1.40	1%
10B	Freshwater marshes	3,791.94	2.36	1%
10C	Swamps	268,411.38	166.78	84%
10D	Scrub-shrub wetlands	5,709.03	3.55	2%
9A	Sheltered tidal flats	20,364.64	12.65	6%
9B	Sheltered, vegetated low banks	7,335.66	4.56	2%
8B	Sheltered, solid man-made structures	2,423.63	1.51	1%
8C	Sheltered riprap	1,213.08	0.75	< 1%
7	Exposed tidal flats	5,718.94	3.55	2%
6B	Exposed riprap	167.45	0.10	< 1%
3A	Fine- to medium-grained sand beaches	594.79	0.37	< 1%
1B	Exposed, solid man-made structures	815.91	0.51	< 1%

Total ESI Shoreline: 318,803.35 Total ESI Shoreline: 198.10
 Total Shoreline: 288,666.16 Total Shoreline: 179.37

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
North Carolina

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											
SAV	Submerged aquatic veg	High Ecological Value			Present	J	F	M	A	M	J	J	A	S	O	N	D

BIRDS

Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence											
308	Waterfowl	American coot	Wintering			100S	J	F	M	A	M	J	J	A	S	O	N	D
	Waterfowl	Canada goose	Wintering			1000S												
	Waterfowl	Gadwall	Wintering			100S												
	Waterfowl	Hooded merganser	Wintering			100S												
	Waterfowl	Mallard	Wintering			100S												
	Waterfowl	Ring-necked duck	Wintering			100S												
	Waterfowl	Scaup	Wintering			100S												
	Waterfowl	Tundra swan	Wintering			1000S												

FISH

Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence											
524	Diadromous	Alewife	Nursery Area			Present	J	F	M	A	M	J	J	A	S	O	N	D
	Diadromous	American shad	Spawning Area			Present												
	Diadromous	Atlantic sturgeon	General Distribution	C		-												
	Diadromous	Blueback herring	Nursery Area			Present												
	Diadromous	Gizzard shad	Spawning Area			Abundant												
	Diadromous	Striped bass	Nursery Area			Abundant												
	Estuarine Nursery	Hogchoker	Spawning Area			Abundant												
530	Diadromous	Alewife	Nursery Area			Present	J	F	M	A	M	J	J	A	S	O	N	D
	Diadromous	American shad	Spawning Area			Present												
	Diadromous	Atlantic sturgeon	Concentration Area	C		Common												
	Diadromous	Blueback herring	Nursery Area			Present												
	Diadromous	Gizzard shad	Spawning Area			Highly Abundant												
	Diadromous	Striped bass	Nursery Area			Abundant												
	Estuarine Nursery	Hogchoker	Spawning Area			Abundant												
550	Diadromous	Alewife	Spawning Area			Present	J	F	M	A	M	J	J	A	S	O	N	D
	Diadromous	American shad	Spawning Area			Present												
	Diadromous	Atlantic sturgeon	General Distribution	C		-												
	Diadromous	Blueback herring	Spawning Area			Present												
	Diadromous	Gizzard shad	Spawning Area			Abundant												
	Diadromous	Striped bass	Nursery Area			Abundant												

FISH (continued)

Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Eggs	Larvae	Juveniles	Adults
							J	F	M	A	M	J	J	A	S	O	N	D				
557	Estuarine Nursery	Hogchoker	Spawning Area			Abundant													Apr-Oct	Apr-Oct	-	-
	Diadromous	Alewife	Spawning Area			Present													Mar-Jul	May-Aug	-	-
	Diadromous	American shad	Spawning Area			Present													Apr-Jun	May-Jul	Feb-May	-
	Diadromous	Blueback herring	Spawning Area			Present													Mar-Jul	May-Jul	-	-

INVERTEBRATES

Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Eggs	Larvae	Juveniles	Adults
							J	F	M	A	M	J	J	A	S	O	N	D				
828	Bivalve	Alewife floater	Vulnerable Occurrence	T	T	-													Aug-Jun	-	Jan-Dec	Jan-Dec
	Bivalve	Eastern pondmussel	Vulnerable Occurrence	T	T	-													Jul-Sep	-	Jan-Dec	Jan-Dec

MARINE MAMMALS

Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Calving	Pupping	Molt																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
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WIDESPREAD IN MAPPED AREA (> 10 SQUARE KILOMETERS)

BIRDS

<div><div></div></div>	Subelement	Species	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					
<div><div></div></div>	Waterfowl	American black duck	Wintering			-												-	Feb-Mar	Oct-Nov	-	-	
		American wigeon	Wintering			-													-	Feb-Mar	Oct-Nov	-	-
		Bufflehead	Wintering			-													-	Feb-Mar	Oct-Nov	-	-
		Canada goose	Wintering			-													-	Feb-Mar	Oct-Nov	-	-
		Canvasback	Wintering			-													-	Feb-Mar	Oct-Nov	-	-
		Gadwall	Wintering			-													-	Feb-Mar	Oct-Nov	-	-
		Greater scaup	Wintering			-													-	Feb-Mar	Oct-Nov	-	-
		Green-winged teal	Wintering			-													-	Feb-Mar	Oct-Nov	-	-
		Lesser scaup	Wintering			-													-	Feb-Mar	Oct-Nov	-	-
		Mallard	Wintering			High													-	Feb-Mar	Oct-Nov	-	-
		Northern shoveler	Wintering			-													-	Feb-Mar	Oct-Nov	-	-
		Ring-necked duck	Wintering			-													-	Feb-Mar	Oct-Nov	-	-
		Tundra swan	Wintering			6000													-	Feb-Mar	Oct-Nov	-	-
		Wood duck	Wintering			High													-	Feb-Mar	Oct-Nov	-	-




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				
	Waterfowl													Mar-Jun	-	-	-
	Wood duck																

FISH

Monthly Presence

Subelement	Species	J	F	M	A	M	J	J	A	S	O	N	D	Spawn	Eggs	Larvae	Juveniles	Adults
	American eel													-	-	Jan-Jun	Jan-Dec	Aug-Dec
	American eel													-	-	Jan-Dec	Jan-Dec	Sep-Dec
	Hickory shad													Apr-Jun	-	-	-	Nov-Apr
	Hickory shad													Apr-Jun	-	-	-	Jan-Apr
	Striped bass													Apr-Jun	Apr-Jun	Apr-Jun	Jan-Dec	Jan-Dec
	Atlantic croaker													-	-	Sep-Jun	Jan-Dec	Mar-Oct
	Atlantic croaker													-	-	Sep-Mar	Jan-Dec	Jan-Dec
	Atlantic menhaden													-	-	Jan-Jun	Jan-Dec	-
	Atlantic menhaden													-	-	-	-	Feb-Apr
	Bay anchovy													Apr-Sep	Apr-Sep	Apr-Oct	Jan-Dec	Jan-Dec
	Black drum													-	-	-	Jan-Dec	Jun-Nov
	Bluefish													-	-	-	May-Oct	Jun-Oct
	Ladyfish													-	-	-	Apr-Oct	Sep-Oct
	Pinfish													-	-	Dec-Mar	Jan-Dec	May-Oct
	Red drum													-	-	-	Jan-Dec	Jan-Dec
	Red drum													-	-	-	Jan-Dec	-
	Sheepshead													-	-	-	Jun-Sep	Jun-Sep
	Southern flounder													-	-	Dec-Mar	Jan-Dec	Jan-Dec
	Southern kingfish													-	-	-	May-Dec	Jul-Oct
	Spot													-	-	Jan-Mar	Jan-Dec	May-Oct
	Spotted seatrout													-	-	-	Jan-Dec	Jan-Dec
	Striped mullet													-	-	-	May-Sep	-
	Striped mullet													-	-	-	Jan-Dec	Jan-Dec
	Summer flounder													-	-	Oct-May	Jan-Dec	-
	Weakfish													Mar-Oct	Mar-Oct	-	Jan-Dec	Mar-Oct
	White perch													Apr-Jul	Apr-Jul	Apr-Aug	Jan-Dec	Jan-Dec
	White perch													Mar-Jun	Mar-Jun	May-Aug	Jun-Oct	-
	Inland silverside													Mar-Aug	Mar-Aug	Jun-Sep	-	-
	Black crappie													Mar-May	Mar-May	Mar-May	Jan-Dec	Jan-Dec
	Bluegill													Apr-Oct	Apr-Oct	-	Jan-Dec	Jan-Dec
	Bowfin													Mar-Jun	Mar-Jun	-	Jan-Dec	Jan-Dec
	Largemouth bass													May-Jun	May-Jun	May-Jun	-	Jan-Dec
	Longnose gar													Mar-Sep	Mar-Sep	-	Jan-Dec	Jan-Dec
	Threadfin shad													Apr-Jul	Apr-Jul	Apr-Jul	-	-
	Yellow perch													Jan-Mar	Jan-Mar	Jan-Mar	Apr-Dec	Apr-Dec
	Atlantic spadefish													-	-	-	Jun-Aug	-
	Atlantic needlefish													May-Jul	May-Jul	Jun-Aug	Jun-Oct	-
	Spanish mackerel													-	-	-	Jul-Nov	Jul-Oct

