

Environmental Sensitivity Index Maps

A Guide to Coastal Resources at Risk to Spilled Oil

Chesapeake Bay: Volume 8 Upper James River



Office of Response and Restoration

September 2016

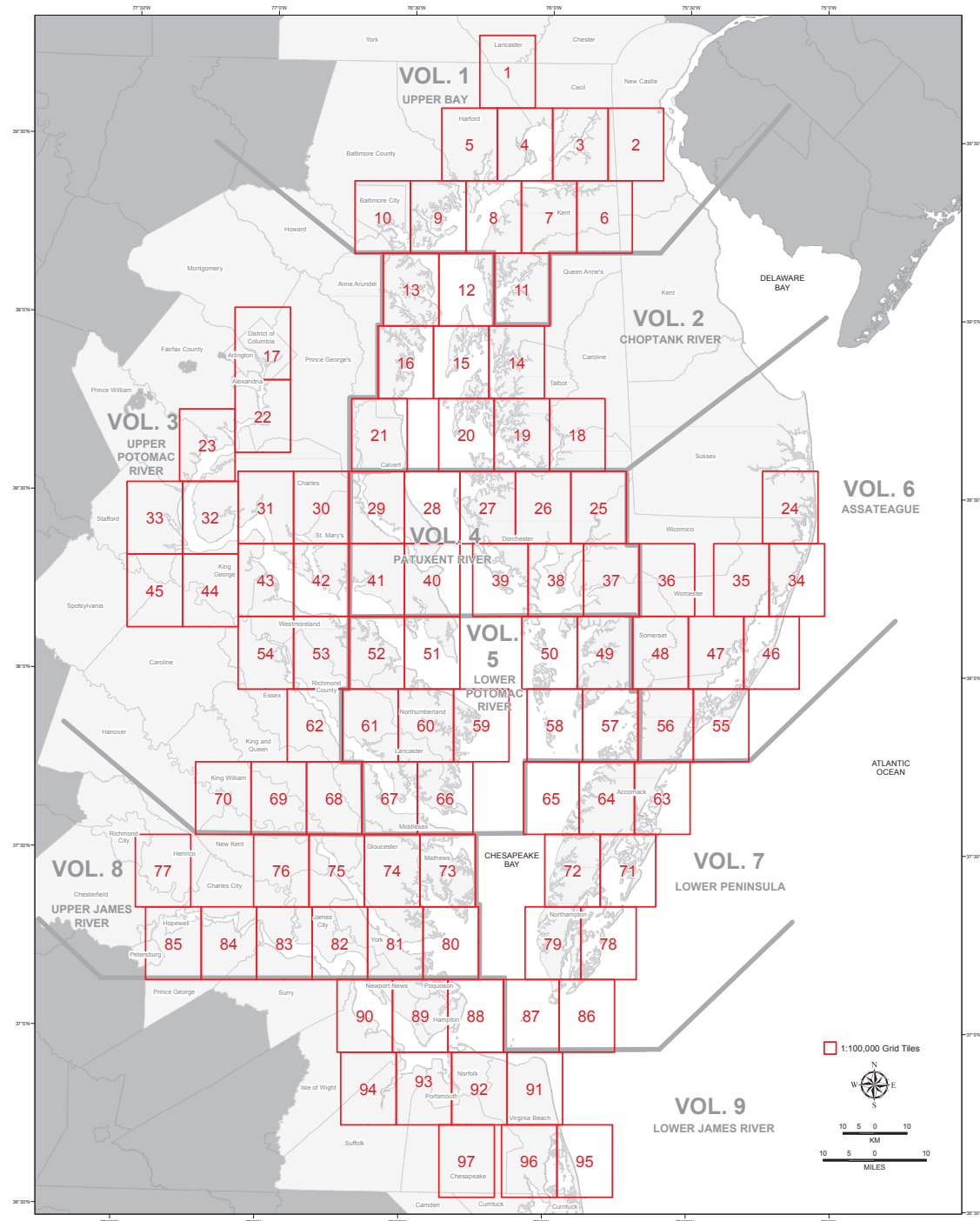
NOAA

Environmental Sensitivity

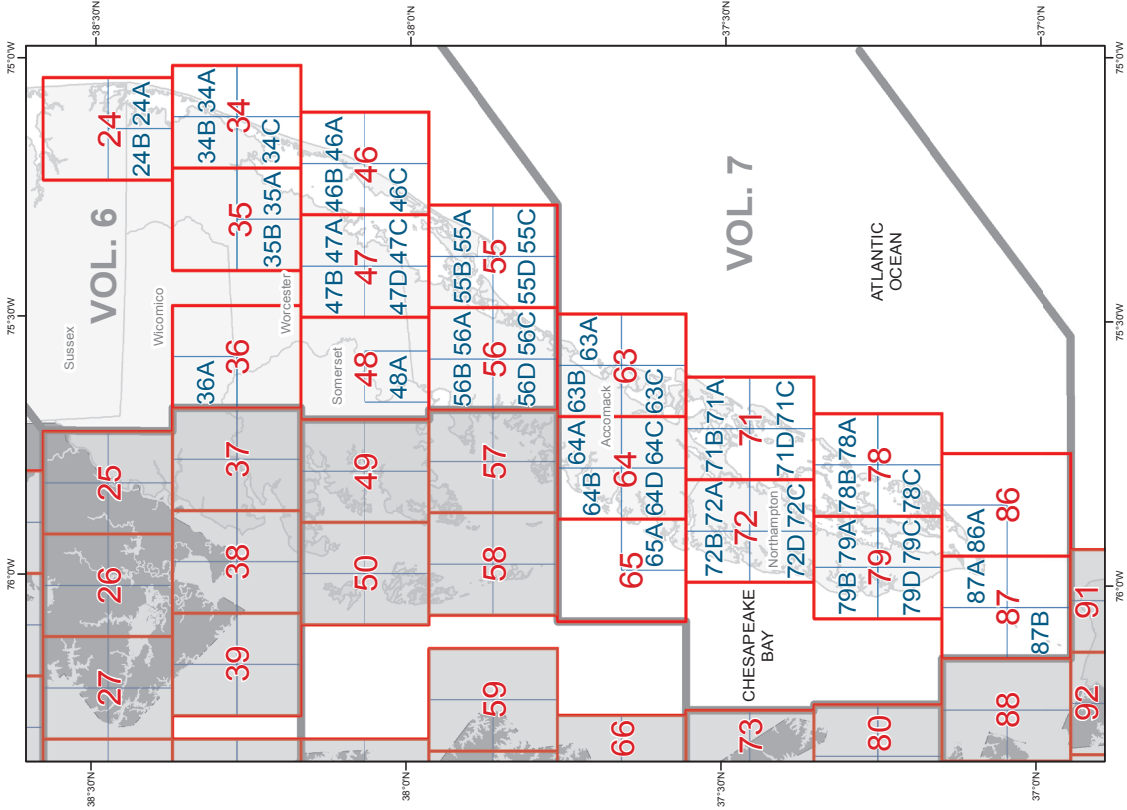
Index Maps

A Guide to Coastal Resources at Risk to Spilled Oil

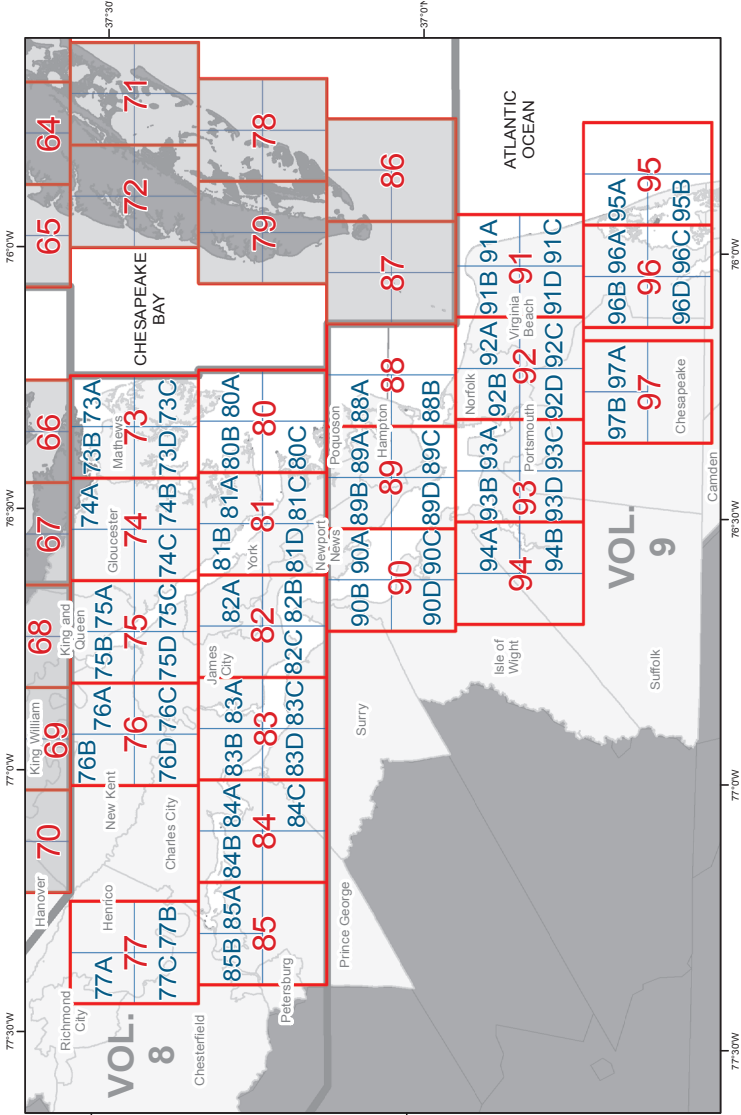
Chesapeake Bay and the Outer Coasts of Maryland and Virginia



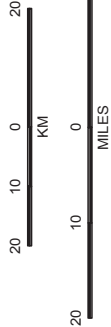
Chesapeake Bay: Volumes 6 and 7
(Delmarva Peninsula: Assateague and Lower Peninsula)



Chesapeake Bay: Volumes 8 and 9
(Chesapeake South: Upper James River and Lower James River)



1:100,000 Grid Tiles
1:50,000 Grid Tiles



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ENVIRONMENTAL SENSITIVITY INDEX: CHESAPEAKE BAY AND THE OUTER COASTS OF MARYLAND AND VIRGINIA

INTRODUCTION

This Environmental Sensitivity Index (ESI) atlas was developed for the and marine and coastal areas of Chesapeake Bay and the outer coasts of Maryland and Virginia. The atlas covers the entire coastal area of Maryland and Virginia from the Pennsylvania and Maryland border to the north in the Susquehanna River, from the Delaware and Maryland border to the east at Fenwick Island, to Washington District of Columbia to the west at the Potomac River, and to the Virginia and North Carolina border to the south in Back Bay. The Maryland and Virginia ESI extends 12 nautical miles seaward. The inland extent of the study area includes lands and waters ranging from five to ten nautical miles from the shoreline of all tidal waters. The study area covers all Atlantic Ocean coastal bays, including (from north to south): Assawoman Bay, Isle of Wight Bay, Sinepuxent Bay, Newport Bay, Chincoteague Bay, Toms Cove, Metompkin Bay, Hog Island Bay, Cobb Bay, South Bay, Fishermans Inlet, and Back Bay. In addition, the study area encompasses all of Chesapeake Bay and major tidal tributary rivers, including (from north to south along the western Bay shoreline): Susquehanna River (south of the Pennsylvania and Maryland border), Back River, Patapsco River, Magothy River, Severn River, Rhode River, West River, Herring Bay, Patuxent River, Potomac River (north to Washington D.C.), Rappahannock River (west to Fredericksburg), York River, Mattaponi River (west to White Oak Landing), Pamunkey River (west to Hampstead), James River (west to Richmond), Appomattox River (west to the I-95 corridor), Nansemond River (west to Hwy 58), Elizabeth River (east to Hwy 168), North Landing River (south to the North Carolina border), Lynnhaven River, Wolfsnare Creek, and Linkhorn Bay. Also included in the study area are major tidal tributary rivers along the eastern Bay shoreline, including (from north to south): Elk River (and Back Creek to the Maryland and Delaware border), Sassafras River, Chester River, Eastern Bay, Wye River, Tred Avon River, Choptank River (east to Providence Landing), Fishing Bay, Nanticoke River (east to the Maryland and Delaware border), Manokin River (east to Kings Creek), Back Creek (east to Hwy 13), Big Annemessex River (east to Hwy 413), Pocomoke River (east to Pocomoke City), Beasley Bay, Pompc Creek, Deep Creek, Onancock Creek, Pungoteague Creek, Nandua Creek, Curratuck Creek, Craddock Creek, Occohannock Creek, Nassawaddox Creek, Hungars Creek, Cherrystone Inlet, and Longs Pond.]. 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 Chesapeake Bay and the outer coasts of Maryland and Virginia shoreline was derived from the integration of the Virginia Institute of Marine Science (VIMS) Center for Coastal Resources Management (CCRM) Tidal Marsh Inventory (TMI, 2010-2013); the National Oceanic and Atmospheric Administration (NOAA) Continually Updated Shoreline Product (CUSP, 1990-2015) and National Shoreline composite (2003-2015); the U.S. Geological Survey (USGS) high resolution National Hydrography Dataset (NHD, 2002-2014); the U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) dataset (1974-2010); and manual digitization at 1:4,000 from BING Bird's Eye and Aerial imagery (2003-2014), ESRI Basemap World Imagery (2011-2015), and Google Earth aerial imagery (2013-2015). The most recent shoreline was utilized where available.

The intertidal shoreline habitats were classified based on the USFWS NWI wetland polygons and low-altitude oblique and nadir aerial imagery from: BING Bird's Eye, BING Aerial, ESRI Basemap, and Google Earth.

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

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

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

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

- Center for Conservation Biology (CCB)
- Maryland Department of Natural Resources (MD DNR)
- National Park Service (NPS), Assateague Island National Seashore
- NPS Northeast Coastal and Barrier Network (NCBN)
- NPS Northeast Region
- National Oceanic and Atmospheric Administration (NOAA)
- North Carolina Division of Marine Fisheries – Habitat Protection Section, Albemarle-Pamlico National Estuary Program
- Saltmarsh Habitat and Avian Research Program (SHARP)
- The Nature Conservancy (TNC)
- Virginia Aquarium and Marine Science Center (VAMSC)
- Virginia Commonwealth University (VCU)
- Virginia Department of Conservation and Recreation (VA DCR)
- Virginia Department of Game and Inland Fisheries (VDGIF)
- Virginia Institute of Marine Science (VIMS), College of William and Mary
- Virginia Marine Resources Commission (MRC)
- U.S. Fish and Wildlife Service (USFWS), Division of Migratory Bird Management (DMBM)
- USFWS National Wildlife Refuge (NWR) System

The above organizations provided the majority of the biological information included in the atlas. Other participating organizations will be featured in the sources table and cited 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 September 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 MD DNR and VDGIF.
- 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



Bat



Small Mammal



Ungulate

HERPETOFAUNA



Amphibian



Turtle

INVERTEBRATE



Bivalve



Cephalopod



Crab



Gastropod



Insect



Lobster



Shrimp

FISH



Fish



Nursery

BIRD



Alcid/Pelagic



Diving



Gull/Tern



Passerine



Raptor



Shorebird



Wading



Waterfowl

HABITAT



Upland/Wetland/Plant

Mapping Qualifiers and Guidelines

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

MARINE MAMMALS

Marine mammals depicted in this atlas include whales, dolphins, seals, and manatees. Species that are federally and state listed, and those that are vulnerable to oiling and response activities, are specifically emphasized. Marine mammal occurrence and seasonality information displayed in this atlas are based on data from the Ocean Biogeographic Information System (OBIS) and Global Biodiversity Information Facility (GBIF), NOAA Fisheries Marine Mammal Stock Assessment Reports (SARS), and correspondence with local resource experts from Virginia Aquarium and Marine Science Center and other agencies (see expert contact list). Both hardcopy and digital data sources are listed below and included in the metadata.

Four of the marine mammal species included in this ESI atlas are currently listed as endangered at both the federal and state level. These include the North Atlantic right whale (*Eubalaena glacialis*, FE, VA/MD SE), fin whale (*Balaenoptera physalus*, FE, VA/MD SE), humpback whale (*Megaptera novaeangliae*, FE, VA/MD SE) and the Florida manatee (*Trichechus manatus latirostris*, FE, VA SE), a sub-species of the West Indian manatee. Two of these species currently have federal proposals under review in 2016 that may change their federal statuses within the boundaries of this ESI, by either removing them from the ESA

listing altogether (humpback whale) or reclassifying them from endangered to threatened (Florida manatee). These proposals were under review at the time this atlas was published (hence, both are still considered endangered); however, their listings may change so it is important to review their listings prior to any planning or response activities.

North Atlantic right whales may be present in both Maryland and Virginia marine waters from October to May. The waters off the mid-Atlantic coast are an important migration corridor between their wintering and calving areas, located off the southeastern United States, to their summer feeding and nursery grounds in New England waters. Right whales are known to primarily occur in coastal and shelf waters, although movements into deeper waters have been observed.

Fin whales can be found off the U.S. Atlantic coast from Cape Hatteras, NC northward and are the dominant large cetacean in this region. Although typically observed over continental shelf waters eastward of the 12 nautical mile boundary of the ESI, they may be present in shallower waters closer to the coastline from November through April.

Humpback whales may be present in Maryland and Virginia coastal waters throughout the year, but are primarily observed during the winter months as they migrate between their winter calving grounds in the West Indies and their summer feeding grounds in the Gulf of Maine and areas further north. Not all humpbacks migrate every winter, and significant numbers can be found in mid- and high-latitude regions along the Atlantic coast during this time. During their migration, humpback whales tend to stay near the surface of the ocean. They are known to enter Chesapeake Bay, which may be a supplemental feeding ground for this species, especially for juveniles; however, most sightings occur near the mouth of the bay and the surrounding marine waters.

The Florida manatee was mapped from information provided by peer-reviewed literature and local resource experts. This species is an irregular visitor to the Chesapeake Bay region and has, on rare occasion, been observed in the Maryland portion of the Chesapeake Bay, as far north as the Susquehanna River. They are a warm-water species (68°F or above) that feed on seagrasses and other aquatic plants, and can be found in marine, brackish and freshwater habitats. They usually travel along shorelines and within channels (i.e., Intracoastal Waterway) and may be present in shallow nearshore waters during the summer and fall months when water temperatures are above 68°F. Most of the reported sightings in Chesapeake Bay have been south of the Potomac River, with the majority of them occurring in the waters proximal to Norfolk, VA.

Other marine mammals were mapped using information provided by local marine mammal experts. Literature and thirty years of observation data from the SARs reports, OBIS, and GBIF were also reviewed. Bottlenose dolphins are the only species likely to occur regularly in inshore and offshore areas and may be present year round. Other species of cetaceans and pinnipeds that may occur in Chesapeake Bay and/or the coastal or continental shelf waters of Maryland and Virginia that were mapped in this atlas include gray seals, harbor seals, harbor porpoises, and short-beaked common dolphins.