INVERTEBRATES

Monthly Presence

Subelement	Species	J	F	M	A	M	J	J	A	S	O	N	D	Spawn	Eggs	Larvae	Juveniles	Adults
	Blue crab													-	-	-	Jan-Dec	Jan-Dec
	Brown shrimp													-	-	Feb-Apr	Mar-Aug	-

MARINE MAMMALS

Subelement	Species	Monthly Presence												Molt
		J	F	M	A	M	J	J	A	S	O	N	D	
Dolphin	Bottlenose dolphin													

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	143.95	0.22
10C	Swamps	1,846.31	2.88
10D	Scrub and Shrub Wetlands	146.54	0.23
7	Exposed Tidal Flats	3.41	0.01

ESI SHORELINE HABITAT TYPES

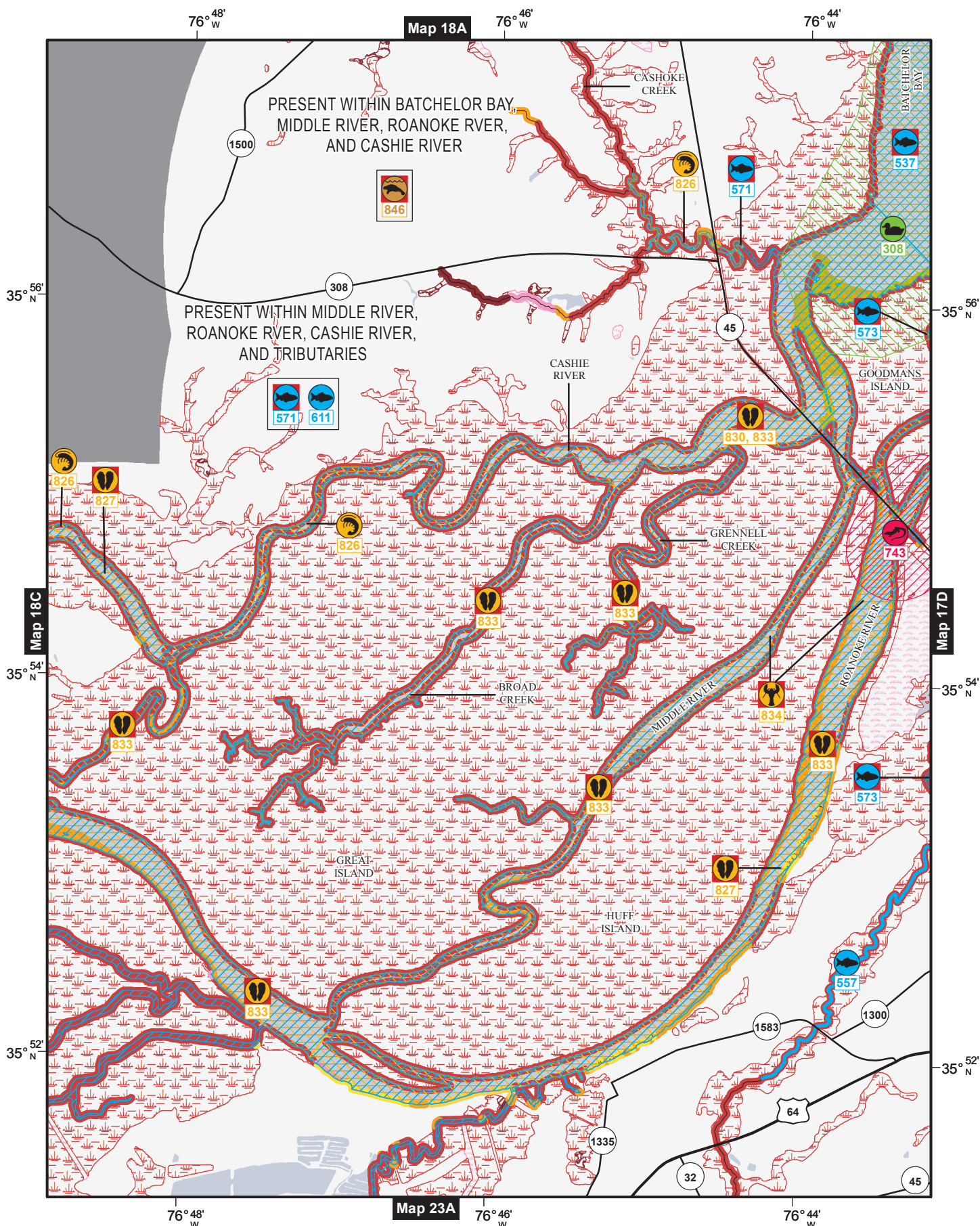
ESI Rank	Shoreline Habitat Classification	Length (Meters)	Length (Miles)	% of ESI Shoreline
10B	Freshwater marshes	1,289.66	0.80	3%
10C	Swamps	41,456.99	25.76	82%
10D	Scrub-shrub wetlands	4,033.90	2.51	8%
9B	Sheltered, vegetated low banks	1,833.58	1.14	4%
8B	Sheltered, solid man-made structures	80.96	0.05	< 1%
7	Exposed tidal flats	564.57	0.35	1%
6B	Exposed riprap	167.45	0.10	< 1%
3A	Fine- to medium-grained sand beaches	594.82	0.37	1%
1B	Exposed, solid man-made structures	817.05	0.51	2%

Total ESI Shoreline: 50,838.98 Total ESI Shoreline: 31.59
Total Shoreline: 49,804.20 Total Shoreline: 30.95

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
North Carolina

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	S	F	Concentration	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Juveniles	Adults
							J	F	M	A	M	J	J	A	S	O	N	D					
308	Waterfowl	American coot	Wintering			100S													-	Feb-Mar	Oct-Nov	-	-
	Waterfowl	Canada goose	Wintering			1000S													-	Feb-Mar	Oct-Nov	-	-
	Waterfowl	Gadwall	Wintering			100S													-	Feb-Mar	Oct-Nov	-	-
	Waterfowl	Hooded merganser	Wintering			100S													-	Feb-Mar	Oct-Nov	-	-
	Waterfowl	Mallard	Wintering			100S													-	Feb-Mar	Oct-Nov	-	-
	Waterfowl	Ring-necked duck	Wintering			100S													-	Feb-Mar	Oct-Nov	-	-
	Waterfowl	Scaup	Wintering			100S													-	Feb-Mar	Oct-Nov	-	-
	Waterfowl	Tundra swan	Wintering			1000S													-	Feb-Mar	Oct-Nov	-	-

FISH

Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
							J	F	M	A	M	J	J	A	S	O	N	D					
537	Diadromous	Alewife	Nursery Area			Present													-	-	May-Aug	Jul-Oct	-
	Diadromous	Atlantic sturgeon	Concentration Area	C		Common													-	-	-	Jan-Dec	Jan-Dec
	Diadromous	Blueback herring	Nursery Area			Present													-	-	May-Jul	Jul-Oct	-
557	Diadromous	Gizzard shad	Spawning Area			Highly Abundant													Mar-May	Mar-May	Apr-Jun	May-Sep	-
	Diadromous	Alewife	Spawning Area			Present													Mar-Jul	Mar-Jul	May-Aug	-	-
	Diadromous	American shad	Spawning Area			Present													Apr-Jun	Apr-Jun	May-Jul	Feb-May	-
	Diadromous	Blueback herring	Spawning Area			Present													Mar-Jul	Mar-Jul	May-Jul	-	-
571	Diadromous	Alewife	Spawning Area			Present													Mar-Jul	Mar-Jul	May-Aug	-	-
	Diadromous	Atlantic sturgeon	General Distribution	C		-													-	-	-	Jan-Dec	Jan-Dec
	Diadromous	Atlantic sturgeon	Spawning Area	C		-													Sep-May*	Sep-May*	Sep-May*	-	-
	Diadromous	Blueback herring	Spawning Area			Present													Mar-Jul	Mar-Jul	May-Jul	-	-
573	Diadromous	Gizzard shad	Spawning Area			Present													Mar-May	Mar-May	Apr-Jun	May-Sep	-
	Diadromous	Alewife	Spawning Area			Present													Mar-Jul	Mar-Jul	May-Aug	-	-
	Diadromous	Atlantic sturgeon	General Distribution	C		-													-	-	-	Jan-Dec	Jan-Dec
	Diadromous	Atlantic sturgeon	Spawning Area	C		-													Sep-May*	Sep-May*	Sep-May*	-	-
611	Diadromous	Blueback herring	Spawning Area			Present													Mar-Jul	Mar-Jul	May-Jul	-	-
	Diadromous	Gizzard shad	Spawning Area			Present													Mar-May	Mar-May	Apr-Jun	May-Sep	-
	Diadromous	Striped bass	Spawning Area			Abundant													Apr-Jun	Apr-Jun	Apr-Jun	Jan-Dec	Jan-Dec
	Diadromous	Striped bass	Spawning Area			Abundant													Apr-Jun	Apr-Jun	Apr-Jun	Jan-Dec	Jan-Dec

REPTILES & AMPHIBIANS

Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Nest	Hatch	Internest	Juveniles	Adults
							J	F	M	A	M	J	J	A	S	O	N	D					
743	Snake	Rainbow snake	Vulnerable Occurrence			-													May-Sep	Aug-Nov	-	Jan-Dec	Jan-Dec

INVERTEBRATES


Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Eggs	Larvae	Juveniles	Adults
							J	F	M	A	M	J	J	A	S	O	N	D				
826	Shrimp	Brown shrimp	Nursery Area			-													-	Feb-Apr	Mar-Aug	-
827	Bivalve	Eastern pondmussel	Vulnerable Occurrence	T		-													Jan-Dec	-	Jan-Dec	Jan-Dec
830	Bivalve	Alewife floater	Vulnerable Occurrence	T	T	-													Aug-Jun	-	Jan-Dec	Jan-Dec
833	Bivalve	Tidewater mucket	Vulnerable Occurrence	T		-													Jul-Sep	-	Jan-Dec	Jan-Dec
834	Crayfish	Chowanoke crayfish	Vulnerable Occurrence	C		-													Mar	-	Jan-Dec	Jan-Dec

MARINE MAMMALS


Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Calving	Pupping	Molt																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
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WIDESPREAD IN MAPPED AREA (> 10 SQUARE KILOMETERS)

BIRDS

Subelement	Species	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				
	American black duck	Wintering			-													-	Feb-Mar	Oct-Nov	-
	American coot	Wintering			1000S													-	Feb-Mar	Oct-Nov	-
	American wigeon	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Bufflehead	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Canada goose	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Canvasback	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Gadwall	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Greater scaup	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Green-winged teal	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Lesser scaup	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Mallard	Wintering			High													-	Feb-Mar	Oct-Nov	-
	Northern shoveler	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Ring-necked duck	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Tundra swan	Wintering			6000													-	Feb-Mar	Oct-Nov	-
	Wood duck	Wintering			High													-	Feb-Mar	Oct-Nov	-







FISH

Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
						J	F	M	A	M	J	J	A	S	O	N	D					
	Diadromous	American shad	Spawning Area		Present													Apr-Jun	Apr-Jun	May-Jul	Feb-May	-
		Striped bass	Nursery Area		Abundant													Apr-Jun	Apr-Jun	Apr-Jun	Jan-Dec	Jan-Dec
	Estuarine Nursery	Hogchoker	Spawning Area		Abundant													Apr-Oct	Apr-Oct	Apr-Oct	-	-

Monthly Presence

[illegible]

Monthly Presence

Subelement	Species	J F M A M J J A S O N D												Spawn	Eggs	Larvae	Juveniles	Adults	
		J	F	M	A	M	J	J	A	S	O	N	D						
	Diadromous	American eel													-		Jan-Jun	Jan-Dec	Aug-Dec
		American eel													-		Jan-Dec	Jan-Dec	Sep-Dec
		Hickory shad													Apr-Jun		-	-	Nov-Apr
		Striped bass													Apr-Jun	Apr-Jun	Apr-Jun	Jan-Dec	Jan-Dec
	Estuarine Nursery	Atlantic croaker													-		Sep-Mar	Jan-Dec	Jan-Dec
		Atlantic croaker													-		Sep-Jun	Jan-Dec	-
		Atlantic menhaden													-		Jan-Jun	Jan-Dec	-
		Bay anchovy													Apr-Sep	Apr-Sep	Apr-Oct	Jan-Dec	Jan-Dec
		Black drum													-		-	Jan-Dec	Jun-Nov
		Bluefish													-		-	May-Oct	Jun-Oct
		Ladyfish													-		-	Apr-Oct	Sep-Oct
		Pinfish													-		Dec-Mar	Jan-Dec	May-Oct
		Red drum													-		-	Jan-Dec	-
		Sheepshead													-		-	Jun-Sep	Jun-Sep
		Southern flounder													-		Dec-Mar	Jan-Dec	Jan-Dec
		Southern kingfish													-		-	May-Dec	Jul-Oct
		Spot													-		Jan-Mar	Jan-Dec	May-Oct
		Spotted seatrout													-		-	Jan-Dec	Jan-Dec
		Striped mullet													-		-	Mar-Jun*	-
		Striped mullet													-		-	Jan-Dec	Jan-Dec
		Summer flounder													-		-	Jan-Dec	Jan-Dec
		Weakfish													-		Oct-May	Jan-Dec	-
		White perch													Mar-Oct	Mar-Oct	-	Jan-Dec	Mar-Oct
		White perch													Mar-Jun	Mar-Jun	May-Aug	Jun-Oct	-
	Estuarine Resident	Inland silverside													Apr-Jul	Apr-Jul	Apr-Aug	Jan-Dec	Jan-Dec
		Black crappie													Mar-Aug	Mar-Aug	Jun-Sep	-	-
		Bluegill													Mar-May	Mar-May	Mar-May	Jan-Dec	Jan-Dec
		Bowfin													Apr-Oct	Apr-Oct	-	Jan-Dec	Jan-Dec
		Largemouth bass												Mar-Jun	Mar-Jun	-	Jan-Dec	Jan-Dec	
		Longnose gar												May-Jun	May-Jun	May-Jun	-	Jan-Dec	
		Threadfin shad												Mar-Sep	Mar-Sep	-	Jan-Dec	Jan-Dec	
		Yellow perch												Apr-Jul	Apr-Jul	Apr-Jul	-	-	
	Marine Benthic	Atlantic spadefish												Jan-Mar	Jan-Mar	Jan-Mar	Apr-Dec	Apr-Dec	
		Atlantic needlefish												-	-	-	Jun-Aug	Jun-Oct	-
			Spanish mackerel												May-Jul	May-Jul	Jun-Aug	Jun-Oct	-
															-	-	-	Jul-Nov	Jul-Oct