In addition to those species mapped, other pelagic cetacean and pinniped species can occasionally move into the area without predictable occurrence. Species have been reported via stranding data or other observations, but are not included due to their relative rarity of occurrence within the mapped 'Area of Interest' (AOI) for this atlas.

Expert contacts for Chesapeake Bay and the outer coasts of Maryland and Virginia marine mammals*:

Name	Agency	City	Phone	Species
Susan Barco	VAMSC	Virginia Beach, VA	757/385-6476	Cetaceans, Pinnipeds and Sirenia
Mark Swingle	VAMSC	Virginia Beach, VA	757/437-6022	Cetaceans, Pinnipeds and Sirenia
Jennifer Dittmar	National Aquarium, Baltimore	Baltimore, MD	410/986-2377	Cetaceans and Pinnipeds
Amanda Weschler	MD DNR	Oxford, MD	410/226-5193	Cetaceans and Pinnipeds
Kevin Holcomb	USFWS	Chincoteague, VA	757/336-6122	Chincoteague and Wallops Island NWRs
Alex Wilke	TNC	Nassawadox, VA	757/442-3049	Eastern Shore species
Ruth Boettcher	VDGIF	Machipongo, VA	757/709-0766	Eastern Shore species

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

Major Data Sources Used: Marine Mammals

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- Waring G.T., E. Josephson, K. Maze-Foley, and P.E. Rosel, editors. 2015. U.S. Atlantic and Gulf of Mexico Marine Mammal Stock Assessments -- 2014. NOAA Tech Memo NMFS NE 231, 361 p. doi: 10.7289/V5TQ5ZH0. Accessed at <http://www.nmfs.noaa.gov/pr/sars/region.htm>.

BIRDS

Birds displayed in this atlas include: alcids, diving birds, gulls, terns, passerines, pelagic birds, raptors, shorebirds, wading birds, and waterfowl. Species that are federally and state listed, and coastal nesting, roosting, and migratory staging locations are specifically emphasized. Bird occurrence information displayed in this atlas is based on information gathered at workshops and via phone/email correspondence with local resource experts from VDGIF, MD DNR, NPS, USFWS, CCB, and TNC. Additional hardcopy and digital sources are listed below and included in the metadata.

Shorebirds, diving birds, gulls and terns – Survey data on locations of breeding, migrating, and/or wintering shorebirds, diving birds, gulls, and terns were provided by various agencies via shapefiles, spreadsheets, primary literature, and expert local knowledge, and was supplemented with information from eBird. In general, data from the various data sources were compiled and either mapped to habitat, park or refuge, or specific locations, per expert recommendations. Additional source information is provided in the accompanying data tables and metadata.

Colonial waterbird nesting areas – For Virginia, VDGIF provided nesting data for colonial waterbirds from 2013 that originated from various partner organizations including: CCB, VDGIF, TNC, VA DCR, USFWS, USGS, and College of William and Mary. Each nesting colony location was buffered by 200 meters (m), and where buffered nest locations overlapped, buffers were dissolved to form single polygons, and counts from the dissolved colonies were summed. Number of nesting pairs for each species for each colony and aggregated colony were reported in the ESI.

For Maryland, MD DNR provided nesting data for colonial waterbirds from surveys conducted annually during 2004-2013. Each nesting colony location was buffered by 200 m, and where buffered nest locations overlapped, buffers were dissolved to form single polygons, and counts from the dissolved colonies were summed. Number of nesting pairs for each species for each colony and aggregated colony were reported in the ESI.

Additionally, CCB provided nesting heron and egret survey data for the entire Chesapeake Bay drainage area (including MD), also from 2013. Where the heron/egret colonies overlapped with the VA colonial waterbird colonies, the heron/egret counts were added to the existing colony. Elsewhere, the heron and egret survey locations were mapped as points with counts of pairs for each species for each point location. Overall, species mapped using colonial waterbird datasets in VA include: black-crowned night-heron, black skimmer (MD SE), brown pelican, Caspian tern, cattle egret, common tern, double-crested cormorant, Forster's tern, glossy ibis, great black-backed gull, great blue heron, great egret, green heron, gull-billed tern (VA ST, MD SE), herring gull, laughing gull, least tern (MD ST), little blue heron, royal tern, sandwich tern, snowy egret, tricolored heron, white ibis, and yellow-crowned night-heron.

Wintering and nesting waterfowl – Tens of thousands of waterfowl migrate through Chesapeake Bay and Atlantic coastal bays with numbers of southbound transients peaking October through December and northbound transients peaking February through April. High numbers of scoters, red-throated loon, northern gannet, and other seabirds frequently concentrate at the mouth of Chesapeake Bay, Tangiers Sound, and the mouth of the Choptank River from November through April. Chesapeake Bay marsh islands and coastal bays provide habitat for the highest concentrations of nesting American black duck in the region. Waterfowl data for Virginia and Maryland were provided by VDGIF and USFWS and included mid-winter waterfowl surveys (2004-2015) and expert knowledge from VDGIF and MD DNR.

In Maryland, diving ducks and geese along the Chesapeake Bay were mapped into Areas of Critical State Concern for waterfowl (defined under Maryland's State Planning enabling legislation, article 88C). In coastal bays these species were mapped with a 250-m offshore buffer based on MD DNR surveys (2013-2014). Dabbling ducks were mapped based on USFWS mid-winter survey blocks and MD DNR coastal bay surveys with a 250-m onshore/offshore buffer. In Virginia, species were mapped according to areas defined by VDGIF when compiling aerial survey data for USFWS mid-winter surveys (2004-2015) and expert knowledge. Counts were binned into Present, (<10), 10s, 100s, 1,000s, or 10,000s.

Nesting waterfowl occurrences in Maryland were derived from MD DNR expert knowledge and data from the Second Atlas of the Breeding Birds of Maryland and the District of Columbia compiled by U.S. Geological Survey; they are mapped as a 250-m onshore buffer. In Virginia, American black duck nesting distributions were mapped based on VDGIF expert knowledge; mallard and Canada goose were mapped using species' presence during mid-winter surveys in or near marsh habitats; and wood duck were mapped using species' presence during mid-winter surveys in swamps and freshwater marshes. Nesting concentrations for waterfowl are represented as Present, Low, Moderate, High, or Very High. Onshore buffers that intersected with larger areas of freshwater or salt-and brackish-water marsh included those areas as part of the mapped distribution. Numbers from wintering surveys are likely underestimates, since surveys do not necessarily occur during each species' months of peak abundance.

Atlantic Ocean and Chesapeake Bay seabirds – Distribution of pelagic birds, gulls, terns, diving birds, alcids, phalaropes, and waterfowl in open waters of Chesapeake Bay and tributaries and the Atlantic Ocean (nearshore and offshore) were generated from discussions with resource experts, reports, and survey data. Species in open waters of Chesapeake Bay and the Atlantic Ocean were mapped from compiled aerial and shipboard survey data from USFWS that included: USFWS Atlantic Coast Wintering Sea Duck Surveys (ACWSD; preliminary survey in 2008, full surveys 2009-11), USFWS Atlantic Marine Assessment Program for Protected Species (AMAPPS) seabird surveys (preliminary survey in 2010, full-coast surveys in summer 2011, spring and fall 2012, winter 2014), NOAA EcoMon surveys, and Department of Energy (DOE)/Biological Research Institute (BRI) surveys (2012-2014). Distributions in Chesapeake Bay tributaries were mapped from USFWS midwinter surveys (2004-2015), BRI reports (2015), and eBird records from 2004-2016. Based on frequency of occurrence, abundance in these areas, and expert advice, data were grouped to create divisions throughout Chesapeake Bay and its tributaries, at the mouth of Chesapeake Bay, and as offshore polygons made as either a 0-5 nautical mile (nm) offshore buffer or a 0-12 nm offshore buffer. Counts were binned into Present (<10), 10s, 100s, 1,000s, or 10,000s.

Raptors – Bald eagle nest survey data (2015) were provided by CCB for Virginia. Nest locations were mapped as points in the ESI. Recent bald eagle nest survey data was not available for MD, as the state no longer surveys for the species. Historical data (1988-2010) of MD nest locations were mapped as points with the last observation date noted in the ESI concentration field. According to local experts (D. Brinker, L. Davidson), bald eagle nests are common in the state and the historical dataset is incomplete and does not fully cover where the species currently nests. VDGIF provided a Bald Eagle Concentration and Roosts (BECAR) dataset that features concentration areas along shorelines that have been identified through surveys to support a high density of non-breeding bald eagles in summer and/or winter. Roost sites are sites that have been documented as repeatedly used as night-time resting places for multiple bald eagles, and are displayed as both polygons (based on the VDGIF BECAR data set) and points (based on the CCB data set). Peregrine falcon and osprey nest sites were mapped based on expert knowledge and/or nesting survey data. Northern harrier were mapped based on expert knowledge.

Secretive marsh birds – Black rail (VA SE) detection data for Virginia were provided by CCB for 2007-2008 and 2014. Data from both datasets largely overlapped, so the datasets were combined for the ESI. Points were buffered by 200 m. Patch analysis data for clapper rail, saltmarsh sharp-tailed sparrow, seaside sparrow, and willet were provided by SHARP. The patch analysis used habitat data from NWI to delineate marsh patches, and field surveys of the target species to model species densities in each patch. Species densities were converted to number of birds per square kilometer and mapped to the appropriate marsh patches. Additionally, there were four SHARP survey sites on the western side of the Chesapeake Bay that had detected clapper rails in numbers too low for patch analysis. These survey sites were mapped as 50-m buffer polygons. NPS NCBN provided survey data of the following marsh birds on Assateague Island: clapper rail, king rail, saltmarsh sharp-tailed sparrow, and seaside sparrow. Each survey location with birds detected was mapped with a 200-m buffer. Where overlap occurred between SHARP data and NCBN data, SHARP data were used because they contained more detailed spatial and concentration information.

Rare birds - A few rare bird species were mapped using data supplied by MD DNR from their Ecologically Significant Areas database. Data from this program came in the form of large generalized polygons that often include the presence of more than one species. Bird species mapped from this data set include: American bittern, black rail (MD SE, VA SE), black skimmer (MD SE), common moorhen, gull-billed tern (MD SE, VA ST), least bittern, peregrine falcon (VA ST), and royal tern (MD SE).

Note that locations of nesting, wintering, and/or migratory sites, species composition within polygons, and particularly concentration values, are based on a compilation of observations made over multi-year periods and are not meant to accurately reflect ‘current’ conditions in the case of an event. Survey limitations and adjustments in protocols over the years, changes in shoreline geomorphology (particularly on small/ephemeral islands), weather, and other ecological factors contribute to the condition of nesting colonies and migratory or other concentrations at any given time. Also, note that concentrations vary throughout the multi-month nesting, migratory, and wintering periods listed in the seasonality table. Please contact local resource experts in the event of a spill or if data are to be used for any reason other than spill planning or response.

Expert contacts for Chesapeake Bay and the outer coasts of Maryland and Virginia birds*:

Name	Agency	City	Phone	Species
Ruth Boettcher	VDGIF	Machipongo, VA	757/709-0766	Birds of Virginia Eastern Shore
Bryan Watts	CCB	Williamsburg, VA	757/221-2247	Birds of Virginia and Chesapeake Bay
Alex Wilke	TNC	Nassawadox, VA	757/442-3049	Birds of Virginia Eastern Shore
Kevin Holcomb	USFWS	Chincoteague, VA	757/336-6122	Chincoteague and Wallops Island NWRs
Pam Denmon	USFWS	Cape Charles, VA	757/331-2760	Eastern Shore of Virginia and Fisherman Island NWRs
Lauren Billodeaux Mowbray	USFWS	Virginia Beach, VA	757/301-7329	Back Bay NWR and Eastern Virginia Rivers NWRC
Doug Brewer	USFWS	Virginia Beach, VA	757/301-7329	Back Bay NWR
Geralyn Mireles	USFWS	Virginia Beach, VA	757/301-7329	Back Bay NWR
Jack Kumer	NPS	Berlin, MD	410/629-6070	Assateague Island NS
Bill Hulslander	NPS	Berlin, MD	410/629-6061	Assateague Island NS

Name	Agency	City	Phone	Species
Dave Brinker	MD DNR	Annapolis, MD	410/744-8939	Maryland colonial-waterbirds
Lynn Davidson	MD DNR	Annapolis, MD	410/260-8563	Digital data provider
Gary Costanzo	VDGIF	Charles City, VA	804/367-1000	Waterfowl
Ben Lewis	VDGIF	Charles City, VA	804/367-1000	Waterfowl
Bill Harvey	MD DNR	Cambridge, MD	410/221-8838	Waterfowl
Don Webster	MD DNR	Cambridge, MD	410/221-8838	Waterfowl
Larry Hindman	MD DNR (Retired)	Cambridge, MD	-	Waterfowl
Paul Padding	USFWS	Laurel, MD	301/497-5851	Waterfowl
Tim Jones	USFWS	Laurel, MD	301/497-5674	Seabirds
Emily Silverman	USFWS	Laurel, MD	301/497-5801	Seabirds
Caleb Spiegel	USFWS	Hadley, MA	413/253-8490	Seabirds
Matt Whitbeck	USFWS	Cambridge, MD	410/221-2034	Chesapeake Marshlands NWR Complex

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

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- USFWS. 2014. Back Bay NWR peak bird numbers, 2013 and 2014, spreadsheets.
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HERPETOFAUNA

Herpetofauna depicted in this atlas include four species of sea turtles, diamondback terrapin, barking treefrog (VA ST), chicken turtle (VA SE), and snapping turtle.

Nesting and in-water distribution data for diamondback terrapins were provided by VIMS (in-water data set), USGS (nesting data set), and USFWS (pers. comm.). The VIMS data set was based on 2012 and 2013 spring-summer surveys at 165 sites and was conducted to study the relationship between terrestrial-aquatic connectivity and the distribution of an estuarine turtle. The results of the survey included predicted probability of occupancy of diamondback terrapins in the Chesapeake Bay, and the ‘high’ and ‘low’ probabilities of occupancy that were determined during the study were adapted for inclusion and

represented as likely terrapin distribution polygons in the ESI. The USGS nesting data set was based on the results of the Patuxent Wildlife Research Center investigation of over 3,000 kilometers of Chesapeake Bay shoreline in 2002 for terrapins, tracks, and active and disturbed nests.

Green (FT/MD ST, VA ST), Kemp's ridley (FE/MD SE, VA SE), leatherback (FE/MD SE, VA SE) and loggerhead (FT/MD ST, VA ST) sea turtles were mapped in this atlas. Many barrier island, and some mainland, outer sand beaches are important nesting habitat for loggerhead sea turtle, and potential (but very rare) nesting habitat for Kemp's ridley and green sea turtles. Nesting typically occurs in Virginia and Maryland from May to August with hatching from June-October (loggerhead sea turtle). Data that represent documented nesting in Virginia from 1970-2015 were provided by VDGIF. The concentration values were based on the range of nest counts observed on a particular stretch of beach over time (e.g., 0-8 nests, <10 nests). Beach buffers were used rather than point locations due to the potential for beaches adjacent to known nest sites to also provide suitable nesting habitats. Green sea turtle and Kemp's ridley sea turtle were documented as having 'false crawls' only and no nest counts. Additional nesting and general distribution and seasonality information were provided during interviews with NPS, USFWS, and the VA Aquarium.

Distributions for the barking treefrog (VA ST) and chicken turtle (VA SE) were mapped using data provided as part of VDGIF's Wildlife Environmental Review Map Service (WERMS) database. Records of both species were pulled from survey dates between the years 1996 and 2013, with 2013 being the most recent surveys for herpetofauna in the database.

Expert contacts for Chesapeake Bay and the outer coasts of Maryland and Virginia herpetofauna*:

Name	Agency	City	Phone	Species
Ruth Boettcher	VDGIF	Machipongo, VA	757/709-0766	Sea turtles
Jack Kumer	NPS	Berlin, MD	410/629-6070	Assateague Island NS
Lauren Billodeaux Mowbray	USFWS	Virginia Beach, VA	757/301-7329	Back Bay NWR
Susan Barco	VA Aquarium	Virginia Beach, VA	757/385-6476	Sea turtles
Robert Isdell III	VIMS	Gloucester Pt., VA	804/684-7179	Diamond-back terrapins
Jay Kapalczynski	VDGIF	Henrico, VA	804/367-6796	WERMS Database

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

Major Data Sources Used: Herpetofauna

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National Marine Fisheries Service. 2015. Virginia and Maryland Sea Turtle Conservation Plan. National Marine Fisheries Service, Virginia Beach, 58 pp.

USFWS. 2012. Presquile National Wildlife Refuge. Comprehensive Conservation Plan, USFWS, Warsaw, VA, 306 pp.

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Virginia Institute of Marine Science. 2015. Terp occupancy, vector digital data.

FISH

Fish species depicted in this atlas include select marine, estuarine, and freshwater species. Species of conservation interest, commercial or recreational importance, or ecological importance are emphasized. Fish polygons were created based on fisheries-independent survey information, digital data, and expert opinion provided primarily by resource experts at MD DNR, VDGIF, VIMS, VMR, ASMFC, USFWS, and NOAA.

Atlantic and Shortnose sturgeon - Populations of shortnose sturgeon (FE, VA/MD SE) and Atlantic sturgeon (FE, VA SE) are found in Chesapeake Bay and adult and sub-adult Atlantic sturgeon distributions also encompass the coastal waters of Virginia and Maryland. Data on shortnose sturgeon populations in Chesapeake Bay are limited to incidental catches during a tagging program for Atlantic sturgeon by USFWS, and to a few recent studies of movements in the Potomac river. Generally, shortnose sturgeon are concentrated in the upper portions of the Chesapeake Bay, roughly from the mouth of the Chester River and north, but they are not uncommon to the mouth of the Potomac, and have been found to stray as far south as the James River in Virginia. No spawning of shortnose sturgeon has been documented in Chesapeake Bay, but there is some evidence of potential for spawning in the Potomac River and possibly the Susquehanna River. Atlantic sturgeon inhabit all areas in the Chesapeake Bay at various life stages. For the purposes of the ESI, life stages of Atlantic sturgeon were defined using definitions published by the Atlantic States Marine Fisheries Commission (ASMFC). In the ESI data tables, larvae refer to fish less than 4 weeks old, juveniles refer to young-of-year, and adults include both sub-adults (age 2 to 15) and adults. Eggs, larvae, and juveniles are restricted to known or potential spawning rivers, including the James, Nanticoke, Pocomoke, Rappahannock Rivers, and the York River system, which includes the Mattaponi and Pamunkey Rivers.

Special concentration information was also included for Atlantic and shortnose sturgeon spawning and migration areas. For Atlantic sturgeon, the concentration field was used to differentiate between spring and fall spawning migration runs in the James River, where adult sturgeon have been documented making spawning forays during both spring and fall months. However, spawning itself has only been conclusively documented during the fall. Areas within the Mattaponi, Pocomoke, Nanticoke, Rappahannock, and James Rivers (spring run) were marked as 'Potential Spawning' due to the fact that while milting and migrating adult fish have been documented, fertilized eggs have not been documented in these systems. Fall spawning has only been documented for the Pamunkey and James Rivers. Finally, two areas were marked as concentration areas for Atlantic sturgeon, one in the Nanticoke River, and one in the James River. Both areas are known to attract high numbers of adults and sub-adults and are believed to be staging areas for spawning runs upstream.