INVERTEBRATES

Subelement	Species	Monthly Presence												Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D				
Crab	Blue crab													-	-	Jan-Dec	Jan-Dec
Shrimp	Brown shrimp													-	Feb-Apr	Mar-Aug	-

MARINE MAMMALS

Subelement	Species	Monthly Presence												Mating	Calving	Pupping	Molt
		J	F	M	A	M	J	J	A	S	O	N	D				
Dolphin	Bottlenose dolphin													Sep-Oct	Sep-Oct	-	-

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)
10B	Freshwater Marshes	207.75
10C	Swamps	12,331.23
10D	Scrub and Shrub Wetlands	40.30
9A	Sheltered Tidal Flats	94.81
7	Exposed Tidal Flats	81.44

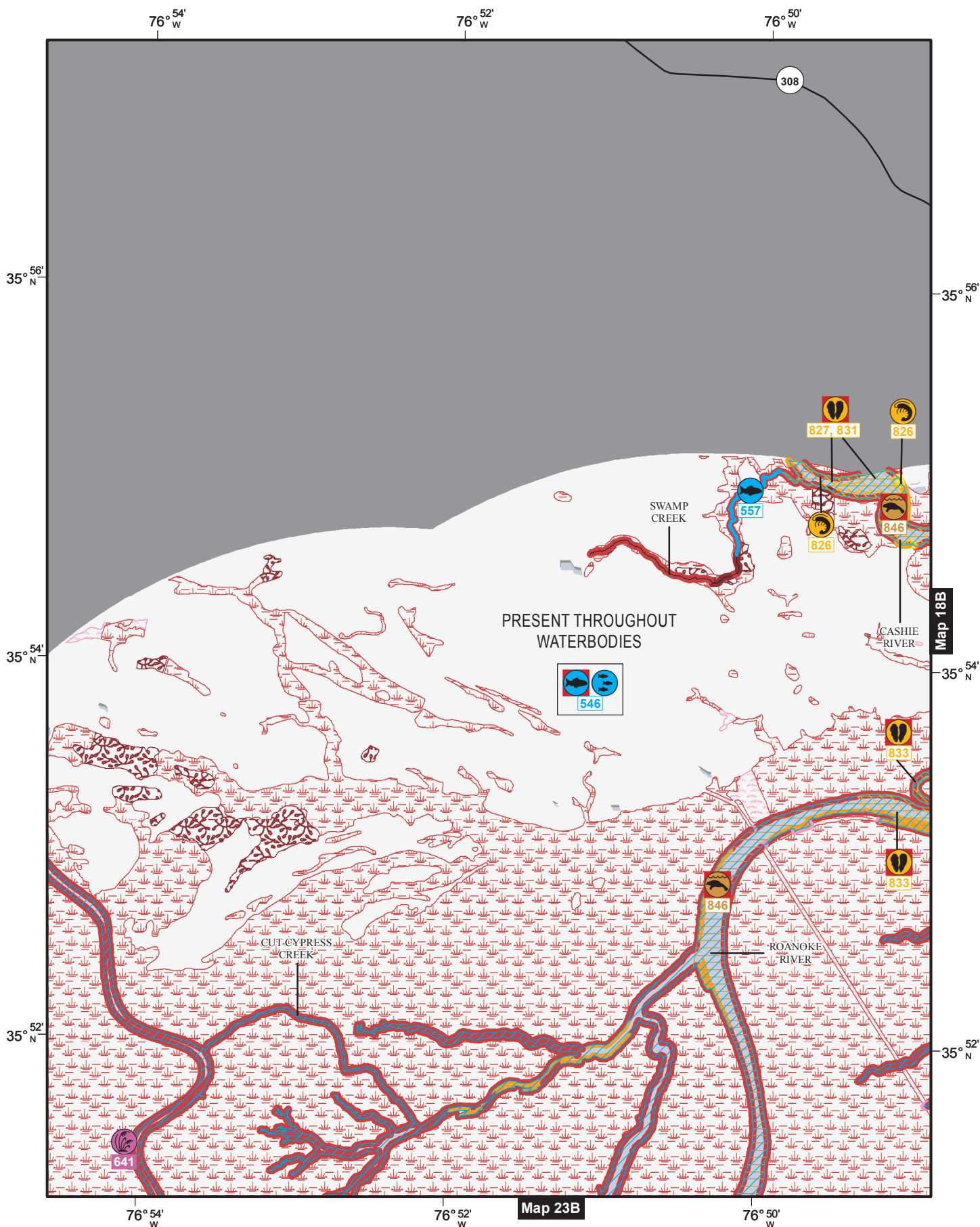
ESI SHORELINE HABITAT TYPES		
ESI Rank	Shoreline Habitat Classification	% of ESI Shoreline
10A	Salt- and brackish-water marshes	1%
10B	Freshwater marshes	1%
10C	Swamps	84%
10D	Scrub-shrub wetlands	1%
9A	Sheltered tidal flats	6%
9B	Sheltered, vegetated low banks	2%
8B	Sheltered, solid man-made structures	1%
8C	Sheltered riprap	1%
7	Exposed tidal flats	3%

Total ESI Shoreline: 194,949.86
Total ESI Shoreline: 121.14
Total Shoreline: 174,105.90
Total Shoreline: 108.18

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



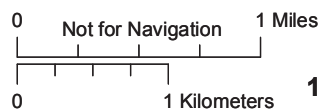


Map 18C

North Carolina



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



1:50,000



BIOLOGICAL RESOURCES

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

DISPLAYED ON MAP

FISH

Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
							J	F	M	A	M	J	J	A	S	O	N	D					
546	Diadromous	Alewife	Spawning Area			Present													Mar-Jul	Mar-Jul	May-Aug	-	-
	Diadromous	American shad	Spawning Area			Present													Apr-Jun	Apr-Jun	May-Jul	Feb-May	-
	Diadromous	Atlantic sturgeon	General Distribution	C		-													Sep-May*	Sep-May*	-	Jan-Dec	Jan-Dec
	Diadromous	Atlantic sturgeon	Spawning Area	C		-													Mar-Jul	Mar-Jul	May-Jul	-	-
	Diadromous	Blueback herring	Spawning Area			Present													Mar-May	Mar-May	Apr-Jun	May-Sep	-
	Diadromous	Gizzard shad	Spawning Area			Present													Apr-Jun	Apr-Jun	Apr-Jun	Jan-Dec	Jan-Dec
	Diadromous	Striped bass	Nursery Area			Abundant													Apr-Jun	Apr-Jun	Apr-Jun	Jan-Dec	Jan-Dec
	Diadromous	Striped bass	Spawning Area			Abundant													Apr-Jun	Apr-Jun	Apr-Jun	Jan-Dec	Jan-Dec
	Estuarine Nursery	Hogchoker	Spawning Area			Abundant													Apr-Oct	Apr-Oct	May-Aug	-	-
	Diadromous	Alewife	Spawning Area			Present													Mar-Jul	Mar-Jul	May-Jul	Feb-May	-
557	Diadromous	American shad	Spawning Area			Present													Apr-Jun	Apr-Jun	May-Jul	-	-
	Diadromous	Blueback herring	Spawning Area			Present													Mar-Jul	Mar-Jul	May-Jul	-	-

HABITATS & RARE PLANTS

Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence											
641	Wetland	Carolina grasswort	Vulnerable Occurrence			Current	J	F	M	A	M	J	J	A	S	O	N	D