Anadromous Fish – Virginia - A number of other anadromous species' spawning runs and nursery areas were mapped based on multiple data sources. Alewife, blueback herring, American shad, and hickory shad distributions were mapped based on expert knowledge provided by Eric Brittle and Alan Weaver (VDGIF), The Nature Conservancy's Chesapeake Fish Passage Prioritization Project data, and the Habitat Requirements for Chesapeake Bay Living Resources. White and yellow perch spawning and nursery areas were initially mapped using the Habitat Requirements for Chesapeake Bay Living Resources and were modified based on comments from VDGIF, USFWS, and VIMS biologists. Striped bass spawning and nursery areas were mapped primarily based on expert knowledge from VIMS and VDGIF biologists.

Anadromous Fish – Maryland - Alewife, blueback herring, American shad, and hickory shad distributions were mapped based on expert knowledge provided by Jim Thompson and Margaret McGinty (VDGIF), The Nature Conservancy's Chesapeake Fish Passage Prioritization Project data, and MD DNR data on river herring spawning and nursery habitat. White and yellow perch spawning and nursery areas were initially mapped using the Habitat Requirements for Chesapeake Bay Living Resources and were modified based on comments from MD DNR and USFWS biologists. Striped bass spawning and nursery areas were mapped using MD DNR data on spawning reaches and rivers, and were expanded based on expert knowledge of MD DNR staff. Anadromous fish presence and spawning runs in the Coastal Bays of Maryland were mapped based on expert knowledge provided by Steve Doctor and Angel Willey.

It should be noted that alewife, blueback herring, and shad species spawn outside of the areas identified as 'spawning areas' in the ESI. This is especially true of the two herring species which utilize freshwater streams and lakes to a large degree for spawning. Also, note that eel life histories do not match the standard ESI terminology, so for the purpose of this ESI, 'juveniles' correspond to immigrating glass eels and 'adults' refer to resident yellow eels and emigrating silver eels. Lastly, striped bass juveniles and sub-adults can be found year-round in Chesapeake Bay. Mature females typically join the coastal migration at year three or four, and while the majority of males do as well, some are known to become permanent residents in the Bay. Areas in the ESI identified as 'spawning' or 'nursery' areas, specifically large areas in the Potomac, York, James, and Rappahannock Rivers, represent the most important early life stage areas; however, striped bass likely utilize other smaller tributaries and water bodies for spawning as well.

Finally, there was special consideration given to a number of rivers on the western shore of Chesapeake Bay in Maryland. These are rivers where anadromous fish still make migratory runs and attempt to spawn. However, the deteriorated condition of these rivers prevents the successful maturation of eggs and larvae. Thus, while these rivers still attract significant numbers of spawning adult fish, they are functionally sterile. Rivers on the western shore that were identified by MD DNR staff as described above include: Bush River, Severn River, South River, and Magothy River. Anadromous fish species that attempt to utilize these rivers for spawning have been recorded in the ESI attribute table 'Concentration' field with the designation 'Historical Spawning'.

Freshwater fish - Maryland - Freshwater finfish distributions were initially mapped to the river systems based on sampling data (2000-2014) from the Maryland Biological Stream Survey (MBSS). This survey is conducted on a yearly basis during the summer months in streams throughout Maryland using a stratified-random sampling method to determine the yearly sampling locations, except for a limited series of sentinel or reference sites that are sampled every year. Although the MBSS does not sample in the main stems of Maryland's rivers, as it is specifically a survey conducted in smaller tributaries that feed the major rivers, MBSS survey data were used to assign initial fish distributions to the fresh water reaches of Maryland's river systems (Back, Bohemia, Bush, Chester, Choptank, Elk, Gunpowder, Middle, Nanticoke, North East, Patuxent, Potomac, Sassafras, and Susquehanna) included in this ESI. MBSS data were utilized due to a lack of sampling data available for the fresh water portions of these rivers. Fish species that were captured in multiple years (>3) and in multiple sampling locations (>5) within the watersheds were included in the initial freshwater fish distribution lists and assigned to river polygons proximal to the sites where they were captured. In the Potomac River, freshwater fish species captured in the VIMS Juvenile Fish and Blue Crab Trawl Survey, which encompasses sampling effort up to the approximate fresh/salt water mixing zone in the Potomac (and James, Rappahannock and York Rivers in VA), but not captured by the MBSS, were also included in the initial distributions to supplement the MBSS data (see also methods below under marine and estuarine fish). Seasonalities for spawning and the presence of various life stages were assigned using information contained in the Field Guide to Fishes of the Chesapeake Bay, when available, due to a lack of year round sampling data.

Through consultations and in-person meetings with resource managers/scientists at MD DNR who were responsible for the sampling programs and management of Maryland's freshwater fisheries, fish species included in the initial distribution assessment (as described above) were systematically reviewed for their spatial distributions and life history characteristics (seasonalities) and either accepted, modified, or removed based on the comprehensive knowledge and expert opinions of the MD DNR reviewers.

Freshwater fish - Virginia - In Virginia, freshwater species were mapped in the river systems, bays, and sounds using data from the VIMS Juvenile Fish and Blue Crab Trawl survey, VDGIF Wildlife Environmental Review Map Service (WERMS) Species Observations Database, USFWS Back Bay National Wildlife Refuge fishery management plans and survey data, and expert opinion from VIMS scientists and VGDIF staff.

Freshwater species distributions were mapped in the main rivers in Virginia (James, Rappahannock and York Rivers) primarily using data from the VIMS Juvenile Fish and Blue Crab Trawl dataset, which was summarized by VIMS for the sampling years 2005-2014, to give total number of fish captured by species per sampling station. Utilizing this summary, the frequency of each species caught during each month

was calculated for the designated sampling regions, which were based on polygonal regions designated by VIMS for the trawl survey. Initial distributions were based on species that were captured in the trawl survey at a 10% frequency or higher (based on number of trawls) in a given month for a given sampling region. Species that met the 10% threshold were marked as present for that month and region.

Some rivers and bays in Virginia had only limited or no sampling data, including Currituck Sound, Back Bay, and North Landing River. Initial fish distributions for these areas were developed using available publications, including management plans, and limited survey data (when available). Fresh water regions lacking all data were initially populated for species using data from adjacent sampling regions (i.e., VIMS Juvenile Fish and Blue Crab Trawl) and the WERMS Species Observations Database. Additional distributions and life history seasonalities, such as larvae, eggs, and spawning months, were typically gathered from the Field Guide to Fishes of the Chesapeake Bay (Murdy and Musick, 2013) and expert knowledge provided by VIMS scientists or VDGIF staff.

Through a series of consultations and in-person meetings with resource managers/scientists at VIMS and VDGIF, who are responsible for the sampling programs and/or management of Virginia's freshwater fisheries, fish species included in the initial distribution assessment (as described above) were systematically reviewed for their spatial distributions and life histories (seasonalities) and either accepted, modified or removed based on the knowledge and expert opinions of the reviewers.

Additional fresh water fish species known to occur in the river systems of Maryland and Virginia, which were not contained within the initial data request and assessment, were also included in this ESI based on the expert opinion of the reviewers from the respective states.

Nearshore and Estuarine Fish Species – Nearshore marine and estuarine distributions of fish species were mapped primarily using fishery-independent data from the Northeast Area Monitoring and Assessment Program (NEAMAP), the Chesapeake Bay Multispecies Monitoring and Assessment Program (ChesMMAAP), MD DNR Coastal Bays Fisheries Investigation, and VIMS Juvenile Fish and Blue Crab Trawl Survey. These data sets were supplemented with information from Funderburk et al. (1991), Murdy and Musick (2013), and then systematically reviewed by resource managers and scientists from MD DNR, VDGIF, USFWS and VIMS.

Data from ChesMMAAP and the VIMS Juvenile Fish and Blue Crab Trawl Survey were used to map fish species distributions within Chesapeake Bay and its tributaries. ChesMMAAP data, which was initially requested for 40 commercially and/or recreationally important species, is collected during the months of March, May, July, September and November. The VIMS Juvenile Fish and Blue Crab Trawl Survey is conducted in every month throughout the year. The VIMS Trawl survey was also used to map species into the three main Virginia tributaries of the Chesapeake Bay (James River, Rappahannock River and the York River) and the Potomac River in Maryland, up to, and including, the fresh water boundary regions (see fresh water fish species above). Both datasets were used as a reference for fish distributions in Maryland's river systems, where there was a lack of sampling data available. Each requested dataset was summarized by the data provider for the sampling years 2005-2014 to give total number of occurrences per sampling station by species. From these summaries, the frequency of capture of each species caught during each month for each sampling region was calculated (based on how many times a species was captured in a trawl divided by the total number of trawls conducted in the sampling region). The standardized polygonal sampling regions provided by the respective surveys for each of these datasets were used to create the geographic distributions of species. Species that were found to occur with a 10% frequency or higher in a given month for a given sampling region were marked as present for that month and sampling region. Due to the limited sampling times in the ChesMMAAP data, the final monthly presence and absence data was determined through in-person consultations with VIMS and MD DNR scientists.

For marine species in the Atlantic Ocean from the coast out to 12 nm for both Maryland and Virginia, fish species distributions and seasonalities were initially created using data from the NEAMAP trawl survey, which began sampling in the fall of 2007. NEAMAP sampling takes place in the coastal waters of Maryland and Virginia in the spring (April and occasionally May) and fall (October) each year. Data used for the ESI included trawls from the years 2007-2014, and the frequencies of species caught were used to

determine monthly presence/absence for the sampling months. Presence within a sampling month was determined by the same 10% frequency cut-off outlined for the ChesMMAP and VIMS Trawl data above. Due to the limited sampling times in the NEAMAP data the final monthly presence and absence data were determined through face-to-face consultations with VIMS and MD DNR scientists.

Maryland's Coastal Bays Fisheries Investigation (CBFI) Survey data, summarized by MD DNR, were used to initially map species distributions in the coastal bays of Maryland. Due to a lack of survey data in Virginia's coastal bays, CBFI data were also used as a reference for initial species distributions in the coastal bays of Virginia. Species distributions for the Back Bay region were mapped based on reports and data supplied by USFWS and expert opinion from VDGIF scientists.

Additional species distributions and life history traits, such as larvae, eggs, and spawning months, were gathered from the Field Guide to Fishes of the Chesapeake Bay (Murdy and Musick, 2013), ELMR Program data (Stone et al., 1994) and expert opinion from MD DNR and VIMS. All marine and estuarine species distributions and presence/absence data included in this ESI were systematically reviewed and approved through consultations with MD DNR, VDGIF, USFWS and VIMS scientists.

Sharks - The southern region of Chesapeake Bay is an important nursery area for several shark species. Nursery areas and general distributions of sharks were mapped based on expert knowledge from scientists at MD DNR and VIMS, who conduct both adult longline and juvenile shark (COASTSPAN) surveys within the area covered by this atlas. Note that the life-history stages for fish in the ESI data structure do not match the correct terminology for sharks. As a result, areas with months for shark 'larvae' represent months for which that polygon serves as habitat or a nursery area for young-of-year sharks (i.e., primary nursery areas).

Estuarine and marine fish species generally spawn where and when environmental conditions are suitable and spatially defined spawning areas have not been determined through surveys for the majority of the marine, estuarine, and fresh water species included in this atlas. Spawning information for these species' life history is contained in the 'general distribution' polygons to capture seasons in which spawning, eggs, and larvae are likely to be present. Exceptions include anadromous species which have known spawning locations.

This atlas does not contain all of the fish species that are present in the Chesapeake Bay, in the coastal bays of Maryland and Virginia, or in the Atlantic Ocean. Some species, like killifish spp. (in Chesapeake Bay), butterfish, mummichog, and needlefish, were not included due to their ubiquitous nature in the bay and/or marine environment; while others species were not included due to lack of data or on the expert opinion of the scientists and data providers.

Expert contacts for Virginia fish*:

Name	Agency	City	Phone	Species
Eric Brittle	VDGIF	Chesapeake, VA	757/334-5075	Anadromous and Freshwater Fish
Alan Weaver	VDGIF	Richmond, SC	804/367-6795	Anadromous and Freshwater Fish
Bob Greenlee	VDGIF	Charles City, VA	804/829-6715	Atlantic and shortnose sturgeon
Katie May Laumann	VMRC	Newport News, VA	757)-247-2263	Atlantic sturgeon
Albert Spells	USFWS	Charles City, VA	804/829-5627	Atlantic and shortnose sturgeon
Jason Kahn	NOAA	Silver Springs, MD	301/427-8464	Atlantic sturgeon
Troy Tuckey	VIMS	Gloucester Point, VA	804/684-7328	Estuarine fish and striped bass
Mary C. Fabrizio	VIMS	Gloucester Point, VA	804/684-7308	Estuarine fish

Name	Agency	City	Phone	Species
Chris Bonzek	VIMS	Gloucester Point, VA	804/684-7291	Marine finfish
Debra Gauthier	VIMS	Gloucester Point, VA	804/684-7891	Marine finfish

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

Expert contacts for Maryland fish*:

Name	Agency	City	Phone	Species
Steve Doctor	MD DNR	Ocean City, MD	410/213-1531	Marine and estuarine fish
Angel Willey	MD DNR	Matapeake, MD	410/643-6801 x 2101	Marine and estuarine fish
Jim Thompson	MD DNR	Annapolis, MD	410/260-8269	Anadromous fish
Beth Versak	MD DNR	Annapolis, MD	410/260-8304	Striped bass
Paul Piavis	MD DNR	Annapolis, MD	410/643-6801	Estuarine and anadromous fish
Margaret McGinty	MD DNR	Annapolis, MD	410/260-8297	Estuarine and anadromous fish
Chuck Stence	MD DNR	Stevensville, MD	410/643-6788	Atlantic sturgeon
Steve Minkinnen	USFWS	Annapolis, MD	410/573-4506	Atlantic and shortnose sturgeon
Mike Mangold	USFWS	Annapolis, MD	410/573-4509	Atlantic and shortnose sturgeon
Matt Ashton	MD DNR	Annapolis, MD	410/260-8604	Freshwater fish
Scott Stranko	MD DNR	Annapolis, MD	410/260-8603	Freshwater fish

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

Major Data Sources Used: Fish

Funderburk, S.L., S.J. Jordan, J.A. Mihursky, and D. Riley, editors. 1991. Habitat requirements for Chesapeake Bay living resources (Revised edition). Chesapeake Bay Program, Annapolis, MD.

MD DNR. 2014. Coastal Bays Fisheries Investigation Trawl and Beach Seine Survey data, 2005-2014, spreadsheet.

MD DNR. 2014. Maryland Biological Stream Survey (MBSS) data, 2000-2014, spreadsheet.

MD DNR. 2015. Maryland river herring spawning and nursery habitats, vector digital data.

MD DNR. 2012. Maryland striped bass spawning areas, vector digital data.

Murdy, E.O. and J.A. Musick. 2013. Field guide to fishes of the Chesapeake Bay. The John Hopkins University Press, Baltimore, MD, 345 pp.

Stone, S.L., T.A. Lowery, J.D. Field, C.D. Williams, D.M. Nelson, S.H. Jury, M.E. Monaco and L. Andreasen. 1994. Distribution and abundance of fishes and invertebrates in Mid-Atlantic estuaries. ELMR Rep. No. 12. NOAA/NOS Strategic Environmental Assessments Division, Silver Spring, MD. 280 p.

The Nature Conservancy. 2015. Chesapeake Bay Fish Passage Prioritization Project data, vector digital data.

- USFWS. 2011. Maryland sturgeon reward program captures - Atlantic and shortnose sturgeon, spreadsheet
- VDGIF. 2015. Wildlife Environmental Review Map Service: Species Observation Database (SppObs), vector digital data.
- VIMS. 2014. VIMS Multispecies Research Group, Chesapeake Bay Multispecies Monitoring and Assessment Program (ChesMMAP) data, 2005-2014, spreadsheet.
- VIMS. 2014. VIMS Multispecies Research Group, Northeast Area Monitoring and Assessment Program (NEAMAP) data, 2005-2014, spreadsheet.
- VIMS. 2014. VIMS Recruitment Program Juvenile Fish and Blue Crab Trawl Survey data, 2005-2014, spreadsheet.

INVERTEBRATES

Invertebrates depicted in this atlas include selected marine and estuarine species of commercial, ecological, and/or conservation value. Blue crabs, clams, oysters, and shrimp support valuable commercial and/or recreational shellfisheries with Chesapeake Bay and the coastal waters of Virginia and Maryland.

Marine and Estuarine Invertebrate Species - Sources used to depict distribution and seasonality of invertebrate species include: personal interviews with resource experts from MD DNR, VDGIF, VA MRC and VIMS; fishery-independent sampling data provided by MD DNR, NEAMAP, ChesMMAP and VIMS; species observation datasets for Virginia; reports and hardcopy maps for soft clam and razor clam distributions in Maryland; and vector digital data covering oyster reef locations provided by VIMS and MD DNR and shellfish lease areas provided by VA MRC.

Blue crabs - Blue crab were initially mapped in Chesapeake Bay and the Atlantic Ocean using fishery-independent data for the time period 2005–2014 from NEAMAP, ChesMMAP, and VIMS Juvenile Fish and Blue Crab Trawl survey. Spatial data from Habitat Requirements for Chesapeake Bay Living Resources (Funderburk et al., 1991) was used to depict summer high density areas. Winter high density areas were mapped using independent fishery data from the Blue Crab Winter Dredge survey (2009–2010) provided by VIMS. Spatial distributions in the coastal bays of Maryland and Virginia were mapped using expert knowledge from biologists at MD DNR and VIMS. Blue crab presence/absence data were then systematically reviewed and modified through consultations with MD DNR and VIMS scientists to the final distributions depicted on this ESI.

Chesapeake Bay Shellfish - Oysters and other commercially and/or recreationally important shellfish species, including hard clams, soft clams and stout razor clams, were mapped in Chesapeake Bay using a combination of independent fishery survey data, shellfish lease areas, reports and expert knowledge from MD DNR, VA MRC and VIMS. In Maryland, shellfish distributions were mapped using a combination of MD DNR Oyster Dredge Survey data (2005–2014), Maryland’s Historical Oyster Bottom vector digital data, the Assessment of Chesapeake Bay Commercial Softshell Clams (Homer et al., 2011), Habitat Requirements for Chesapeake Bay Living Resources (Funderburk et al., 1991), and expert opinion from MD DNR biologists. In Virginia, shellfish spatial distributions were mapped using VA MRC 2015 active shellfish lease data, Habitat Requirements for Chesapeake Bay Living Resources (Funderburk et al., 1991), and expert opinion from VA MRC and VIMS scientists.

Coastal Bays Shellfish - Oysters, stout razor clam and softshell clam distributions in the coastal bays of Maryland were mapped based on expert opinion of MD DNR. Hard clam distributions were mapped using data from MD DNR Coastal Hard Clam survey from 2004–2014. In Virginia’s coastal bays, oyster general distributions were based on shellfish lease digital data and expert opinion provided by VA MRC, and oyster reefs were mapped using digital data provided by VIMS (Ross et al., 2009), which had a resolution of approximately 1 m². The oyster reef polygons in this dataset were buffered by 25 m and

then merged together to conform to the minimum resolution requirements of the ESI maps and to take into account the growth and shifting nature of oyster reefs. Oyster reefs mapped in the ESI are not the only reefs that could occur in coastal areas, but represent current and potential oyster habitat.

Other Invertebrates - Distributions of other marine and estuarine invertebrates, including brown shrimp, white shrimp, mantis shrimp, and squid species were mapped in Chesapeake Bay and the Atlantic Ocean using data from NEAMAP, ChesMMAP, and VIMS Juvenile Fish and Blue Crab Trawl surveys from 2005–2014. Presence and absence of species was calculated using the NEAMAP, CHesMMAP and VIMS Juvenile Fish and Blue Crab survey data sets and followed the same methods outlined under the fish section (above). Additional invertebrate species with spatial distributions in the coastal bays of Maryland and Virginia and in marine waters (out to 12 nm), including life history traits, were based on expert knowledge provided by MD DNR, VA DGIF and VIMS. All marine and estuarine invertebrate spatial distributions and presence/absence data depicted in this ESI were systematically reviewed and finalized through consultations with MD DNR, VA MRC and VIMS scientists prior to inclusion.

Horseshoe crabs - Horseshoe crab spawning beaches were mapped from three different sources. In the Coastal Bays of Maryland, spawning beaches were identified using expert knowledge provided by Steve Doctor. Tom's Cove in the Chincoteague National Wildlife Refuge holds arguably the most important spawning habitat within the Chesapeake Bay and the Outer Coasts of Maryland and Virginia ESI. Spawning beaches in Tom's Cove were mapped from the Tom's Cove, Virginia Horseshoe Crab Tag Recovery Study Interim Report. Lastly, a number of small spawning sites within Chesapeake Bay itself were mapped using public sightings data provided by MD DNR. It should be noted that horseshoe crabs utilize whatever appropriate habitat is available inside Chesapeake Bay, and that these areas can shift over time. No comprehensive surveys for spawning beaches have been conducted, so the public sightings data are unlikely to capture all the ecologically significant areas.

Freshwater mussels - Freshwater mussels in Virginia and Maryland were mapped using VDGIF's Freshwater Mussel database, MD DNR's Ecologically Significant Areas database and the Maryland Biological Stream Survey data, respectively. Mussels mapped in Virginia represent rare species that are of conservation concern and are of significant ecological importance. Species observations mapped from the VDGIF database were restricted to the dates 1995–2013, and only include records that fell within 1000 m of ESI water bodies that are continuous to the ocean. Species mapped in Maryland have similar importance, but also include two endangered species: the dwarf wedgemussel (FE, MD SE) and the triangle floater (MD SE). Species mapped from MD DNR's Ecologically Significant Areas database are restricted based on date of last survey and include the years 1996 to 2016.

Insects - A number of insects of conservation concern were mapped in Maryland using MD DNR's Ecologically Significant Areas database. Records were selected based upon date of last survey and include data from 1996 to 2016. Insect species mapped from this database include three beetles: a darkling beetle, *Schoenicus puberulus* (MD SE); a helops darkling beetle, *Helops cisteloides* (MD SE); and the white tiger beetle, *Habroscelimorpha dorsalis media* (formerly *Cicindela dorsalis media*) (MD SE); and two species of butterfly: Palamedes swallowtail, *Papilio palamedes* (MD SE), and Selys' sunfly, *Helocordulia selysii* (MD ST). USFWS provided shapefiles depicting occurrences of FT/SE insects; common names were not included in the data tables for these species.

Tiger beetles - Northeastern beach tiger beetle (*Cicindela dorsalis dorsalis*, FT, MD SE, VA ST) occurrences in Virginia were mapped using a hard copy map from USFWS. On the eastern shore of Chesapeake Bay in Virginia, two sites account for more than 50% of the total population along that shore. These sites, Parker's Marsh and Savage Neck, have been marked as 'Concentration Areas' in the ESI database. The western shore harbors a smaller total population of northeastern beach tiger beetles, mostly due to recent hurricane events in 2003 and 2006, that seriously altered beach habitat and resulted in a large drop in population size. As of the last survey in 2008, approximately 10,000 tiger beetles were found on the western shore, as opposed to more than 38,000 beetles found on the eastern shore in 2005. Northeastern beach tiger beetles were also mapped in various parts of the study area according to expert knowledge.

Assateague National Seashore and USFWS National Wildlife Refuges - Resource experts provided distribution information for little white tiger beetle (*Ellipsoptera lepida*, MD SE), white tiger beetle (see above),

northeastern beach tiger beetle (see above), and monarch butterfly (*Danaus plexippus*) on federal lands for which they had information.

The species depicted in this atlas do not represent all of the invertebrate species present in this area of interest, including species like ribbed mussels which are ubiquitous to salt marsh habitats. Other invertebrate species, like blue mussels and some razor clam species which can be found in the coastal bays of Maryland and Virginia as juveniles, are also ecologically important as a food source for migrating birds and other invertebrate/fish species, but because of their ephemeral nature and lack of stable adult populations, were not included in this atlas.

Expert contacts for Chesapeake Bay and the outer coasts of Maryland and Virginia invertebrates*:

Name	Agency	City	Phone	Species/ Program
Steve Doctor	MD DNR	Ocean City, MD	410/213-1531	Horseshoe crabs and marine invertebrates
Marek Topolski	MD DNR	Annapolis, MD	410/260-8263	Chesapeake Bay horseshoe crabs
Andy Moser	USFWS	Annapolis, MD	410/573-4537	Tiger Beetles
Brian Watson	VDGIF	Forest, VA	434/525-7522	Freshwater mussels
Matt Ashton	MD DNR	Annapolis, MD	410/260-8604	Freshwater mussels
Lynn Davidson	MD DNR	Annapolis, MD	410/260-8563	Digital data provider
Mark Luckenback	VIMS	Gloucester Point, VA	804/684-7108	Marine and estuarine shellfish
Jim Wesson	VA MRC	Newport News, VA	757/247-2121	Marine and estuarine shellfish
Roger Mann	VA MRC	Gloucester Point, VA	804/ 684-7360	Marine and estuarine shellfish
Angel Willey	MD DNR	Matapeake, MD	410/643-6801 X 2101	Marine invertebrates
Mitch Tarnowski	MD DNR	Annapolis, MD	410/260-8258	Marine and estuarine shellfish
Ben Stagg	VA MRC	Newport News, VA	757-247-2225	Oysters
Leslie Gerlich	USFWS	Annapolis, MD	410/573-4587	Federal T/E species

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

Major Data Sources Used: Invertebrates

Funderburk, S.L., S.J. Jordan, J.A. Mihursky, and D. Riley, editors. 1991. Habitat requirements for Chesapeake Bay living resources (Revised edition). Chesapeake Bay Program, Annapolis, MD.

Hallerman, E. 2009. Tom's Cove, Virginia horseshoe crab tag recovery study: interim report. A report to permitting authorities: Assateague Island National Seashore, Chincoteague National Wildlife Refuge, Virginia Marine Resources Commission. Virginia Polytechnic Institute and State University, Blacksburg, VA.

Homer, M.L., C.F. Dungan, and M.L. Tarnowski. 2011. Assessment of Chesapeake Bay Commercial softshell clams, *Mya arenaria* and *Tagelus plebeius*, with emphasis on abundance and disease status. Maryland Department of Natural Resources, Award NA07NMF4570326.

MD DNR. 2016. Ecologically significant areas of Maryland, vector digital data.

- MD DNR. 2014. Maryland Biological Stream Survey (MBSS) data, *Elliptio complanata* occurrences, 1995-2014, spreadsheet.
- MD DNR. 2014. Maryland Department of Natural Resources Coastal Hard Clam Survey data, 2004-2014, spreadsheet.
- MD DNR. 2014. Maryland Department of Natural Resources Oyster Dredge Survey data, 2005-2014, spreadsheet.
- MD DNR. 1997. Maryland Department of Natural Resources Historical Oyster Bottom. Vector digital data.
- MD DNR. 2015. Maryland horseshoe crab spawning public siting data, 2007-2015, spreadsheet.
- Ross, P.G. and M.W. Luckenbach. 2009. Population assessment of Eastern Oysters (*Crassostrea virginica*) in the Seaside Coastal Bays, vector digital data.
- USFWS. 2011. Northeastern beach tiger beetle occupied habitat, Chesapeake Bay. Gloucester, VA.
- VDGIF. 2013. VDGIF Freshwater Mussel Database, 1995-2013, vector digital data.
- VA MRC. 2015. Virginia Shellfish Lease Areas. Vector digital data.
- VIMS. 2010. Blue Crab Winter Dredge Survey data, 2009-2010. Map images and spatial analyses.
- VIMS. 2014. VIMS Multispecies Research Group, Chesapeake Bay Multispecies Monitoring and Assessment Program (ChesMMAP) data, 2005-2014, spreadsheet.
- VIMS. 2014. VIMS Multispecies Research Group, Northeast Area Monitoring and Assessment Program (NEAMAP) data, 2005-2014. Spreadsheet. Tarnowski, Mitch (MD DNR). Shellfish distributions and life histories in Chesapeake Bay and the coastal bays of Maryland. Personal communication.
- VIMS. 2014. VIMS Recruitment Program Juvenile Fish and Blue Crab Trawl Survey data, 2005-2014, spreadsheet.

BENTHIC HABITATS

Benthic habitats mapped in the ESI atlas include submerged aquatic vegetation (SAV) in the Chesapeake Bay and Back Bay. SAV data for the Chesapeake Bay from 2010-2014 aerial surveys were provided by VIMS. VIMS categorized SAV density for each year for all survey locations using a scale from 1, very sparse (<10% cover), to 4, dense (70-100% cover). For the ESI, VIMS provided five years (2010-2014) of SAV data to account for interannual variation in bed size and density. The five years of data were layered and the resulting polygons were categorized as either “high” or “low” density based on whether a majority of the years (three or more years) had high density categories (3 or 4) or low density categories (1 or 2). Areas with a density category of 0 for all five years were not mapped. Areas with one or two 0 density years were assigned to the ESI “high” or “low” categories based on the density categories of the majority of remaining years. All areas with at least one year of SAV presence, regardless of density value, that was not already covered by the “high” and “low” polygons were mapped with a concentration of “ephemeral”. “High”, “low”, and “ephemeral” polygons were dissolved to make contiguous polygons. SAV in Back Bay was mapped where present using the SAV map of North Carolina and Southeastern Virginia originated by the North Carolina Division of Marine Fisheries and provided by Back Bay NWR. Submerged aquatic vegetation mapped in the ESI is comprised of a variety of species, and the species assemblages are often determined by salinity. The following table lists species assemblages known to occur in the Chesapeake Bay and the months when they are present. Density of all SAV communities in Chesapeake Bay peak in the summer months, and some species are present year-round (Moore et al., 2000). The SAV survey data provided were not species-specific, so all SAV mapped in the Chesapeake Bay were mapped as present year-round. Freshwater SAV communities defoliate and are not present in winter (Moore et al., 2000), so SAV in Back Bay, an oligohaline bay, was mapped only during months present for freshwater SAV.

SAV species assemblages and months present:

SAV community type	Species associations	Months present
<i>Zostera</i> Community	<i>Zostera marina</i> * <i>Ruppia maritima</i>	January – December
<i>Ruppia</i> Community	<i>Ruppia maritima</i> * <i>Potamogeton perfoliatus</i> <i>Potamogeton pectinatus</i> <i>Zannichellia palustris</i>	January – December
<i>Potamogeton</i> Community	<i>Potamogeton pectinatus</i> * <i>Potamogeton perfoliatus</i> * <i>Potamogeton crispus</i> <i>Elodea canadensis</i>	May – November
Freshwater Mixed Community	<i>Myriophyllum spicatum</i> * <i>Hydrilla verticillata</i> * <i>Vallisneria americana</i> * <i>Ceratophyllum demersum</i> <i>Heteranthera dubia</i> <i>Elodea canadensis</i> <i>Najas</i> spp. <i>Potamogeton crispus</i> <i>Potamogeton pusillus</i>	May – November

*Dominant species

Expert contacts for Chesapeake Bay and the outer coasts of Maryland and Virginia benthic habitats*:

Name	Agency	City	Phone	Species/ Program
Bob Orth	VIMS	Gloucester Point, VA	804/684-7392	SAV
David Wilcox	VIMS	Gloucester Point, VA	804/684-7088	SAV
Lauren Billodeaux Mowbray	USFWS	Virginia Beach, VA	757/301-7329 x3108	Back Bay NWR SAV
Geralyn Mireles	USFWS	Virginia Beach, VA	757/301-7329 x153	Back Bay NWR SAV

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

Major Data Sources Used: Benthic Habitats

Moore, K.A., D.J. Wilcox, and R.J. Orth. 2000. Analysis of the abundance of submersed aquatic vegetation communities in the Chesapeake Bay. *Estuaries* 23: 115-127.

North Carolina Division of Marine Fisheries, Habitat Protection Section, Albemarle-Pamlico Sound National Estuary Program Submerged Aquatic Vegetation (SAV) Mapping Partnership. 2008. SAV Map of North Carolina and Southeastern Virginia 2007-2008, vector digital data.

VIMS. 2015. SAV distribution, 2010-2014, vector digital data.

HABITATS

Plant Species and Sensitive Ecological Communities – The MD DNR provided the majority of data for rare, threatened, and endangered plant species from their Ecologically Significant Areas (ESAs) of Maryland database. Data from the ESAs came in the form of generalized polygons within which multiple threatened or endangered species can often be found. Species include two federally listed species: seabeach amaranth (FT, VA ST, MD SE) and sensitive joint-vetch (FT, VA ST, MD SE) as well as numerous Maryland state listed species. To simplify display of these data, species names were generalized to reflect the Maryland state status with one of two designations, either ‘threatened plant’ or ‘endangered plant’. When more than one threatened or endangered species is found in the same polygon, this is recorded in the concentration field of the attribute table. For example, if two distinct endangered plants occur in the same polygon, this would result in a single record attributed with ‘2 species present’ in the concentration field. If there is no attribute in the concentration field, than only a single species is present.

State threatened plant genera mapped in Maryland:

<i>Antennaria</i>	<i>Linum</i>	<i>Sclerolepis</i>
<i>Carex</i>	<i>Lygodium</i>	<i>Scutellaria</i>
<i>Chamaedaphne</i>	<i>Lysimachia</i>	<i>Smilax</i>
<i>Chelone</i>	<i>Paspalum</i>	<i>Solidago</i>
<i>Diplazium</i>	<i>Phemeranthus</i>	<i>Sphenopholis</i>
<i>Eleocharis</i>	<i>Polygala</i>	<i>Stenanthium</i>
<i>Eriocaulon</i>	<i>Rhynchospora</i>	<i>Thelypteris</i>
<i>Eupatorium</i>	<i>Sagittaria</i>	
<i>Hypericum</i>	<i>Sanguisorba</i>	

State endangered plant genera mapped in Maryland:

<i>Aeschynomene</i>	<i>Equisetum</i>	<i>Leersia</i>	<i>Parnassia</i>	<i>Sesuvium</i>
<i>Agalinis</i>	<i>Eriocaulon</i>	<i>Lemna</i>	<i>Paspalum</i>	<i>Sida</i>
<i>Amaranthus</i>	<i>Eurybia</i>	<i>Liatris</i>	<i>Pedicularis</i>	<i>Sorghastrum</i>
<i>Aristida</i>	<i>Gaylussacia</i>	<i>Limnobia</i>	<i>Persea</i>	<i>Sporobolus</i>
<i>Asclepias</i>	<i>Glyceria</i>	<i>Limosella</i>	<i>Pluchea</i>	<i>Stachys</i>
<i>Bidens</i>	<i>Gymnopogon</i>	<i>Lipocarpa</i>	<i>Polanisia</i>	<i>Stellaria</i>
<i>Cardamine</i>	<i>Hasteola</i>	<i>Lithospermum</i>	<i>Polygonum</i>	<i>Symphyotrichum</i>
<i>Carex</i>	<i>Helianthemum</i>	<i>Litsea</i>	<i>Potamogeton</i>	<i>Tephrosia</i>
<i>Ceratophyllum</i>	<i>Hexastylis</i>	<i>Lobelia</i>	<i>Prenanthes</i>	<i>Trachelospermum</i>
<i>Chamaecrista</i>	<i>Honckenya</i>	<i>Ludwigia</i>	<i>Prunus</i>	<i>Triglochin</i>
<i>Cicuta</i>	<i>Hottonia</i>	<i>Lycopodiella</i>	<i>Pycnanthemum</i>	<i>Triosteum</i>
<i>Coelorachis</i>	<i>Hudsonia</i>	<i>Lysimachia</i>	<i>Ranunculus</i>	<i>Utricularia</i>
<i>Deschampsia</i>	<i>Hypericum</i>	<i>Lythrum</i>	<i>Rhynchospora</i>	<i>Valeriana</i>
<i>Desmodium</i>	<i>Iris</i>	<i>Matelea</i>	<i>Rumex</i>	<i>Veratrum</i>
<i>Dichanthelium</i>	<i>Juncus</i>	<i>Mecardonia</i>	<i>Sabatia</i>	<i>Xyris</i>
<i>Dryopteris</i>	<i>Krigia</i>	<i>Melothria</i>	<i>Sacciolepis</i>	<i>Zizaniopsis</i>
<i>Elatine</i>	<i>Kyllinga</i>	<i>Morella</i>	<i>Salix</i>	<i>Stellaria</i>
<i>Eleocharis</i>	<i>Lachnanthes</i>	<i>Nymphoides</i>	<i>Scleria</i>	<i>Symphyotrichum</i>
<i>Elephantopus</i>	<i>Lathyrus</i>	<i>Panicum</i>	<i>Scutellaria</i>	

Data for sensitive joint-vetch and seabeach amaranth in National Wildlife Refuges were provided through personal communication with USFWS staff and in NWR reports. Occurrences of seabeach amaranth within the Assateague Island National Seashore were provided by NPS staff. Additional occurrences of rare plant species within Chincoteague and Wallops Island National Wildlife Refuges were provided by USFWS staff via personal communication.

Expert contacts for Chesapeake Bay and the outer coasts of Maryland and Virginia rare plants*:

Name	Agency	City	Phone	Species/ Program
Jack Kumer	NPS	Berlin, MD	410/629-6070	Assateague Island NS
Lauren Billodeaux Mowbray	USFWS	Virginia Beach, VA	757/301-7329	Back Bay NWR
Kevin Holcomb	USFWS	Chincoteague, VA	757/336-6122	Chincoteague and Wallops Island NWRs
Lynn Davidson	MD DNR	Annapolis, MD	410/260-8563	Digital data provider

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

Major Data Sources Used: Habitats

MD DNR. 2016. Ecologically Significant Areas of Maryland, vector digital data.