INVERTEBRATES

Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
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826	Shrimp	Brown shrimp	Nursery Area			-											-																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									

MARINE MAMMALS

Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Mating	Calving	Pupping	Molt
846	Manatee	West Indian manatee	General Distribution	E	E	-	J	F	M	A	M	J	J	A	S	O	N	D				

BIRDS




Subelement	Species	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				
	American black duck	Wintering			-													-	Feb-Mar	Oct-Nov	-
	American coot	Wintering			1000S													-	Feb-Mar	Oct-Nov	-
	American wigeon	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Bufflehead	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Canada goose	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Canvasback	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Gadwall	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Greater scaup	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Green-winged teal	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Lesser scaup	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Mallard	Wintering			High													-	Feb-Mar	Oct-Nov	-
	Northern shoveler	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Ring-necked duck	Wintering			-													-	Feb-Mar	Oct-Nov	-
	Tundra swan	Wintering			6000													-	Feb-Mar	Oct-Nov	-
	Wood duck	Wintering			High													-	Feb-Mar	Oct-Nov	-

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				
	Wood duck													Mar-Jun	-	-	-

FISH

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	American eel													-	-	Jan-Dec	Jan-Dec	Sep-Dec
	Atlantic croaker													-	-	Sep-Jun	Jan-Dec	Jan-Dec
	Bay anchovy													Apr-Sep	Apr-Sep	Apr-Oct	Jan-Dec	Jan-Dec
	Southern flounder													-	-	Dec-Mar	Jan-Dec	Jan-Dec
	Striped mullet													-	-	-	Mar-Jun*	-
	Summer flounder													-	-	Oct-May	Jan-Dec	-
	White perch													Mar-Jun	Mar-Jun	May-Aug	Jun-Oct	-
	Inland silverside													Mar-Aug	Mar-Aug	Jun-Sep	-	-
	Black crappie													Mar-May	Mar-May	Mar-May	Jan-Dec	Jan-Dec
	Bluegill													Apr-Oct	Apr-Oct	-	Jan-Dec	Jan-Dec
	Bowfin													Mar-Jun	Mar-Jun	-	Jan-Dec	Jan-Dec
	Largemouth bass													May-Jun	May-Jun	May-Jun	-	Jan-Dec
	Longnose gar													Mar-Sep	Mar-Sep	-	Jan-Dec	Jan-Dec
	Threadfin shad													Apr-Jul	Apr-Jul	Apr-Jul	-	-
	Yellow perch													Jan-Mar	Jan-Mar	Jan-Mar	Apr-Dec	Apr-Dec
	Atlantic needlefish													May-Jul	May-Jul	Jun-Aug	Jun-Oct	-

INVERTEBRATES

Subelement	Species	Monthly Presence											
		J	F	M	A	M	J	J	A	S	O	N	D
Crab	Blue crab												
Shrimp	Brown shrimp												

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)
10B	Freshwater Marshes	83.41
10C	Swamps	7,902.88
10D	Scrub and Shrub Wetlands	246.28
9A	Sheltered Tidal Flats	51.68

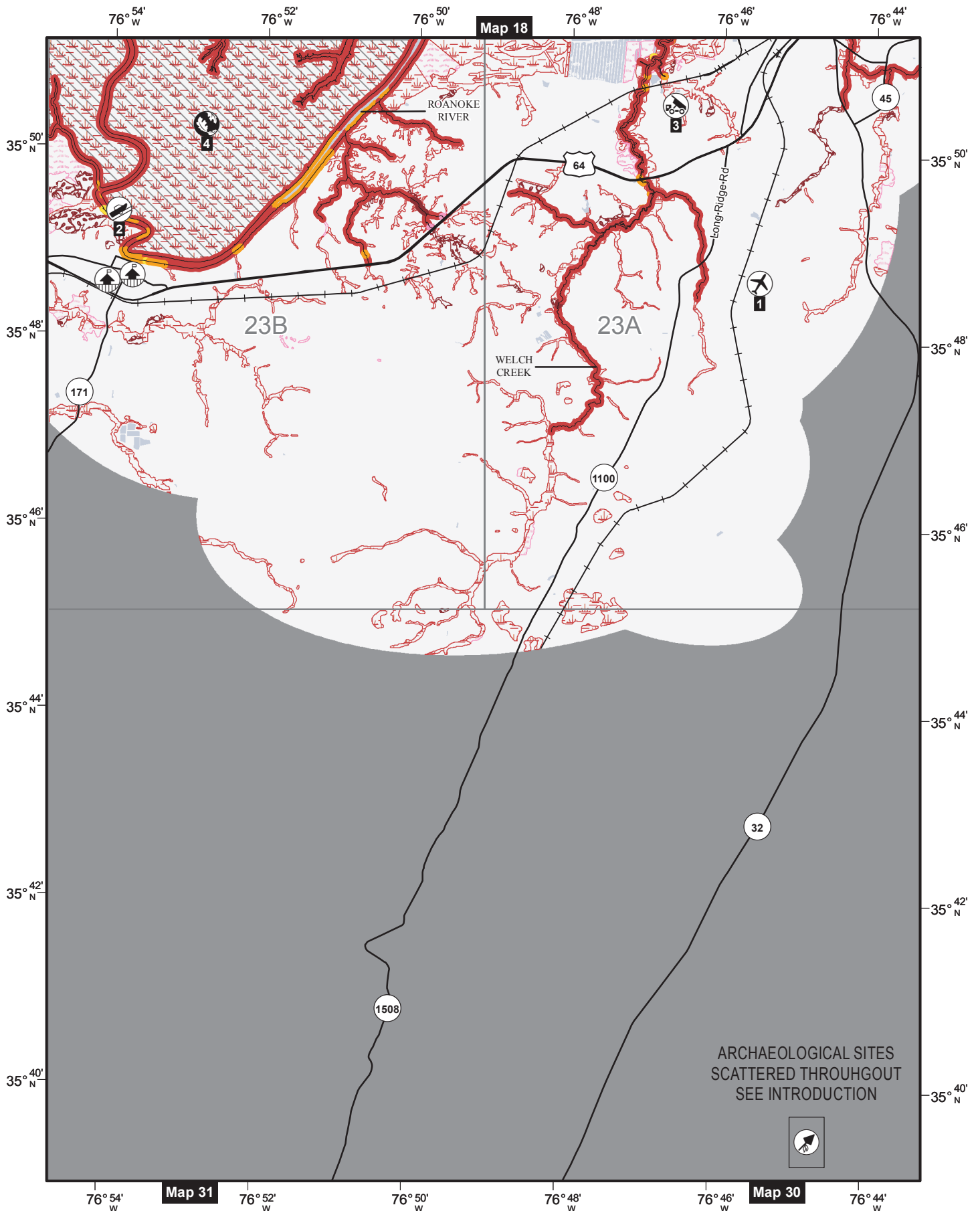
ESI SHORELINE HABITAT TYPES		
ESI Rank	Shoreline Habitat Classification	Length (Meters)
10B	Freshwater marshes	506.38
10C	Swamps	62,644.88
10D	Scrub-shrub wetlands	664.38
9A	Sheltered tidal flats	8,259.17
9B	Sheltered, vegetated low banks	648.15
8B	Sheltered, solid man-made structures	265.23

Total ESI Shoreline: 72,988.20
Total ESI Shoreline: 45.35
Total Shoreline: 64,729.03
Total Shoreline: 40.22

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





HUMAN USE RESOURCES

DISPLAYED ON MAP (POINTS)			
Map ID	Type	Name	Phone
1	AIRPORT	PLYMOUTH MUNICIPAL	252-793-9801
2	BOAT RAMP	ASTORIA LANDING, JAMESVILLE	252-792-3868
3	LANDFILL	DOMTAR PAPER COMPANY LANDFILL	252-793-8163