USFWS. 2015. Eastern Virginia Rivers National Wildlife Refuge Complex – sensitive joint-vetch map.

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.

TERRESTRIAL MAMMALS

Terrestrial mammals depicted in this atlas include bats, squirrels, shrews, horses, and otters. Species that are federally and state listed, and those that are vulnerable to oiling and response activities, are specifically emphasized. Threatened and endangered mammals include the Delmarva fox squirrel (VA SE, MD SE), and the Rafinesque's eastern big-eared bat (VA SE). Terrestrial mammal occurrence and seasonality information displayed in this atlas are based on data supplied by the USFWS, NPS, and VDGIF. Note that distributions for Delmarva fox squirrel's (VA SE, MD SE) are areas where they are likely to occur in their preferred habitat. Fox squirrels are primarily found in forests with mixed hardwoods and pines.

Expert contacts for Chesapeake Bay and the outer coasts of Maryland and Virginia terrestrial mammals*:

Name	Agency	City	Phone	Species
Jack Kumer	NPS	Berlin, MD	410/629-6070	Assateague Island NS
Lauren Billodeaux Mowbray	USFWS	Virginia Beach, VA	757/301-7329	Back Bay NWR
Jay Kapalczynski	VDGIF	Henrico, VA	804/367-6796	WERMS Database

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

Major Data Sources Used: Terrestrial Mammals

USFWS. 2008. Delmarva peninsula fox squirrel. Arlington, VA.

VDGIF. 2015. Wildlife environmental review map service, species observation database, vector digital data.

WILDLIFE REHABILITATION

The following contact provides veterinary care and/or retrieval of wildlife adversely affected by an event: Tri-State Bird Rescue & Research. 170 Possum Hollow Road, Newark, DE 19711. (302)-737-9543.






























HUMAN-USE RESOURCES

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

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

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

Note that some data provided by MD DNR, as part of their Ecologically Significant Areas (ESA) database, were included in the Essential Habitats resource. Species mapped this way include some of the most sensitive species in the ESA database. Many of these species are federally threatened or endangered. MD DNR considers these species so sensitive that they were unwilling to disclose species' names or what ESI element they represent. Without knowing the element these species fall under, they could not be mapped with the biological data.

	Abandoned Vessel		Marina
	Airport		Military Installation
	Anchorage		Mooring Site
	Aquaculture		National Estuarine Research Reserve
	Artificial Reef		National Park
	Beach		Nature Conservancy
	Boat Ramp		Park
	Commercial Fishing		Port
	Critical Habitat		Recreational Fishing
	EPA Facility		Repeated Measurement Site
	Ferry		State Protected Area
	Heliport		Tribal Land
	Historical Site		Water Intake
	Lock and Dam		Wildlife Refuge
	Management Area		

Abandoned Vessel: Data on locations of abandoned and derelict vessels comes from NOAA's Office of Coast Survey Automated Wrecks and Obstructions Information System (AWOIS).

Airport: Locations of airports, airfields, landing strips, etc. were downloaded from the National Transportation Atlas Databases maintained by the Federal Aviation Administration.

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

Aquaculture: Data were provided by the Center for Coastal Resources Management, Virginia Institute of Marine Science, College of William and Mary.

Army Corps of Engineers: U.S. Army Corps of Engineers (USACE) districts and divisions data were provided from the geospatial platform maintained by USACE.

Artificial Reef: Artificial reef data were provided by VA Department of Game and Inland Fisheries, MD DNR, The Nature Conservancy, and NOAA's Office of Coastal Management.

Beach: Locations of recreational beaches used for activities such as swimming, sun-bathing, fishing, etc. were mapped from expert knowledge.

Boat Ramp: Boat ramp location data were provided by the MD DNR, MD Geographic Information Office, VA Department of Conservation and Recreation, VA Department of Game and Inland Fisheries, and the Center for Coastal Resource Management at Virginia Institute of Marine Science, College of William and Mary.

Coast Guard: U.S. Coast Guard (USCG) stations were provided by the USCG and the U.S. Army Corps of Engineers. USCG polygonal district boundaries were provided by the USCG.

Commercial Fishing: Commercial pound net sites were provided by Maryland Department of Natural Resources.

County Boundary: Boundaries were downloaded from the U.S. Census Bureau MAF/TIGER (Topologically Integrated Geographic Encoding and Referencing) geographic database.

Critical Habitat: Designated Critical Habitat was mapped for the Maryland darter (*Etheostoma sellare*). Data were provided by the United States Fish and Wildlife Service.

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. The data comes from the USEPA.

Environmental Protection Agency Region: Jurisdictional region boundaries were provided by the Environmental Protection Agency.

Essential Habitat: Essential habitat for Maryland's vulnerable, rare, threatened, and/or endangered species were obtained from MD Department of Natural Resources.

Federal Emergency Management Agency Region: Jurisdictional region boundaries were provided by the Federal Emergency Management Agency.

Ferry: U.S. Department of Transportation's Intermodal Passenger Connectivity Database provided ferry terminal data.

Fishery Area: Virginia's Baylor Grounds, public oyster grounds, were provided by the Center for Coastal Resources Management, Virginia Institute of Marine Science, College of William and Mary, in addition to the black drum and oyster management areas. Public Shellfish Fishing Areas in Maryland were mapped by MD DNR.

Heliport: Locations of heliports were downloaded from the National Transportation Atlas Databases maintained by the Federal Aviation Administration.

Historical Site: Historical sites were depicted from sites in the National Park Service National Register of Historic Places (2007) and MD State Historic Preservation Office (The Maryland Historical Trust).

Lock and Dam: Marine lock and dam system data were downloaded from the National Transportation Atlas Database.

Management Area: Management areas in this ESI atlas include: wildlife management areas, nature preserves, and conservation areas and were provided by the VA Department of Conservation and Recreation, VA Department of Game and Inland Fisheries, and MD DNR.

Marina: Marina location data were provided by MD DNR.

Military Installation: Military installation data were provided by the U.S. Census Bureau's MAF/TIGER (Topologically Integrated Geographic Encoding and Referencing) geographic database.

Mooring Site: NOAA's Electronic Navigational Charts (NOAA ENC's) provided mooring locations.

National Estuarine Research Reserve (NERR): NERR boundary data were provided by the Chesapeake Bay Virginia and Maryland NERR.

National Guard: Army National Guard Units were provided by Environmental Systems Research Institute, ArcGIS Online.

National Park: National Park boundaries were provided by the National Park Service (NPS).

Nature Conservancy: Boundaries of The Nature Conservancy (TNC) properties were obtained from TNC Lands database.

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

Park: State park boundaries were provided by MA DNR and VA Department of Conservation and Recreation.

Pipeline: Natural gas inter/intrastate lines were provided by the U.S. Energy Information Association.

Port: Major port location data were compiled from ACE National Transportation Atlas databases.

Rail Route: Locations of railways were downloaded from the National Transportation Atlas Databases, maintained by the Department of Transportation.

Recreational Fishing: Recreational fishing locations were provided by Maryland DNR and Virginia Department of Game and Inland Fisheries.

Repeated Measurement Site: Repeated measurement sites obtained from NOAA include: national data buoy locations (DB), Mussel Watch monitoring sites (MWS), National Water Level Observation Network (NWLON), and Physical Oceanographic Real-Time System (PORTS). Water quality monitoring stations (WQ) were obtained from the Chesapeake Bay Program. The Long Term Ecological Research (LTER) Network provided the locations for their LTER Stations.

Road (or Bridge): Bridges were provided by NOAA Continually Updated Shoreline Product (CUSP) and also NOAA National Geodetic Survey's (NGS) Composite/National Shoreline Product.

Shipping Lane: Shipping lanes in U.S. waters were provided by NOAA's Coastal and Marine Spatial Planning office.

State (or State Border): State Borders were compiled from a variety of sources and verified by Research Planning, Inc.

State Protected Area: Areas that receive varied levels of state protection data were provided by VA Department of Game and Inland Fisheries, MD DNR, and NOAA's U.S. Marine Protected Areas Boundaries Inventory.

State Waters: State jurisdictional waters (low water mark extending 3 nm offshore) were derived from the Marine Cadastre, Coastal Zone Management Act offshore boundary.

Tribal Land: Tribal lands were downloaded from the U.S. Census Bureau's Census MAF/TIGER database.

Tunnel: Locations of tunnels were digitized as lines from information provided by Virginia Department of Transportation and Maryland Transportation Authority and verified with Google Earth imagery by Research Planning, Inc.

Washover: A washover, or washover fan, is a relatively flat surface on the top of a barrier spit complex that slopes gently landward. It is usually created when water, forced landward by breaking waves, flows across the top of the barrier spit during high spring tides or storms. This process creates a flattened-off surface along which sand is transported across the top of the spit into the standing water (lagoon) or marsh landward of the spit. The resulting deposit usually has a fan-like shape. Washover locations are represented by points that were digitized from ESRI World Imagery by Research Planning, Inc. at a scale of 1:8,000.

Waste Disposal: Locations represent ocean disposal sites of dredged material removed from the bottom of waterbodies in order to maintain navigation channels and berthing areas. Data were provided by NOAA's Office of Coastal Management.

Water Intake: Location of the fish hatchery water intake was provided by USFWS.

Wildlife Refuge: Twenty-one National Wildlife Refuges (NWR) fall within the ESI atlas. Locations of NWRs were provided by the U.S. Fish and Wildlife Service.

GEOGRAPHIC INFORMATION SYSTEM

All maps were produced using the ESI Geographic Information System (GIS) data compiled for this region. These data are stored 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, lines 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 RESOURCES

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

This project was supported by the NOAA Office of Response and Restoration, Hazardous Materials Response Division, under the direction of Jill Petersen, NOAA's ESI Program Manager. The development of this atlas was part of a larger effort to update much of the Atlantic coast after the destruction caused by Hurricane Sandy in October 2012. Funding was provided by the Disaster Relief Appropriations Act of 2013. Frank Csulak (NOAA ERD/Scientific Support Coordinator) assisted greatly in all aspects of the project's completion. Cover photo provided by Joseph Fehrer of the Nature Conservancy.

The biological and human-use data included on the maps were provided by numerous individuals and agencies, including: CCB, MD DNR, NPS, NCBN, NOAA, SHARP, TNC, VAMSC, VCU, VADCR, VDGIF, VIMS, MRC, USFWS and others. Staff at these organizations contributed a vast amount of information to this effort, including first-hand expertise, publications, maps, and digital data.

At Research Planning, Inc. in Columbia, South Carolina, numerous scientific, GIS, and graphic staff were involved with different phases of the project. Mark White, GIS Director, and Christine Boring, Biology Dept. Manager, were co-Project Managers. The ESI shoreline was classified by Jennifer Horsman and Dr. Tim McClinton. The biological and human-use data were collected and compiled onto base maps by Christine Boring, Lauren Szathmary, Lincoln Smith, Michael Bauman, Mike Thompson, and Emily Watson. Lee Diveley, Katy Beckham, Jeff Dahlin, Emily Watson, Chris Locke, and Bryan Thom processed and produced the GIS data. Joe Holmes produced the final documents.

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 any contributing 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. Also, this atlas should not be used for navigation.

SPECIES LIST

Common Name	Scientific Name
BENTHIC	
SAV	
Submerged aquatic vegetation	-
BIRDS	
ALCID	
Alcids	-
DIVING	
American white pelican	<i>Pelecanus erythrorhynchos</i>
Brown pelican	<i>Pelecanus occidentalis</i>
Common loon	<i>Gavia immer</i>
Diving birds	-
Double-crested cormorant	<i>Phalacrocorax auritus</i>
Grebes	-
Horned grebe	<i>Podiceps auritus</i>
Pied-billed grebe	<i>Podilymbus podiceps</i>
Red-necked grebe	<i>Podiceps grisegena</i>
Red-throated loon	<i>Gavia stellata</i>
GULL_TERN	
<u>Black skimmer</u>	<u><i>Rynchops niger</i></u>
Bonaparte's gull	<i>Larus philadelphia</i>
Caspian tern	<i>Hydroprogne caspia</i>
Common tern	<i>Sterna hirundo</i>
Forster's tern	<i>Sterna forsteri</i>
Great black-backed gull	<i>Larus marinus</i>
<u>Gull-billed tern</u>	<u><i>Gelochelidon nilotica</i></u>
Gulls	-
Herring gull	<i>Larus argentatus</i>
Laughing gull	<i>Larus atricilla</i>
<u>Least tern</u>	<u><i>Sternula antillarum</i></u>
Ring-billed gull	<i>Larus delawarensis</i>
<u>Roseate tern</u>	<u><i>Sterna dougallii</i></u>
<u>Royal tern</u>	<u><i>Thalasseus maximus</i></u>
Sandwich tern	<i>Thalasseus sandwicensis</i>
Terns	-
PASSERINE	
Coastal plain swamp sparrow	<i>Melospiza georgiana nigrescens</i>
Le Conte's sparrow	<i>Ammodramus leconteii</i>

Common Name	Scientific Name
BIRDS, cont.	
PASSERINE, cont.	
Marsh passerine	-
Marsh wren	<i>Cistothorus palustris</i>
Nelson's sharp-tailed sparrow	<i>Ammodramus nelsoni</i>
Northern parula	<i>Setophaga americana</i>
Prothonotary warbler	<i>Protonotaria citrea</i>
Purple martin	<i>Progne subis</i>
Saltmarsh sharp-tailed sparrow	<i>Ammodramus caudacutus</i>
Savannah sparrow	<i>Passerculus sandwichensis</i>
Seaside sparrow	<i>Ammodramus maritimus</i>
<u>Sedge wren</u>	<u><i>Cistothorus platensis</i></u>
Swamp sparrow	<i>Melospiza georgiana</i>
PELAGIC	
Northern gannet	<i>Morus bassanus</i>
Shearwaters	-
Storm-petrels	<i>Oceanodroma</i> spp.
RAPTOR	
Bald eagle	<i>Haliaeetus leucocephalus</i>
Northern harrier	<i>Circus cyaneus</i>
Osprey	<i>Pandion haliaetus</i>
<u>Peregrine falcon</u>	<u><i>Falco peregrinus</i></u>
Red-tailed hawk	<i>Buteo jamaicensis</i>
SHOREBIRD	
American oystercatcher	<i>Haematopus palliatus</i>
Black-bellied plover	<i>Pluvialis squatarola</i>
Common snipe	<i>Gallinago gallinago</i>
Dowitchers	<i>Limnodromus</i> spp.
Dunlin	<i>Calidris alpina</i>
Greater yellowlegs	<i>Tringa melanoleuca</i>
Killdeer	<i>Charadrius vociferus</i>
Least sandpiper	<i>Calidris minutilla</i>
Lesser yellowlegs	<i>Tringa flavipes</i>
Phalaropes	<i>Phalaropus</i> spp.
<u>Piping plover</u>	<u><i>Charadrius melodus</i></u>
<u>Red knot</u>	<u><i>Calidris canutus</i></u>
Ruddy turnstone	<i>Arenaria interpres</i>
Sanderling	<i>Calidris alba</i>

SPECIES LIST

Common Name	Scientific Name	Common Name	Scientific Name
BIRDS, cont.		BIRDS, cont.	
SHOREBIRDS, cont.		WATERFOWL	
Semipalmated plover	<i>Charadrius semipalmatus</i>	American black duck	<i>Anas rubripes</i>
Semipalmated sandpiper	<i>Calidris pusilla</i>	American coot	<i>Fulica americana</i>
Shorebirds	-	American wigeon	<i>Anas americana</i>
Short-billed dowitcher	<i>Limnodromus griseus</i>	Blue-winged teal	<i>Anas discors</i>
Solitary sandpiper	<i>Tringa solitaria</i>	Brant	<i>Branta bernicla</i>
Spotted sandpiper	<i>Actitis macularia</i>	Bufflehead	<i>Bucephala albeola</i>
Stilt sandpiper	<i>Calidris himantopus</i>	Canada goose	<i>Branta canadensis</i>
Western sandpiper	<i>Calidris mauri</i>	Canvasback	<i>Aythya valisineria</i>
Whimbrel	<i>Numenius phaeopus</i>	Common goldeneye	<i>Bucephala clangula</i>
Willet	<i>Tringa semipalmata</i>	Common moorhen	<i>Gallinula chloropus</i>
<u>Wilson's plover</u>	<u><i>Charadrius wilsonia</i></u>	Dabbling ducks	-
Yellowlegs	<i>Tringa spp.</i>	Diving ducks	-
WADING		Gadwall	<i>Anas strepera</i>
American bittern	<i>Botaurus lentiginosus</i>	Geese	-
American woodcock	<i>Scolopax minor</i>	Greater scaup	<i>Aythya marila</i>
<u>Black rail</u>	<u><i>Laterallus jamaicensis</i></u>	Green-winged teal	<i>Anas crecca</i>
Black-crowned night-heron	<i>Nycticorax nycticorax</i>	Hooded merganser	<i>Lophodytes cucullatus</i>
Cattle egret	<i>Bubulcus ibis</i>	Lesser scaup	<i>Aythya affinis</i>
Clapper rail	<i>Rallus longirostris</i>	Long-tailed duck	<i>Clangula hyemalis</i>
Glossy ibis	<i>Plegadis falcinellus</i>	Mallard	<i>Anas platyrhynchos</i>
Great blue heron	<i>Ardea herodias</i>	Mergansers	-
Great egret	<i>Ardea alba</i>	Northern pintail	<i>Anas acuta</i>
Green heron	<i>Butorides virescens</i>	Northern shoveler	<i>Anas clypeata</i>
King rail	<i>Rallus elegans</i>	Red-breasted merganser	<i>Mergus serrator</i>
Least bittern	<i>Ixobrychus exilis</i>	Redhead	<i>Aythya americana</i>
Little blue heron	<i>Egretta caerulea</i>	Ring-necked duck	<i>Aythya collaris</i>
Rails	-	Ruddy duck	<i>Oxyura jamaicensis</i>
Secretive marsh birds	-	Scaup	<i>Aythya spp.</i>
Snowy egret	<i>Egretta thula</i>	Scoters	<i>Melanitta spp.</i>
Sora	<i>Porzana carolina</i>	Snow goose	<i>Chen caerulescens</i>
Tricolored heron	<i>Egretta tricolor</i>	Surf scoter	<i>Melanitta perspicillata</i>
Virginia rail	<i>Rallus limicola</i>	Tundra swan	<i>Cygnus columbianus columbianus</i>
Wading birds		Waterfowl	-
White ibis	<i>Eudocimus albus</i>	Wood duck	<i>Aix sponsa</i>
Yellow-crowned night-heron	<i>Nyctanassa violacea</i>	FISH	
		FISH	
		Alewife	<i>Alosa pseudoharengus</i>