DISPLAYED ON MAP (POLYGONS)		
Map ID	Type	Phone
4	NATURE CONSERVANCY	919-403-8558

ALSO PRESENT IN MAPPED AREA (POLYGONS)			
Type	Name	Contact	Phone
ESSENTIAL HABITAT	ESSENTIAL FISH HABITAT; SNAPPER GROUPE	DAVID DALE, SOUTHEAST REGION	727-824-5317
STATE PROTECTED AREA	GAME LAND	NC WILDLIFE RESOURCES COMMISSION	

JURISDICTIONS			
COUNTY:	BERTIE, MARTIN, WASHINGTON	FEMA:	REGION I
COAST GUARD:	DISTRICT 5, SECTOR NORTH CAROLINA	EPA:	REGION 4
USACE:	SOUTH ATLANTIC DIVISION, WILMINGTON DISTRICT		

ESI POLYGON HABITAT TYPES

<i>ESI Rank</i>	<i>Habitat Classification</i>	<i>Area (Acres)</i>	<i>Area (Sq. Miles)</i>
10B	Freshwater Marshes	544.71	0.85
10C	Swamps	8,468.28	13.23
10D	Scrub and Shrub Wetlands	362.96	0.57
9A	Sheltered Tidal Flats	29.75	0.05



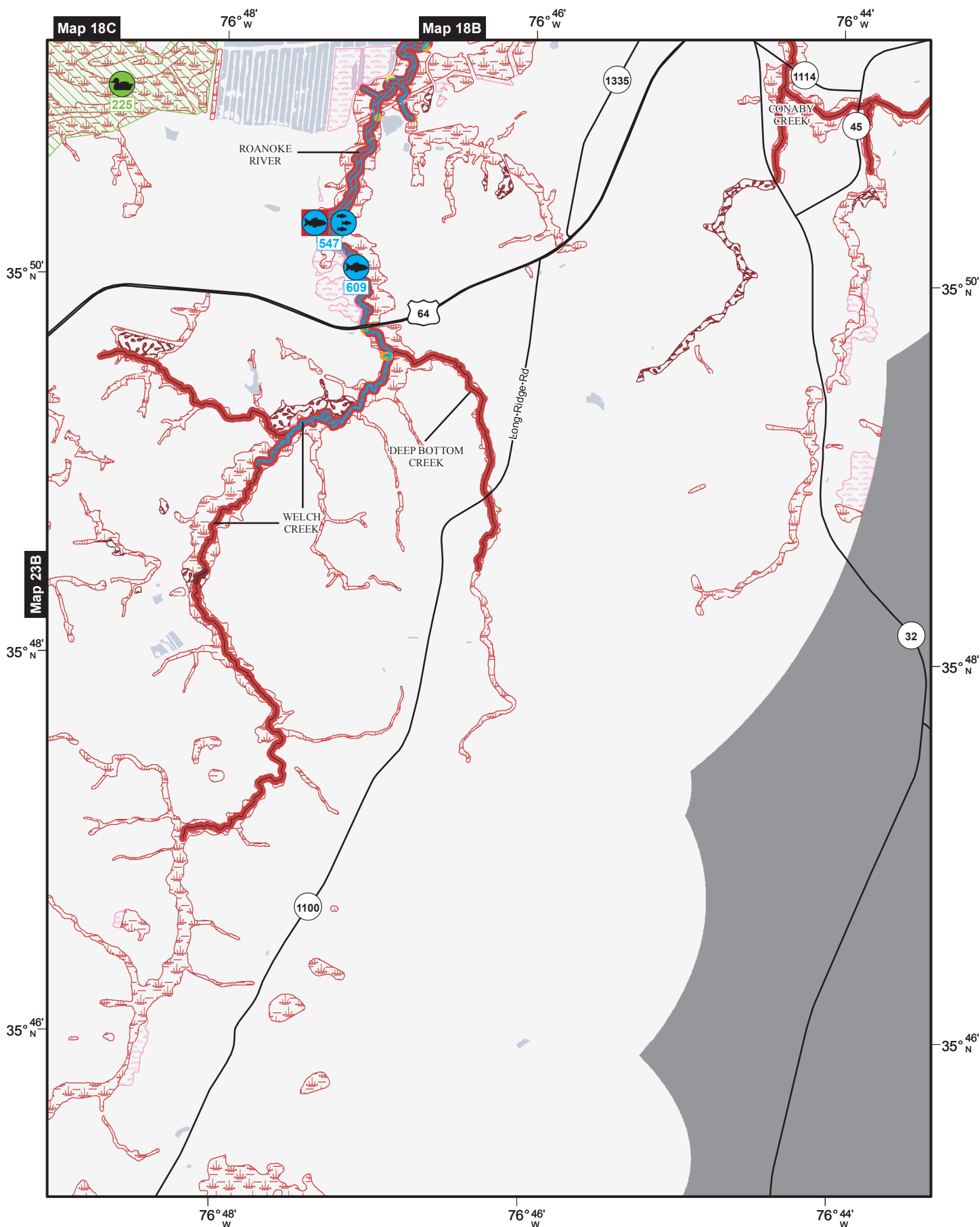
ESI SHORELINE HABITAT TYPES

<i>ESI Rank</i>	<i>Shoreline Habitat Classification</i>	<i>Length (Meters)</i>	<i>Length (Miles)</i>	<i>% of ESI Shoreline</i>
10B	Freshwater marshes	1,512.54	0.94	2%
10C	Swamps	82,753.78	51.42	88%
10D	Scrub-shrub wetlands	685.96	0.43	1%
9A	Sheltered tidal flats	6,777.55	4.21	7%
9B	Sheltered, vegetated low banks	2,465.14	1.53	3%
8B	Sheltered, solid man-made structures	197.98	0.12	< 1%
Total ESI Shoreline:		94,392.95	58.65	
Total Shoreline:		87,615.39	54.44	

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

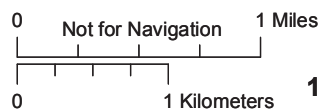




Map 23A North Carolina



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



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Map 23A
North Carolina

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	S	F	Concentration	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Juveniles	Adults	Molt
225	Waterfowl	American coot	Wintering			1000S	J	F	M	A	M	J	J	A	S	O	N	D		Feb-Mar	Oct-Nov			-

FISH

Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
							J	F	M	A	M	J	J	A	S	O	N	D					
547	Diadromous	Alewife	Spawning Area			Present										Mar-Jul	Mar-Jul	May-Aug	-	-			
	Diadromous	American shad	Spawning Area			Present										Apr-Jun	Apr-Jun	May-Jul	Feb-May	-			
	Diadromous	Atlantic sturgeon	General Distribution	C		-										-	-	-	Jan-Dec	Jan-Dec			
	Diadromous	Atlantic sturgeon	Spawning Area	C		-										Sep-May*	Sep-May*	Sep-May*	-	-			
	Diadromous	Blueback herring	Spawning Area			Present										Mar-Jul	Mar-Jul	May-Jul	-	-			
	Diadromous	Gizzard shad	Spawning Area			Present										Mar-May	Mar-May	Apr-Jun	May-Sep	-			
	Diadromous	Striped bass	Spawning Area			Abundant										Apr-Jun	Apr-Jun	Apr-Jun	Jan-Dec	Jan-Dec			
	Estuarine Nursery	Hogchoker	Spawning Area			Abundant										Apr-Oct	Apr-Oct	Apr-Oct	-	-			
609	Diadromous	Striped bass	Nursery Area			Abundant									Apr-Jun	Apr-Jun	Apr-Jun	Jan-Dec	Jan-Dec				

WIDESPREAD IN MAPPED AREA (> 10 SQUARE KILOMETERS)

BIRDS

<div><div></div></div>	Subelement	Species	Mapping Qualifier	S		F	Concentration	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
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	Waterfowl	American black duck	Wintering				-																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															

BIRDS

Subelement	Species	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Juveniles	Adults
Waterfowl	Wood duck	J	F	M	A	M	J	J	A	S	O	N	D	Mar-Jun	-	-	-	-

FISH

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
Diadromous	American eel	J	F	M	A	M	J	J	A	S	O	N	D	-	-	Jan-Dec	Jan-Dec	Sep-Dec
Estuarine Nursery	Atlantic croaker	J	F	M	A	M	J	J	A	S	O	N	D	-	-	Sep-Jun	Jan-Dec	-
	Bay anchovy	J	F	M	A	M	J	J	A	S	O	N	D	Apr-Sep	Apr-Sep	Apr-Oct	Jan-Dec	Jan-Dec
	Southern flounder	J	F	M	A	M	J	J	A	S	O	N	D	-	-	Dec-Mar	Jan-Dec	Jan-Dec
	Striped mullet	J	F	M	A	M	J	J	A	S	O	N	D	-	-	-	Mar-Jun*	-
	Summer flounder	J	F	M	A	M	J	J	A	S	O	N	D	-	-	Oct-May	Jan-Dec	-
	White perch	J	F	M	A	M	J	J	A	S	O	N	D	Mar-Jun	Mar-Jun	May-Aug	Jun-Oct	-
Estuarine Resident	Inland silverside	J	F	M	A	M	J	J	A	S	O	N	D	Mar-Aug	Mar-Aug	Jun-Sep	-	-
Freshwater	Bluegill	J	F	M	A	M	J	J	A	S	O	N	D	Apr-Oct	Apr-Oct	-	Jan-Dec	Jan-Dec
	Bowfin	J	F	M	A	M	J	J	A	S	O	N	D	Mar-Jun	Mar-Jun	-	Jan-Dec	Jan-Dec
	Largemouth bass	J	F	M	A	M	J	J	A	S	O	N	D	May-Jun	May-Jun	May-Jun	-	Jan-Dec
	Longnose gar	J	F	M	A	M	J	J	A	S	O	N	D	Mar-Sep	Mar-Sep	-	Jan-Dec	Jan-Dec
	Threadfin shad	J	F	M	A	M	J	J	A	S	O	N	D	Apr-Jul	Apr-Jul	Apr-Jul	-	-
	Yellow perch	J	F	M	A	M	J	J	A	S	O	N	D	Jan-Mar	Jan-Mar	Jan-Mar	Apr-Dec	Apr-Dec
Marine Pelagic	Atlantic needlefish	J	F	M	A	M	J	J	A	S	O	N	D	May-Jul	May-Jul	Jun-Aug	Jun-Oct	-

INVERTEBRATES

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
Crab	Blue crab	J	F	M	A	M	J	J	A	S	O	N	D	-	-	-	Jan-Dec	Jan-Dec
Shrimp	Brown shrimp	J	F	M	A	M	J	J	A	S	O	N	D	-	-	Feb-Apr	Mar-Aug	-

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>
10B	Freshwater Marshes	213.99	0.33
10C	Swamps	1,768.50	2.76
10D	Scrub and Shrub Wetlands	129.57	0.20



ESI SHORELINE HABITAT TYPES

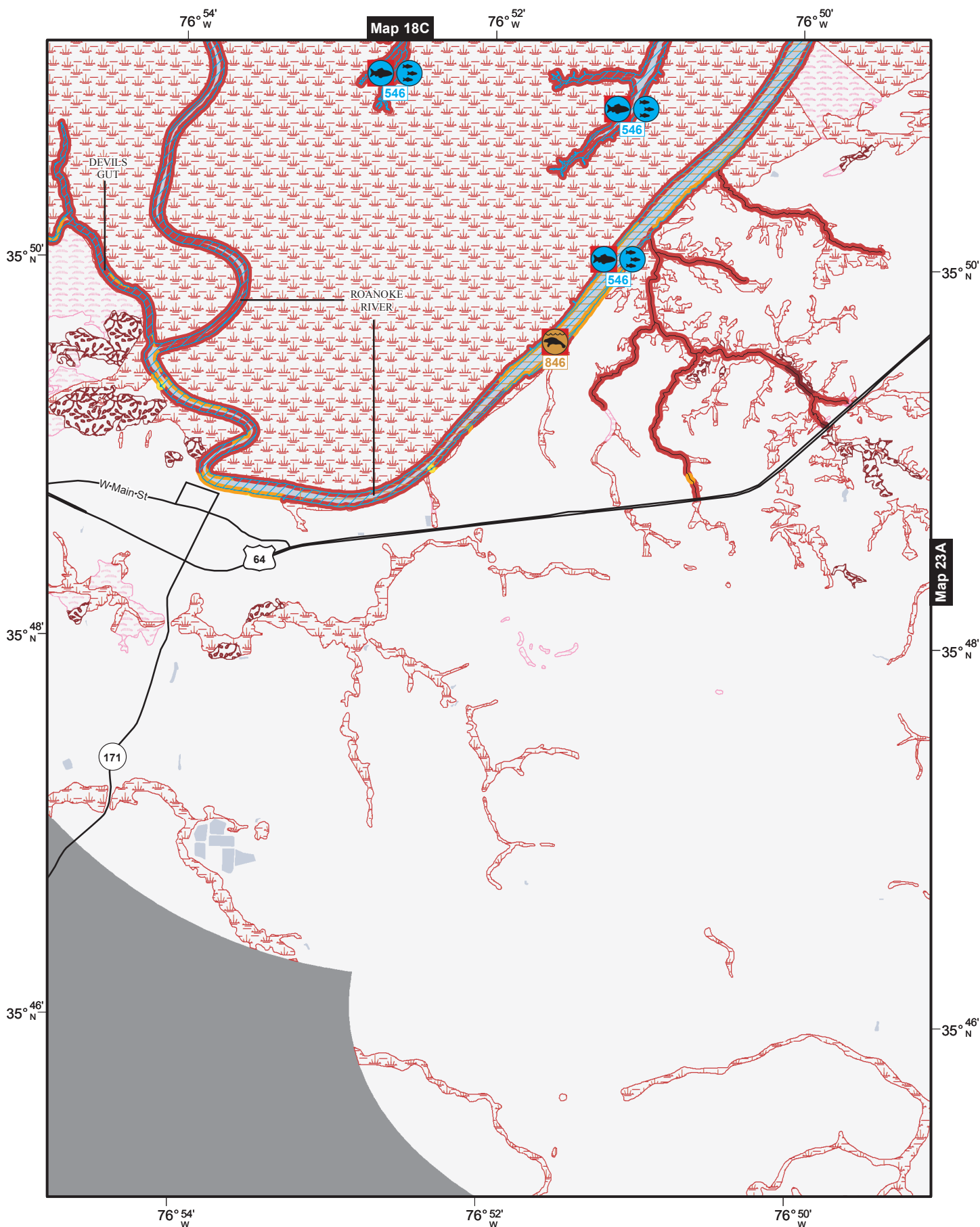
<i>ESI Rank</i>	<i>Shoreline Habitat Classification</i>	<i>Length (Meters)</i>	<i>Length (Miles)</i>	<i>% of ESI Shoreline</i>
10B	Freshwater marshes	1,429.50	0.89	5%
10C	Swamps	29,196.99	18.14	93%
10D	Scrub-shrub wetlands	301.25	0.19	1%
9B	Sheltered, vegetated low banks	434.18	0.27	1%
8B	Sheltered, solid man-made structures	49.31	0.03	< 1%

Total ESI Shoreline: 31,411.23 Total ESI Shoreline: 19.52
 Total Shoreline: 31,411.23 Total Shoreline: 19.52