SPECIES LIST

Common Name	Scientific Name	Common Name	Scientific Name
FISH, cont.		FISH, cont.	
American eel	<i>Anguilla rostrata</i>	Killifish	<i>Fundulus spp.</i>
American shad	<i>Alosa sapidissima</i>	Kingfishes	<i>Menticirrhus spp.</i>
Anchovies	-	Largemouth bass	<i>Micropterus salmoides</i>
Atlantic angel shark	<i>Squatina dumeril</i>	Lined seahorse	<i>Hippocampus erectus</i>
Atlantic croaker	<i>Micropogonias undulates</i>	Longnose gar	<i>Lepisosteus osseus</i>
Atlantic herring	<i>Clupea harengus</i>	Mullet	<i>Mugil spp.</i>
Atlantic mackerel	<i>Scomber scombrus</i>	Northern puffer	<i>Sphoeroides maculatus</i>
Atlantic menhaden	<i>Brevoortia tyrannus</i>	Northern searobin	<i>Prionotus carolinus</i>
Atlantic needlefish	<i>Strongylura marina</i>	Northern stargazer	<i>Astroscopus guttatus</i>
Atlantic sharpnose shark	<i>Rhizoprionodon terraenovae</i>	Pigfish	<i>Orthopristis chrysoptera</i>
Atlantic spadefish	<i>Chaetodipterus faber</i>	Pinfish	<i>Lagodon rhomboides</i>
<u>Atlantic sturgeon</u>	<u><i>Acipenser oxyrinchus</i></u>	Pipefish	<i>Syngnathus spp.</i>
Black crappie	<i>Pomoxis nigromaculatus</i>	Red drum	<i>Sciaenops ocellatus</i>
Black drum	<i>Pogonias cromis</i>	Red hake	<i>Urophycis chuss</i>
Black sea bass	<i>Centropristis striata</i>	Redfin pickerel	<i>Esox americanus americanus</i>
Blacktip shark	<i>Carcharhinus limbatus</i>	Sand tiger shark	<i>Carcharias taurus</i>
Blue catfish	<i>Ictalurus furcatus</i>	Sandbar shark	<i>Carcharhinus plumbeus</i>
Blueback herring	<i>Alosa aestivalis</i>	Scalloped hammerhead	<i>Sphyrna lewini</i>
Bluefish	<i>Pomatomus saltatrix</i>	Sheepshead	<i>Archosargus probatocephalus</i>
Bullhead catfish	<i>Ameiurus spp.</i>	Shorthead redhorse	<i>Moxostoma macrolepidotum</i>
Butterfish	<i>Peprilus triacanthus</i>	<u>Shortnose sturgeon</u>	<u><i>Acipenser brevirostrum</i></u>
Chain pickerel	<i>Esox niger</i>	Silver hake	<i>Merluccius bilinearis</i>
Channel catfish	<i>Ictalurus punctatus</i>	Silversides	-
Chesapeake logperch	<i>Percina bimaculata</i>	Smallmouth bass	<i>Micropterus dolomieu</i>
Clearnose skate	<i>Raja eglanteria</i>	Smooth butterfly ray	<i>Gymnura micrura</i>
Cobia	<i>Rachycentron canadum</i>	Smooth dogfish	<i>Mustelus canis</i>
Common carp	<i>Cyprinus carpio</i>	Southern flounder	<i>Paralichthys lethostigma</i>
Cownose ray	<i>Rhinoptera bonasus</i>	Southern stingray	<i>Dasyatis americana</i>
Crevalle jack	<i>Caranx hippos</i>	Spanish mackerel	<i>Scomberomorus maculatus</i>
Dusky shark	<i>Carcharhinus obscurus</i>	Spinner shark	<i>Carcharhinus brevipinna</i>
Eastern creek chubsucker	<i>Erimyzon oblongus</i>	Spiny dogfish	<i>Squalus acanthias</i>
Gizzard shad	<i>Dorosoma cepedianum</i>	Spot	<i>Leiostomus xanthurus</i>
Golden shiner	<i>Notemigonus crysoleucas</i>	Spotfin shiner	<i>Cyprinella spiloptera</i>
Great hammerhead	<i>Sphyrna mokarran</i>	Spottail shiner	<i>Notropis hudsonius</i>
Great white shark	<i>Carcharodon carcharias</i>	Spotted hake	<i>Urophycis regia</i>
Harvestfish	<i>Peprilus alepidotus</i>	Spotted seatrout	<i>Cynoscion nebulosus</i>
Hickory shad	<i>Alosa mediocris</i>	Striped bass	<i>Morone saxatilis</i>

SPECIES LIST

Common Name	Scientific Name	Common Name	Scientific Name
FISH, cont.		INVERTEBRATES	
Striped burrfish	<i>Cylichthys schoepfi</i>	BIVALVE	
Striped cusk-eel	<i>Ophidion marginatum</i>	Alewife floater	<i>Anodonta implicata</i>
Summer flounder	<i>Paralichthys dentatus</i>	Atlantic surfclam	<i>Spisula solidissima</i>
Sunfish	<i>Lepomis spp.</i>	Bay scallop	<i>Argopecten irradians</i>
Tautog	<i>Tautoga onitis</i>	Carolina slabshell	<i>Elliptio congrarea</i>
Tessellated darter	<i>Etheostoma olmstedii</i>	BIVALVE	
Thresher shark	<i>Alopias vulpinus</i>	Carolina spike	<i>Elliptio raveneli</i>
Walleye	<i>Stizostedion vitreum vitreum</i>	Creeper	<i>Strophitus undulatus</i>
Weakfish	<i>Cynoscion regalis</i>	<u>Dwarf wedgemussel</u>	<u><i>Alasmidonta heterodon</i></u>
White crappie	<i>Pomoxis annularis</i>	Eastern elliptio	<i>Elliptio complanata</i>
White perch	<i>Morone americana</i>	Eastern floater	<i>Pyganodon cataracta</i>
Winter flounder	<i>Pleuronectes americanus</i>	Eastern lampmussel	<i>Lampsilis radiata</i>
Yellow perch	<i>Perca flavescens</i>	Eastern oyster	<i>Crassostrea virginica</i>
HABITATS		Eastern pondmussel	<i>Ligumia nasuta</i>
PLANT		Elliptio complex	<i>Elliptio sp.</i>
<u>Endangered plant</u>	-	Hard clam	<i>Mercenaria mercenaria</i>
Rare plant community	-	Northern lance	<i>Elliptio fisheriana</i>
<u>Threatened plant</u>	-	Paper pondshell	<i>Utterbackia imbecillis</i>
WETLAND		Softshell clam	<i>Mya arenaria</i>
<u>Seabeach amaranth</u>	<u><i>Amaranthus pumilus</i></u>	Stout razor clam	<i>Tagelus plebeius</i>
<u>Sensitive joint-vetch</u>	<u><i>Aeschynomene virginica</i></u>	Tidewater mucket	<i>Leptodea ochracea</i>
HERPETOFAUNA		<u>Triangle floater</u>	<u><i>Alasmidonta undulata</i></u>
AMPHIBIAN		Variable spike	<i>Elliptio icterina</i>
<u>Barking treefrog</u>	<u><i>Hyla gratiosa</i></u>	Yellow lampmussel	<i>Lampsilis cariosa</i>
TURTLE		CEPHALOPOD	
<u>Chicken turtle</u>	<u><i>Deirochelys reticularia</i></u>	Squid	<i>Loligo spp.</i>
<u>Diamondback terrapin</u>	<u><i>Malaclemys terrapin</i></u>	CRAB	
<u>Green sea turtle</u>	<u><i>Chelonia mydas</i></u>	Atlantic rock crab	<i>Cancer irroratus</i>
<u>Kemp's ridley sea turtle</u>	<u><i>Lepidochelys kempii</i></u>	Blue crab	<i>Callinectes sapidus</i>
<u>Leatherback sea turtle</u>	<u><i>Dermochelys coriacea</i></u>	Hermit crab	<i>Pagurus spp.</i>
<u>Loggerhead sea turtle</u>	<u><i>Caretta caretta</i></u>	Horseshoe crab	<i>Limulus polyphemus</i>
<u>Snapping turtle</u>	<u><i>Chelydra serpentina</i></u>	Lady crab	<i>Ovalipes ocellatus</i>
		Knobbed whelk	<i>Busycon carica</i>
		<u>Darkling beetle</u>	<u><i>Schoenicus puberulus</i></u>
		<u>Federally threatened insect 1</u>	-
		<u>Federally threatened insect 2</u>	-

SPECIES LIST

Common Name	Scientific Name	Common Name	Scientific Name
INVERTEBRATES, cont.		TERRESTRIAL MAMMALS	
<u>Helops darkling beetle</u>	<u><i>Helops cisteloides</i></u>	BAT	
<u>Little white tiger beetle</u>	<u><i>Ellipsoptera lepida</i></u>	<u>Rafinesque's eastern big-eared bat</u>	<u><i>Corynorhinus rafinesquii macrotis</i></u>
Monarch butterfly	<i>Danaus plexippus</i>	SMALL MAMMAL	
<u>Northeastern beach tiger beetle</u>	<u><i>Cicindela dorsalis dorsalis</i></u>	<u>Delmarva fox squirrel</u>	<u><i>Sciurus niger cinereus</i></u>
<u>Palamedes swallowtail</u>	<u><i>Papilio palamedes</i></u>	Dismal swamp southeastern shrew	<i>Sorex longirostris fisheri</i>
<u>Selys' sunfly</u>	<u><i>Helocordulia selysii</i></u>	Northern river otter	<i>Lontra canadensis</i>
BIVALVE		UNGULATE	
<u>White tiger beetle</u>	<u><i>Habroscelimorpha dorsalis media</i></u>	Horse	<i>Equus caballus</i>
LOBSTER		* Underlined species are listed as either threatened or endangered under the federal ESA, and/or are listed as threatened, endangered, or special concern by Maryland and Virginia	
American lobster	<i>Homarus americanus</i>		
SHRIMP			
Brown shrimp	<i>Farfantepenaeus aztecus</i>		
Grass shrimp	<i>Palaemonetes spp.</i>		
Mantis shrimp	<i>Squilla empusa</i>		
Sand shrimp	<i>Crangon septemspinosa</i>		
White shrimp	<i>Litopenaeus setiferus</i>		
MARINE MAMMALS			
DOLPHIN			
Bottlenose dolphin	<i>Tursiops truncatus</i>		
Harbor porpoise	<u><i>Phocoena phocoena</i></u>		
Short-beaked common dolphin	<i>Delphinus delphis</i>		
MANATEE			
<u>West Indian manatee</u>	<u><i>Trichechus manatus</i></u>		
PINNIPED			
Gray seal	<i>Halichoerus grypus</i>		
Harbor seal	<i>Phoca vitulina</i>		
WHALE			
<u>Fin whale</u>	<u><i>Balaenoptera physalus</i></u>		
<u>Humpback whale</u>	<u><i>Megaptera novaeangliae</i></u>		
<u>North Atlantic right whale</u>	<u><i>Eubalaena glacialis</i></u>		

SHORELINE DESCRIPTIONS

EXPOSED, ROCKY SHORES

ESI = 1A

DESCRIPTION

- The intertidal zone is steep (greater than 30° slope), with very little width
- Sediment accumulations are uncommon and usually ephemeral, because waves remove the debris that has slumped from the eroding cliffs
- There are few attached plants or animals
- Less than 1% of shoreline

PREDICTED OIL BEHAVIOR

- Oil is held offshore by waves reflecting off the steep cliffs
- Any oil that is deposited is rapidly removed from exposed faces
- The most resistant oil would remain as a patchy band at or above the high-tide line

RESPONSE CONSIDERATIONS

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



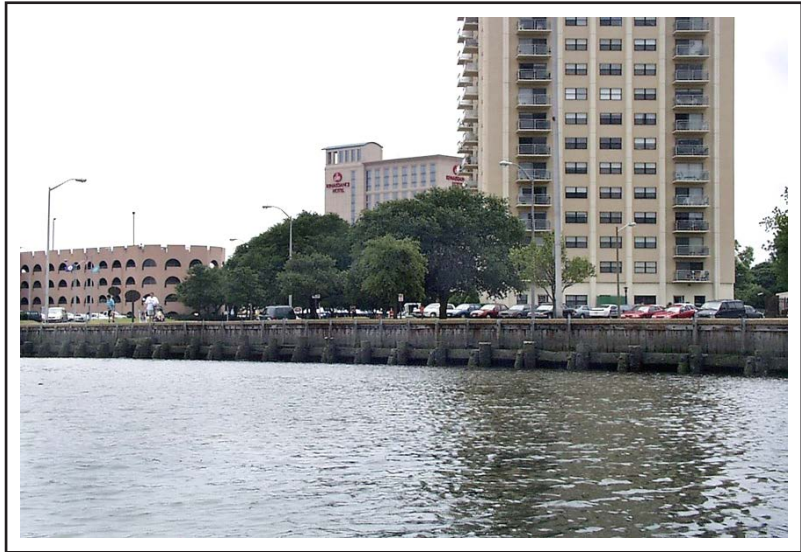
SHORELINE DESCRIPTIONS

EXPOSED, SOLID MAN-MADE STRUCTURES

ESI = 1B

DESCRIPTION

- These structures are solid, man-made structures such as seawalls, 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 rapid natural removal processes
- Attached animals and plants are sparse to moderate
- They are common in highly developed industrial and naval ports such as Norfolk and scattered along residential waterfronts, occurring along approximately 1% of the shoreline



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 patchy 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;
 - improve aesthetics; or
 - prevent leaching of oil

SHORELINE DESCRIPTIONS

EXPOSED SCARPS AND STEEP SLOPES (CLAY)

ESI = 2B

DESCRIPTION

- These habitats generally occur along tidal channels and major river tributaries in the marsh where the currents cut a steep bank into the marsh soils
- Scarp heights vary from about 1 to 3 feet and usually consist of a heavily rooted, peaty soil
- May be fronted by a narrow beach of fine to medium-grained sand and/or shell fragments
- Low biological utilization because of strong currents and erosion
- Typically backed by wetland vegetation
- Very uncommon, comprising less than 1% of the shoreline



PREDICTED OIL BEHAVIOR

- Oil is not expected to adhere to the wet, impermeable clay surface
- There may be a thin band of oil left at or above the high water line

RESPONSE CONSIDERATIONS

- Cleanup is usually not required, because any stranded oil is quickly removed by wave action
- Access may be difficult

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
- This shoreline type occurs along the outer coast and sporadic in the bay, comprising about 2% of the shoreline



PREDICTED OIL BEHAVIOR

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

RESPONSE CONSIDERATIONS

- These beaches are among the easiest shoreline types to clean
- Cleanup should concentrate on removing oil and oily debris from the upper swash zone once oil has come ashore
- Traffic through both oiled and dune areas should be severely limited, to prevent contamination of clean areas
- Manual cleanup, rather than mechanical removal using road graders and front-end loaders, is advised to minimize the volume of sand removed from the shore and requiring disposal and replacement
- 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 (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 the logs can accumulate at the base of the scarp
- Biological utilization by birds and infauna is low
- They are uncommon, comprising less than 1% of the shoreline



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 logs that have accumulated at the base of the scarp
- There is little potential for burial except when major slumping of the bluff occurs
- Active erosion of the scarp will remove the oil

RESPONSE CONSIDERATIONS

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

SHORELINE DESCRIPTIONS

COARSE-GRAINED SAND BEACHES

ESI = 4

DESCRIPTION

- These beaches have moderate slopes, variable widths, and 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% 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 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

- Remove oil primarily from the high tide line
- 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

MIXED SAND AND GRAVEL BEACHES

ESI = 5

DESCRIPTION

- Moderately sloping beach composed of a mixture of sand and shell (shell component should comprise between 20 to 80 percent of total sediments)
- Because of the mixed sediment sizes and shapes, there may be zones of pure sand or shell
- They are uncommon, comprising approximately 1% of the shoreline



PREDICTED OIL BEHAVIOR

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

RESPONSE CONSIDERATIONS

- Remove oil primarily from the high tide line
- 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 sediments should be limited to prevent mixing oil deeper into the beach
- Use of heavy equipment for oiled sediment removal may result in the removal of excessive amounts of sediment; manual cleanup may be more effective

SHORELINE DESCRIPTIONS

GRAVEL BEACHES

ESI = 6A

DESCRIPTION

- The gravel fraction is composed of shell fragments; they occur as lag deposits where the finer-grained sediments have been eroded away
- The shells tend to form steep, narrow berms or washover deposits
- Shell beaches occur along areas exposed to high waves or boat wakes, and they comprise less than 1% of the shoreline



PREDICTED OIL BEHAVIOR

- Deep penetration of stranded oil is likely on shell beaches because of their high permeability
- Long-term persistence will be controlled by the depth of routine reworking by waves or boat wakes
- Deeply penetrated oil can leach out for long periods

RESPONSE CONSIDERATIONS

- Heavy accumulations of pooled oil should be removed quickly from the upper beachface
- All oiled debris should be removed
- Sediment removal should be limited as much as possible
- Low-pressure flushing can be used to float fresh oil away from the sediments for recovery by skimmers or sorbents
- Heavily oiled shells may have to be removed and replaced with clean shells

SHORELINE DESCRIPTIONS

RIPRAP

ESI = 6B

DESCRIPTION

- Riprap structures are composed of cobble- to boulder-sized blocks of bedrock or concrete
- Riprap structures are used for shoreline protection and tidal- inlet stabilization
- Attached biota are sparse on exposed riprap and in fresh- to brackish-water areas
- Present along highly developed commercial waterfronts and residential areas, comprising about 3% of the shoreline



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 heavily oiled blocks and replace them

SHORELINE DESCRIPTIONS

BOULDER RUBBLE

ESI = 6D

DESCRIPTION

- Relatively steep rocky shores with accumulations of angular boulder-sized rubble displaying limited evidence of re-working by waves or sediment transport
- Attached biota may be common at lower intertidal levels, whereas biota along the upper intertidal zones is sparse
- Can co-occur with gravel beaches or exposed rocky shorelines; associated gravel beaches can be either at the upper or the lower half of the intertidal zone, depending on the nature of the rock outcrop
- Relatively uncommon and found mostly on the Potomac River upstream from Washington, D.C., comprising less than 1% of the shoreline



PREDICTED OIL BEHAVIOR

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

RESPONSE CONSIDERATIONS

- Thick accumulations of pooled oil should be of high priority for removal, to prevent re-mobilization and/or penetration
- Manual removal of heavy oil is likely to leave significant residues, but may be useful for thick oil in crevices or sediment pockets

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 indicates that tidal currents and waves are strong enough to mobilize the sediments
- They are usually 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 use by foraging fish
- They occur along about 4% of the shoreline, most commonly on the eastern shore



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 SCARPS (BEDROCK/MUD/CLAY)

ESI = 8A

DESCRIPTION

- This shoreline type is sheltered from wave activity and strong currents
- The slope of the intertidal zone is generally moderate to steep (greater than 15°) with little width
- These habitats are not common, occurring along the upper stretches of major rivers and comprising less than 1% of the shoreline

PREDICTED OIL BEHAVIOR

- Stranded oil will persist because of low energy setting
- There will be little potential for penetration into the clayey substrate

RESPONSE CONSIDERATIONS

- Low-pressure flushing at ambient temperatures is most effective when the oil is fresh and still liquid
- Where the high-tide area is accessible, it may be feasible to remove heavy oil accumulations and oiled debris