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



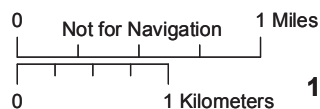


Map 23B

North Carolina



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



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BIOLOGICAL RESOURCES

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

DISPLAYED ON MAP

FISH


Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
							J	F	M	A	M	J	J	A	S	O	N	D					
546	Diadromous	Alewife	Spawning Area			Present													Mar-Jul	Mar-Jul	May-Aug	-	-
	Diadromous	American shad	Spawning Area			Present													Apr-Jun	Apr-Jun	May-Jul	Feb-May	-
	Diadromous	Atlantic sturgeon	General Distribution	C		-													Sep-May*	Sep-May*	-	Jan-Dec	Jan-Dec
	Diadromous	Atlantic sturgeon	Spawning Area	C		-													Mar-Jul	Mar-Jul	May-Jul	-	-
	Diadromous	Blueback herring	Spawning Area			Present													Mar-May	Mar-May	Apr-Jun	May-Sep	-
	Diadromous	Gizzard shad	Spawning Area			Present													Apr-Jun	Apr-Jun	Apr-Jun	Jan-Dec	Jan-Dec
	Diadromous	Striped bass	Nursery Area			Abundant													Apr-Jun	Apr-Jun	Apr-Jun	Jan-Dec	Jan-Dec
	Diadromous	Striped bass	Spawning Area			Abundant													Apr-Jun	Apr-Jun	Apr-Jun	Jan-Dec	Jan-Dec
	Estuarine Nursery	Hogchoker	Spawning Area			Abundant													Apr-Oct	Apr-Oct	Apr-Oct	-	-

MARINE MAMMALS

Map ID	Subelement	Species	Mapping Qualifier	S	F	Concentration	Monthly Presence												Mating	Calving	Pupping	Molt
							J	F	M	A	M	J	J	A	S	O	N	D				
846	Manatee	West Indian manatee	General Distribution	E		-													-	-	-	-

WIDESPREAD IN MAPPED AREA (> 10 SQUARE KILOMETERS)





BIRDS

Subelement	Species	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				
	Waterfowl	American black duck	Wintering			-												-	Feb-Mar	Oct-Nov	-
		American coot	Wintering			1000S												-	Feb-Mar	Oct-Nov	-
		American wigeon	Wintering			-												-	Feb-Mar	Oct-Nov	-
		Bufflehead	Wintering			-												-	Feb-Mar	Oct-Nov	-
		Canada goose	Wintering			-												-	Feb-Mar	Oct-Nov	-
		Canvasback	Wintering			-												-	Feb-Mar	Oct-Nov	-
		Gadwall	Wintering			-												-	Feb-Mar	Oct-Nov	-
		Greater scaup	Wintering			-												-	Feb-Mar	Oct-Nov	-
		Green-winged teal	Wintering			-												-	Feb-Mar	Oct-Nov	-
		Lesser scaup	Wintering			-												-	Feb-Mar	Oct-Nov	-
		Mallard	Wintering			High												-	Feb-Mar	Oct-Nov	-
		Northern shoveler	Wintering			-												-	Feb-Mar	Oct-Nov	-
		Ring-necked duck	Wintering			-												-	Feb-Mar	Oct-Nov	-
		Tundra swan	Wintering			6000												-	Feb-Mar	Oct-Nov	-
		Wood duck	Wintering			High												-	Feb-Mar	Oct-Nov	-

BIRDS

Subelement	Species	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt
		J	F	M	A	M	J	J	A	S	O	N	D				
 Waterfowl	Wood duck													Mar-Jun	-	-	-

FISH

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
 Diadromous	American eel													-	-	Jan-Dec	Jan-Dec	Sep-Dec
	Estuarine Nursery													-	-	Sep-Jun	Jan-Dec	-
 Freshwater	Bay anchovy													Apr-Sep	Apr-Sep	Apr-Oct	Jan-Dec	Jan-Dec
	Southern flounder													-	-	Dec-Mar	Jan-Dec	Jan-Dec
	Striped mullet													-	-	-	Mar-Jun*	-
	Summer flounder													-	-	Oct-May	Jan-Dec	-
 Marine Pelagic	White perch													Mar-Jun	Mar-Jun	May-Aug	Jun-Oct	-
	Estuarine Resident													Mar-Aug	Mar-Aug	Jun-Sep	-	-
	Black crappie													Mar-May	Mar-May	Mar-May	Jan-Dec	Jan-Dec
	Bluegill													Apr-Oct	Apr-Oct	-	Jan-Dec	Jan-Dec
	Bowfin													Mar-Jun	Mar-Jun	-	Jan-Dec	Jan-Dec
	Largemouth bass													May-Jun	May-Jun	May-Jun	-	Jan-Dec
 Marine Pelagic	Longnose gar													Mar-Sep	Mar-Sep	-	Jan-Dec	Jan-Dec
	Threadfin shad													Apr-Jul	Apr-Jul	Apr-Jul	-	-
	Yellow perch													Jan-Mar	Jan-Mar	Jan-Mar	Apr-Dec	Apr-Dec
	Atlantic needlefish													May-Jul	May-Jul	Jun-Aug	Jun-Oct	-

INVERTEBRATES

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
 Crab	Blue crab													-	-	-	Jan-Dec	Jan-Dec
 Shrimp	Brown shrimp													-	-	Feb-Apr	Mar-Aug	-

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>
10B	Freshwater Marshes	325.68	0.51
10C	Swamps	6,504.71	10.16
10D	Scrub and Shrub Wetlands	231.30	0.36
9A	Sheltered Tidal Flats	29.75	0.05



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>
10B	Freshwater marshes	83.05	0.05	< 1%
10C	Swamps	53,598.87	33.30	85%
10D	Scrub-shrub wetlands	384.71	0.24	1%
9A	Sheltered tidal flats	6,777.43	4.21	11%
9B	Sheltered, vegetated low banks	2,030.96	1.26	3%
8B	Sheltered, solid man-made structures	148.66	0.09	< 1%

Total ESI Shoreline: 63,023.68 Total ESI Shoreline: 39.16
 Total Shoreline: 56,246.25 Total Shoreline: 34.95

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

	Abandoned Vessel		Repeated Measurement Site
	Access		Staging
	Airport		State Protected Area
	Anchorage		Waste Disposal
	Archaeological Site		Water Intake
	Army Corp of Engineers		Wildlife Refuge
	Artificial Reef		Map ID
	Beach		US Highway
	Boat Ramp		State Highway or Route
	Campground		Interstate
	Critical Habitat		Road
	EPA Facility		Pipeline
	Ferry		Rail Route
	Heliport		Shipping Lane
	Historical Site		Management Area
	Landfill		
	Management Area		
	Marina		
	Military		
	National Estuarine Research Reserve		
	National Forest		
	National Park		
	Nature Conservancy		
	Oil Facility		
	Park		
	Port		
	Recreational Fishing		
	Renewable Energy		

ESI Shoreline and Habitat Ranking

		1B) Exposed, Solid Man-Made Structures
		3A) Fine to Medium Grained Sand Beaches 3B) Scarps and Steep Slopes (Sand)
		4) Coarse-Grained Sand Beaches
		6B) Riprap
		7) Exposed Tidal Flats
		8B) Sheltered, Solid Man-Made Structures
		8C) Sheltered Riprap
		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	 Reptiles & Amphibians
 Alcide/Pelagic	 Bivalve/Barnacle/Chordate	 Alligator
 Diving	 Crab/Invertebrate/Shellfish	 Amphibian/Frog/Snake
 Gull/Tern	 Crayfish	 Turtle
 Passerine	 Insect	 Habitats
 Raptor	 Shrimp	 Habitats
 Wading	 Marine Mammals	 Upland/Wetland/Plant
 Waterfowl	 Dolphin	 Threatened or Endangered Species
 Fish	 Manatee	
 Fish	 Pinniped	
 Nursery	 Whale	 Map ID
	 Terrestrial Mammal	
	 Small Mammal	
	 Ungulate	

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.