SHORELINE DESCRIPTIONS

SHELTERED, SOLID MAN-MADE STRUCTURES

ESI = 8B

DESCRIPTION

- These structures are solid man-made structures such as seawalls, groins, revetments, piers, and port facilities
- Most of the structures are designed to protect a single lot, thus their composition, design, and condition are highly variable
- Most structures are constructed of concrete, wood, or metal
- Often there is no exposed beach at low tide, but multiple habitats are indicated if present
- Attached animal and plant life can be moderate to high in salt-water areas
- They are common in highly developed commercial areas such as Norfolk and along residential waterfronts throughout the bay, comprising about 5% of the shoreline



PREDICTED OIL BEHAVIOR

- Oil will adhere readily to rough surfaces, particularly along the high-tide line, forming a distinct oil band
- 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 leaching of oil
- Low- to high-pressure spraying and high-volume deluge 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 bedrock or concrete
- These structures are found inside harbors and bays in developed areas, sheltered from direct exposure to waves
- Attached animal and plant life can be present
- They are common in highly developed commercial and residential waterfront areas, comprising 5% of the shoreline



PREDICTED OIL BEHAVIOR

- Deep penetration of oil between the boulders 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 and high-volume deluge 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

SHORELINE DESCRIPTIONS

SHELTERED, ROCKY, RUBBLE SHORES

ESI = 8D

DESCRIPTION

- Relatively steep and narrow rocky shore that is covered by a veneer of angular rubble without any evidence of re-working by waves or sediment transport
- The surface rubble is highly variable in size and packing, but there is always some permeability in the surface materials
- Can co-occur with gravel beaches; the gravel beach can be either at the upper or the lower half of the intertidal zone, depending on the nature of the rock outcrop
- This shoreline type is sheltered from significant wave activity and strong currents
- They are uncommon, occurring along less than 1% of the shoreline



PREDICTED OIL BEHAVIOR

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

RESPONSE CONSIDERATIONS

- Thick accumulations of pooled oil should be of high priority for removal, to prevent re-mobilization and/or penetration
- Manual removal of heavy oil is likely to leave significant residues, but may be useful for oil in crevices or sediment pockets
- Flushing techniques will be most effective when oil is still fresh and liquid
- Expect to increase temperature and pressure over time as the oil weathers

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 major wave activity, and are usually backed by marshes
- The sediments are very soft and cannot support even light foot traffic in many areas
- Sheltered tidal flats can be sparsely to heavily covered with algae and/or seagrasses
- They can have heavy wrack deposits along the upper fringe
- Large concentrations of shellfish, worms, and snails can be found on and in the sediments
- They are heavily utilized by birds for feeding
- Sheltered flats are common along most tidal channels, comprising 29% of the shoreline (the second most common habitat type)



PREDICTED OIL BEHAVIOR

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

RESPONSE CONSIDERATIONS

- These are high-priority areas necessitating the use of spill protection devices to limit impacts from both oil exposure and damage during response; 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 and deployment of sorbents from shallow-draft boats may be attempted

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
- These shorelines are most common along the major river tributaries and upper sections of tidal creeks to the bay and comprise 16% of the shoreline



PREDICTED OIL BEHAVIOR

- During low-water stages, oil will form a narrow band 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 is effective in removing moderate to heavy accumulations of liquid 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 oil from tree roots and trunks, if deemed necessary in high-use areas

SHORELINE DESCRIPTIONS

SALT- AND BRACKISH-WATER MARSHES

ESI = 10A

DESCRIPTION

- These marshes contain emergent, herbaceous vegetation that is salt tolerant; they are often dominated by one species, such as *Spartina alterniflora*
- Width of the marsh can vary widely, from a narrow fringe to extensive areas
- 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 with numerous species with high utilization by birds, fish, and shellfish
- They are the most common shoreline type present, comprising 65% of the shoreline



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 in burrows
- Light oils can penetrate the top few centimeters of sediment and deeply into burrows and cracks (up to one meter)

RESPONSE CONSIDERATIONS

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

SHORELINE DESCRIPTIONS

FRESHWATER MARSHES

ESI = 10B

DESCRIPTION

- These are grassy wetlands composed of emergent herbaceous vegetation; there can be a mix of species
- They occur upstream of brackish vegetation in the upper estuary 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 and large creeks, comprising 6% of the shoreline



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 at the head of the estuary; 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

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; in situ burning maybe be considered in remote areas
- Cleanup activities should be carefully supervised to avoid vegetation damage
- Any cleanup activity must not mix the oil deeper into the sediments. Trampling of the roots must be minimized
- Cutting of oiled vegetation should only be considered when other resources present are at great risk from leaving the oiled vegetation in place

SHORELINE DESCRIPTIONS

SWAMPS

ESI = 10C

DESCRIPTION

- Swamps consist of shrubs and hardwood forested wetlands, essentially flooded forests. Vegetation is taller, on average, than 20 feet
- 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
- This shoreline type occurs along low areas adjacent to the major tributaries and comprises about 7% of the shoreline



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 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 waterbodies

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. Care must be taken to prevent transporting oil to sensitive areas down slope or along shore during flushing operations
- 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
- Live woody vegetation should not be cut

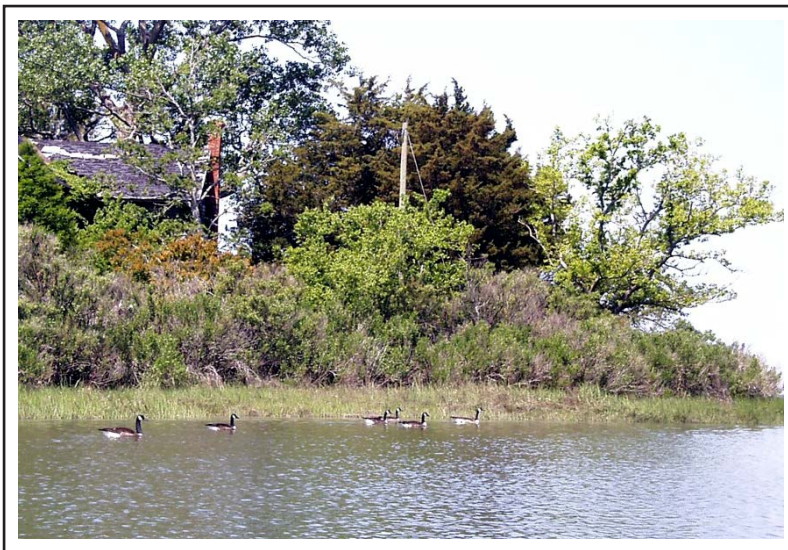
SHORELINE DESCRIPTIONS

SCRUB AND SHRUB WETLANDS

ESI = 10D

DESCRIPTION

- Scrub-shrub wetlands consist of woody vegetation less than 20 feet 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
- This habitat type occurs along about 2% of the shoreline



PREDICTED OIL BEHAVIOR

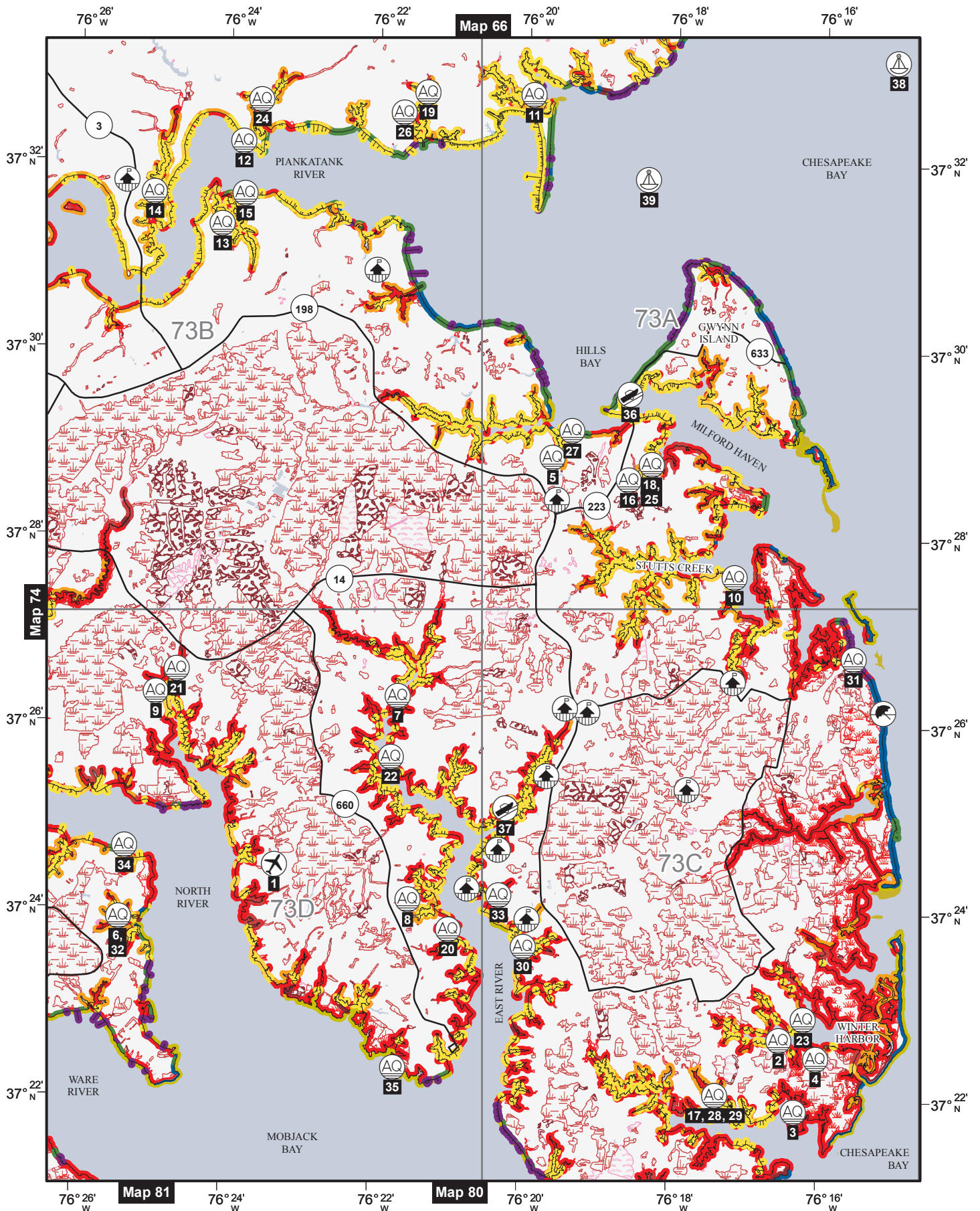
- Oil behavior depends on water level
- During high water, most of the oil passes through the forest, coating the vegetation above the waterline
- Woody vegetation is less sensitive than grasses to oil
- Some oil can be trapped and pooled on the floodplain as water levels drop
- Penetration into the floodplain 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 waterbodies

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
- Live woody vegetation should not be cut

ENVIRONMENTAL SENSITIVITY INDEX MAPS





Map 73
Chesapeake South



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

0 2 Miles
Not for Navigation
0 2 Kilometers

1:100,000

Map 73
Chesapeake South

HUMAN USE RESOURCES

DISPLAYED ON MAP (POINTS)				
Map ID	Type	Name	Contact	Phone
1	AIRPORT	HOLLY POINT		
2	AQUACULTURE	OYSTER COMMERCIAL MAGGARD, ANDREW J. RF#1996-1570	CHIP NEIKIRK, VIRGINIA MARINE RESOURCES COMM.	757-247-2254
3	AQUACULTURE	OYSTER COMMERCIAL MAGGARD, ANDREW J. RF#97-0172	CHIP NEIKIRK, VIRGINIA MARINE RESOURCES COMM.	757-247-2254
4	AQUACULTURE	OYSTER COMMERCIAL MAGGARD, ANDREW J. RF#97-1596	CHIP NEIKIRK, VIRGINIA MARINE RESOURCES COMM.	757-247-2254
5	AQUACULTURE	OYSTER NON-COMM BARNES RF#98-1922	CHIP NEIKIRK, VIRGINIA MARINE RESOURCES COMM.	757-247-2254
6	AQUACULTURE	OYSTER NON-COMM BOLTON, CHRISTOPHER A. RF#98-0875	CHIP NEIKIRK, VIRGINIA MARINE RESOURCES COMM.	757-247-2254
7	AQUACULTURE	OYSTER NON-COMM BROWN, ROBERT A. RF#98-1958	CHIP NEIKIRK, VIRGINIA MARINE RESOURCES COMM.	757-247-2254
8	AQUACULTURE	OYSTER NON-COMM CATH, WILLIAM S. RF#01-0358	CHIP NEIKIRK, VIRGINIA MARINE RESOURCES COMM.	757-247-2254
9	AQUACULTURE	OYSTER NON-COMM CHANDLER RF#01-1342	CHIP NEIKIRK, VIRGINIA MARINE RESOURCES COMM.	757-247-2254
10	AQUACULTURE	OYSTER NON-COMM CRICKENBERGER RF#00-1949	CHIP NEIKIRK, VIRGINIA MARINE RESOURCES COMM.	757-247-2254
11	AQUACULTURE	OYSTER NON-COMM FERRELL, STEVEN E. RF#99-0038	CHIP NEIKIRK, VIRGINIA MARINE RESOURCES COMM.	757-247-2254
12	AQUACULTURE	OYSTER NON-COMM FINE RF#98-1635	CHIP NEIKIRK, VIRGINIA MARINE RESOURCES COMM.	757-247-2254
13	AQUACULTURE	OYSTER NON-COMM GARRETT, LEWIS RF#98-1556	CHIP NEIKIRK, VIRGINIA MARINE RESOURCES COMM.	757-247-2254
14	AQUACULTURE	OYSTER NON-COMM GATES, REBECCA RF#2001-2026	CHIP NEIKIRK, VIRGINIA MARINE RESOURCES COMM.	757-247-2254
15	AQUACULTURE	OYSTER NON-COMM GREGORY RF#98-1982	CHIP NEIKIRK, VIRGINIA MARINE RESOURCES COMM.	757-247-2254
16	AQUACULTURE	OYSTER NON-COMM GRDYER, DENNIS K. RF#98-0840	CHIP NEIKIRK, VIRGINIA MARINE RESOURCES COMM.	757-247-2254
17	AQUACULTURE	OYSTER NON-COMM HANTWERKER, ANDREAS RF#99-2004	CHIP NEIKIRK, VIRGINIA MARINE RESOURCES COMM.	757-247-2254
18	AQUACULTURE	OYSTER NON-COMM HARDEN RF#00-1585	CHIP NEIKIRK, VIRGINIA MARINE RESOURCES COMM.	757-247-2254
19	AQUACULTURE	OYSTER NON-COMM HATTORF RF#98-0979	CHIP NEIKIRK, VIRGINIA MARINE RESOURCES COMM.	757-247-2254
20	AQUACULTURE	OYSTER NON-COMM KERN RF#98-0870	CHIP NEIKIRK, VIRGINIA MARINE RESOURCES COMM.	757-247-2254
21	AQUACULTURE	OYSTER NON-COMM LAUER, MARK R. RF#98-2022	CHIP NEIKIRK, VIRGINIA MARINE RESOURCES COMM.	757-247-2254
22	AQUACULTURE	OYSTER NON-COMM LILES, ARTHUR D. RF#99-1249	CHIP NEIKIRK, VIRGINIA MARINE RESOURCES COMM.	757-247-2254
23	AQUACULTURE	OYSTER NON-COMM MABE RF#01-1656	CHIP NEIKIRK, VIRGINIA MARINE RESOURCES COMM.	757-247-2254
24	AQUACULTURE	OYSTER NON-COMM MILLER, FRANCES RF#99-1774	CHIP NEIKIRK, VIRGINIA MARINE RESOURCES COMM.	757-247-2254
25	AQUACULTURE	OYSTER NON-COMM OWEN RF#00-1626	CHIP NEIKIRK, VIRGINIA MARINE RESOURCES COMM.	757-247-2254
26	AQUACULTURE	OYSTER NON-COMM PHILYAW RF#980839	CHIP NEIKIRK, VIRGINIA MARINE RESOURCES COMM.	757-247-2254
27	AQUACULTURE	OYSTER NON-COMM REYNOLDS, MATHEW W. RF#2000-1734	CHIP NEIKIRK, VIRGINIA MARINE RESOURCES COMM.	757-247-2254
28	AQUACULTURE	OYSTER NON-COMM SCRIBNER, SUE RF#99-1005	CHIP NEIKIRK, VIRGINIA MARINE RESOURCES COMM.	757-247-2254
29	AQUACULTURE	OYSTER NON-COMM SOUTHALL RF#00-1762	CHIP NEIKIRK, VIRGINIA MARINE RESOURCES COMM.	757-247-2254
30	AQUACULTURE	OYSTER NON-COMM TAYLOR RF#01-0754	CHIP NEIKIRK, VIRGINIA MARINE RESOURCES COMM.	757-247-2254
31	AQUACULTURE	OYSTER NON-COMM TRICE RF#00-1075	CHIP NEIKIRK, VIRGINIA MARINE RESOURCES COMM.	757-247-2254
32	AQUACULTURE	OYSTER NON-COMM WHITE RF#00-1834	CHIP NEIKIRK, VIRGINIA MARINE RESOURCES COMM.	757-247-2254
33	AQUACULTURE	OYSTER NON-COMM ZIEROW, ROLF F. RF#98-0893	CHIP NEIKIRK, VIRGINIA MARINE RESOURCES COMM.	757-247-2254
34	AQUACULTURE	SOFT CLAMS VIGLIOTTA, JOHN RF#99-0472	CHIP NEIKIRK, VIRGINIA MARINE RESOURCES COMM.	757-247-2254
35	AQUACULTURE	VARIOUS KURKOWSKI, KENNETH P. RF#96-0035	CHIP NEIKIRK, VIRGINIA MARINE RESOURCES COMM.	757-247-2254
36	BOAT RAMP	GWYNN'S ISLAND	VIRGINIA DEPT. OF GAME AND INLAND FISHERIES	804-367-1000
37	BOAT RAMP	TOWN POINT	LENE PENNINGTON, VDGIF	804-367-0058
38	REPEATED MEASUREMENT SITE	DB - MOORED BUOY, STINGRAY POINT, VA	NATIONAL COASTAL DATA DEVELOPMENT CENTER	866-732-2382
39	REPEATED MEASUREMENT SITE	WQ - STATION LE3.7	CHESAPEAKE BAY PROGRAM	800-968-7229

ALSO PRESENT IN MAPPED AREA (POINTS)			
Type	Name	Contact	Phone
COAST GUARD	ANT MILFORD HAVEN		804-725-5932
COAST GUARD	STA MILFORD HAVEN		804-725-3732

ALSO PRESENT IN MAPPED AREA (POLYGONS)			
Type	Name	Contact	Phone
STATE PROTECTED AREA	BETHEL BEACH	VA DEPT OF CONSERVATION AND RECREATION	

JURISDICTIONS

COUNTY: GLOUCESTER COUNTY, MATHEWS COUNTY, MIDDLESEX COUNTY
COAST GUARD: DISTRICT 5, SECTOR HAMPTON ROADS
USACE: NORTH ATLANTIC DIVISION, NORFOLK DISTRICT

FEMA:
EPA:

REGION I
 REGION 3

SHORELINE RESOURCES

ESI POLYGON HABITAT TYPES

ESI Rank	Habitat Classification	Area (Acres)	Area (Sq. Miles)
10A	Salt and Brackish Water Marshes	3,246.48	5.07
10B	Freshwater Marshes	593.86	0.93
10C	Swamps	13,639.88	21.31
10D	Scrub and Shrub Wetlands	1,832.24	2.86
9A	Sheltered Tidal Flats	13.57	0.02
7	Exposed Tidal Flats	110.93	0.17

ESI SHORELINE HABITAT TYPES

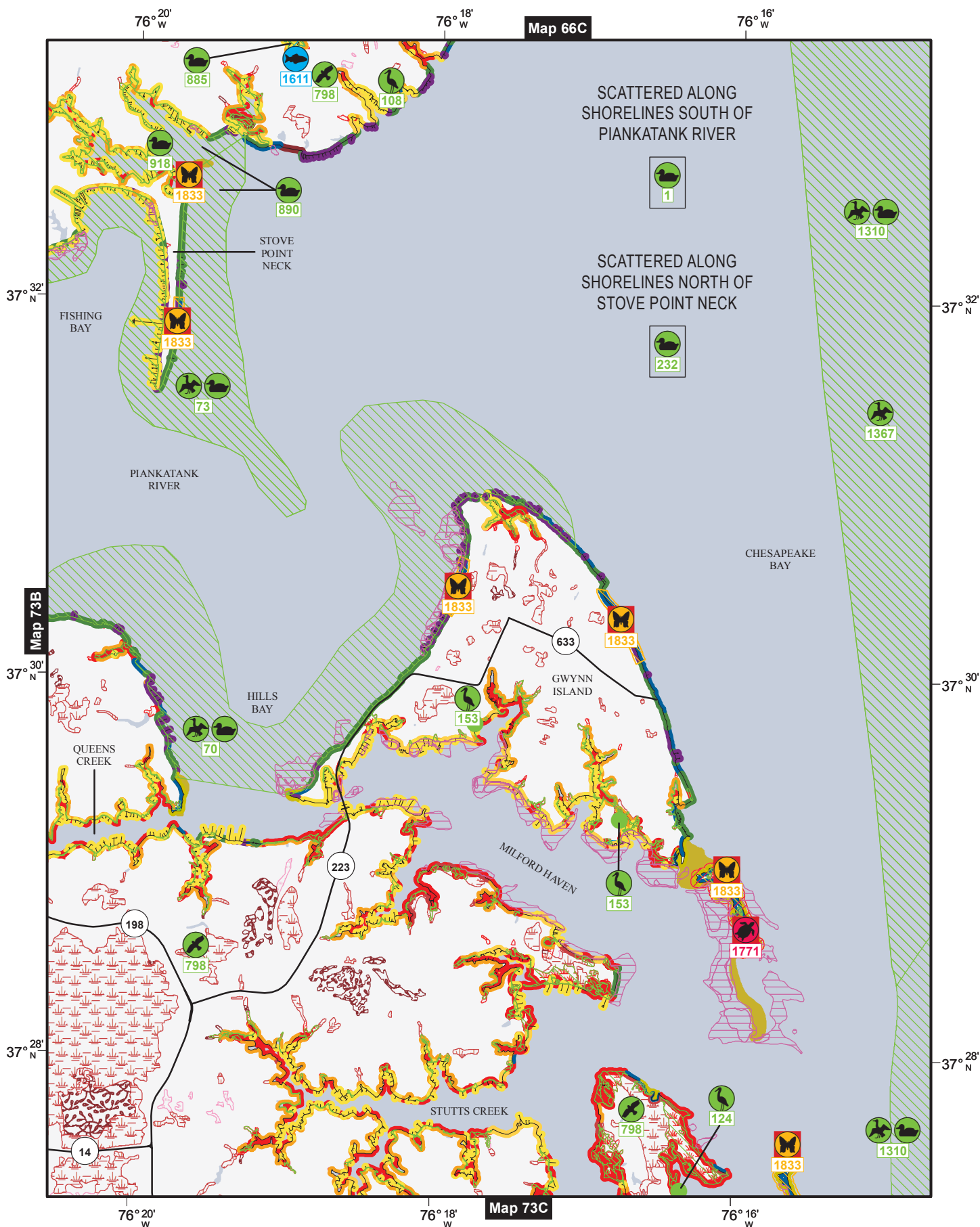
ESI Rank	Shoreline Habitat Classification	Length (Meters)	Length (Miles)	% of ESI Shoreline
10A	Salt and Brackish Water Marshes	483,551.89	300.47	55%
10B	Freshwater Marshes	521.61	0.32	< 1%
10C	Swamps	8,168.02	5.08	1%
10D	Scrub and Shrub Wetlands	4,526.93	2.81	1%
9A	Sheltered Tidal Flats	30,478.84	18.94	3%
9B	Vegetated Low Banks	144,314.39	89.67	16%
8B	Sheltered, Solid Man-Made Structures	83,270.15	51.74	9%
8C	Sheltered Riprap	26,330.54	16.36	3%
7	Exposed Tidal Flats	33,683.57	20.93	4%
6B	Riprap	27,967.92	17.38	3%
5	Mixed Sand and Gravel Beaches	25.29	0.02	< 1%
4	Coarse Grained Sand Beaches	564.29	0.35	< 1%
3A	Fine to Medium Grained Sand Beaches	29,918.10	18.59	3%
3B	Scars and Steep Slopes (Sand)	70.92	0.04	< 1%
1B	Exposed, Solid Man-Made Structures	13,523.12	8.40	2%

Total ESI Shoreline: 886,915.58
 Total ESI Shoreline: 551.10
 Total Shoreline: 655,788.46
 Total Shoreline: 407.49

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

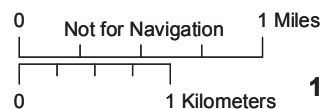




Map 73A
Chesapeake South



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



1:50,000



Map 73A
Chesapeake South

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	MD/VA S F	Concentration	Monthly Presence											
					J	F	M	A	M	J	J	A	S	O	N	D
SAV	Submerged aquatic veg	High Ecological Value		Ephemeral												
SAV	Submerged aquatic veg	High Ecological Value		High												
SAV	Submerged aquatic veg	High Ecological Value		Low												

BIRDS

Map ID	Subelement	Species	Mapping Qualifier	MD/VA S F	Concentration	Monthly Presence										Nest	Mig.(S)	Mig.(F)	Molt
						J	F	M	A	M	J	J	A	S	O	N			
1	Waterfowl	American black duck	Nesting		Present												Apr-Jul	-	-
	Waterfowl	Canada goose	Nesting		Present												Mar-Aug	-	Jun-Jul
	Waterfowl	Mallard	Nesting		Present												Mar-Aug	-	Jul-Aug
70	Diving	Grebes	Wintering		Present												-	-	-
	Waterfowl	American coot	Wintering		10S												-	-	-
	Waterfowl	Blue-winged teal	Migration		Present												Feb-Apr	Aug-Oct	-
	Waterfowl	Bufflehead	Wintering		100S												-	-	-
	Waterfowl	Canada goose	Wintering		1,000S												-	-	-
	Waterfowl	Canvasback	Wintering		100S												-	-	-
	Waterfowl	Common goldeneye	Wintering		Present												-	-	-
	Waterfowl	Gadwall	Wintering		Present												-	-	-
	Waterfowl	Green-winged teal	Wintering		Present												-	-	-
	Waterfowl	Mallard	Wintering		100S												-	-	-
	Waterfowl	Ring-necked duck	Wintering		10S												-	-	-
	Waterfowl	Ruddy duck	Wintering		10,000S												-	-	-
	Waterfowl	Scaup	Wintering		100S												-	-	-
73	Diving	Grebes	Wintering		Present												-	-	-
	Waterfowl	American coot	Wintering		10S												-	-	-
	Waterfowl	Blue-winged teal	Migration		Present												Feb-Apr	Aug-Oct	-
	Waterfowl	Common goldeneye	Wintering		Present												-	-	-
	Waterfowl	Green-winged teal	Wintering		Present												-	-	-
	Waterfowl	Ring-necked duck	Wintering		10S												-	-	-
	Waterfowl	Ruddy duck	Wintering		10,000S												-	-	-
108	Wading	Great blue heron	Nesting		6 Nests												Feb-Jun	-	-
124	Wading	Great blue heron	Nesting		2 Nests												Feb-Jun	-	-
153	Wading	Great blue heron	Nesting		4 Nests												Feb-Jun	-	-
232	Waterfowl	Canada goose	Nesting		Present												Mar-Aug	-	Jun-Jul
	Waterfowl	Mallard	Nesting		Present												Mar-Aug	-	Jul-Aug
798	Raptor	Bald eagle	Nesting		1 Nest												Dec-Jun	-	-
885	Waterfowl	Bufflehead	Wintering		100S												-	-	-

BIRDS (continued)

Map ID	Subelement	Species	Mapping Qualifier	MD/VA		Concentration	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt
				S	F		J	F	M	A	M	J	J	A	S	O	N	D				
890	Waterfowl	Canada goose	Wintering			1,000S													-	-	-	
	Waterfowl	Canvasback	Wintering			100S													-	-	-	
	Waterfowl	Gadwall	Wintering			Present													-	-	-	
	Waterfowl	Mallard	Wintering			100S													-	-	-	
	Waterfowl	Mergansers	Wintering			10S													-	-	-	
	Waterfowl	Ruddy duck	Wintering			1,000S													-	-	-	
	Waterfowl	Scaup	Wintering			100S													-	-	-	
	Waterfowl	Tundra swan	Wintering			10S													-	-	-	
	Waterfowl	Bufflehead	Wintering			100S													-	-	-	
918	Waterfowl	Canada goose	Wintering			1,000S													-	-	-	
	Waterfowl	Canvasback	Wintering			100S													-	-	-	
	Waterfowl	Gadwall	Wintering			Present													-	-	-	
	Waterfowl	Mallard	Wintering			100S													-	-	-	
	Waterfowl	Scaup	Wintering			100S													-	-	-	
	Waterfowl	Mergansers	Wintering			10S													-	-	-	
	Waterfowl	Ruddy duck	Wintering			1,000S													-	-	-	
	Waterfowl	Tundra swan	Wintering			10S													-	-	-	
	Waterfowl	Common loon	Wintering			100S													-	-	-	
1310	Diving	Grebes	Wintering			100S													-	-	-	
	Diving	Scoters	Wintering			10,000S													-	-	-	
	Waterfowl	D. crested cormorant	Wintering			1,000S													-	Mar-May	Aug-Nov	-

FISH

Map ID	Subelement	Species	Mapping Qualifier	MD/VA		Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults	
				S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N						D
1611	Diadromous	Striped bass	Nursery Area			-													-	-	Mar-May	Jan-Dec	-




REPTILES & AMPHIBIANS

Map ID	Subelement	Species	Mapping Qualifier	MD/VA			Monthly Presence												Nest	Hatch	Internest	Juveniles	Adults
				S	F	T	J	F	M	A	M	J	J	A	S	O	N	D					
1771	Turtle	Loggerhead sea turtle	Nesting			1 Nest													May-Aug	Jun-Oct	-	Jun-Oct	May-Aug



INVERTEBRATES

Map ID	Subelement	Species	Mapping Qualifier	MD/VA		Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults	
				S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N						D
1833	Insect	NE beach tiger beetle	Vulnerable Occurrence			-													Jun-Aug	Jun-Aug	Jan-Dec	-	Jun-Aug


BIRDS

Subelement	Species	Mapping Qualifier	MD/VA		Concentration	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt
			S	F		J	F	M	A	M	J	J	A	S	O	N	D				
	Common loon	Wintering			10S													-	-	-	-
	Common loon	Wintering			Present													-	-	-	-
	D. crested cormorant	Wintering			100S													-	Mar-May	Aug-Nov	-
	D. crested cormorant	Wintering			100S													-	Mar-May	Aug-Nov	-
	Grebes	Wintering			10S													-	-	-	-
	Red-throated loon	Wintering			Present													-	-	-	-
	Red-throated loon	Wintering			100S													-	-	-	-
	Northern gannet	Wintering			100S													-	-	-	-
	Northern gannet	Wintering			10S													-	-	-	-
	American black duck	Wintering			10S													-	-	-	-
	Blue-winged teal	Migration			10S													-	Feb-Apr	Aug-Oct	-
	Bufflehead	Wintering			1,000S													-	-	-	-
	Canada goose	Wintering			100S													-	-	-	-
	Gadwall	Wintering			10S													-	-	-	-
	Green-winged teal	Wintering			10S													-	-	-	-
	Long-tailed duck	Wintering			100S													-	-	-	-
	Long-tailed duck	Wintering			10S													-	-	-	-
	Mallard	Wintering			10S													-	-	-	-
	Mergansers	Wintering			100S													-	-	-	-
	Ruddy duck	Wintering			Present													-	-	-	-
	Scaup	Wintering			10S													-	-	-	-
	Scoters	Wintering			100S													-	-	-	-
	Tundra swan	Wintering			100S													-	-	-	-

FISH

Subelement	Species	Mapping Qualifier	MD/VA		Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
			S	F		J	F	M	A	M	J	J	A	S	O	N	D					
	Alewife	Migration			-													-	-	-	Aug-Nov	Feb-Apr
	American shad	Migration			-													-	-	-	Aug-Nov	Feb-Apr
	Atlantic sturgeon	General Distribution	-/E	E	-													-	-	-	-	Jan-Dec
	Blueback herring	Migration			-													-	-	-	Aug-Nov	Mar-Jun
	Hickory shad	Migration			-													-	-	-	Jun-Sep	Feb-May
	Shortnose sturgeon	General Distribution	E/E	E	-													-	-	-	Jan-Dec	Jan-Dec
	Striped bass	Migration			-													-	-	-	-	Feb-Jun
	Atl. sharpnose shark	Nursery Area			-													-	-	-	Jun-Sep	Jun-Sep
	Sandbar shark	Nursery Area			-													-	-	-	May-Sep	May-Sep
					-													-	-	-	-	-



REPTILES & AMPHIBIANS

Subelement	Species	Mapping Qualifier	MD/VA		Monthly Presence												Nest	Hatch	Internest	Juveniles	Adults
			S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N	D				
	Green sea turtle	General Distribution	T/T	T	Common												-	-	-	Jul-Oct	-
	Green sea turtle	General Distribution	T/T	T	Rare												-	-	-	May-Dec*	-
	K. ridley sea turtle	General Distribution	E/E	E	Uncommon												-	-	-	Nov-Dec	-
	K. ridley sea turtle	General Distribution	E/E	E	Common												-	-	-	Apr-Oct	-
	Loggerhead sea turtle	General Distribution	T/T	T	Common												-	-	-	Nov-Dec	Nov-Dec
	Loggerhead sea turtle	General Distribution	T/T	T	Abundant												-	-	-	Apr-Oct	Apr-Oct

INVERTEBRATES




Subelement	Species	Mapping Qualifier	MD/VA		Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
			S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N	D				
	Blue crab	Concentration Area			Highly Abundant-Summ												-	-	-	Jun-Oct	Jun-Oct

MARINE MAMMALS



Subelement	Species	Mapping Qualifier	MD/VA		Monthly Presence												Mating	Calving	Pupping	Molt
			S	F	J	F	M	A	M	J	J	A	S	O	N	D				
	West Indian manatee	General Distribution	-/E	E	Rare												-	-	-	-
	Humpback whale	General Distribution	E/E	E	Very Rare												-	-	-	-

ALSO PRESENT IN MAPPED AREA (GENERAL DISTRIBUTION)





BIRDS

Subelement	Species	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt
		J	F	M	A	M	J	J	A	S	O	N	D				
	Brown pelican													-	-	-	-
	Brown pelican													-	-	-	-
	D. crested cormorant													-	-	-	-
	D. crested cormorant													-	Mar-May	Aug-Nov	-
	Gulls													-	-	-	-
	Terns													-	-	-	-
	Storm-petrels													-	-	-	-

FISH

Subelement	Species	Mapping Qualifier	MD/VA		Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
			S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N	D				
	Alewife	General Distribution															Feb-Apr	Feb-Apr	Feb-Apr	Apr-Oct	Feb-Apr
	American eel	General Distribution															-	-	-	Jan-May	Jan-Dec
	Blueback herring	General Distribution															Mar-Jun	Mar-Jun	Apr-Jun	May-Oct	Mar-Jun
	Gizzard shad	General Distribution															Mar-Jun	-	-	Jan-Dec	Jan-Dec
	Striped bass	General Distribution															-	-	-	Jan-Dec	Jan-Dec
	Atlantic croaker	General Distribution															-	-	Apr-Dec	Jan-Dec	May-Oct
	Atlantic croaker	General Distribution															-	-	Dec-Apr	Jan-Dec	May-Nov
	Atlantic croaker	General Distribution															-	-	-	-	Jan-Jun
	Atlantic menhaden	General Distribution															-	-	-	Jan-Dec	Jan-Dec
	Black drum	General Distribution															Apr-Jun	-	-	Apr-Dec	Apr-Dec







FISH (continued)

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	Black sea bass													-	-	-	Apr-Nov	Apr-Nov
	Bluefish													-	-	-	May-Oct	May-Oct
	Kingfishes													-	-	-	-	Apr-Nov
	Northern puffer													-	-	-	Mar-Oct	Mar-Oct
	Northern puffer													-	-	-	Mar-Oct	Mar-Nov
	Pigfish													-	-	-	-	Apr-Nov
	Red drum													-	-	-	-	May-Nov
	Sheepshead													-	-	-	-	Apr-Nov
	Spot													-	-	-	Nov-Apr	Apr-Dec
	Spotted seatrout													May-Jul	-	-	Apr-Nov	Apr-Nov
	Summer flounder													-	-	Feb-May	Apr-Dec	Jan-Dec
	Weakfish													-	-	May-Aug	Jun-Dec	Apr-Dec
	White perch													-	-	-	Jan-Dec	Jan-Dec
	Winter flounder													-	-	-	-	Dec-Mar
	Pipefish													-	-	-	Jan-Dec	Jan-Dec
	Silversides													Mar-Jul	Mar-Jul	-	Mar-Nov	Mar-Nov
	Anchovies													Apr-Sep	-	-	-	Jan-Dec
	Striped burrfish													-	-	-	May-Oct	May-Oct
	Atlantic spadefish													-	-	-	-	Jun-Sep
	Cleannose skate													-	-	-	-	Jan-Dec
	Cownose ray													Jun-Jul	-	-	May-Oct	May-Oct
	Northern searobin													May-Jul	-	-	-	Apr-Dec
	Northern searobin													-	-	-	-	Apr-Sep
	Red hake													-	-	-	-	Sep-May*
	Silver hake													-	-	-	-	Oct-May
	Spotted hake													-	-	-	Jan-Dec	Jan-Dec
	Butterfish													-	-	-	Jul-Nov	Mar-Nov
	Cobia													-	-	-	-	Jun-Sep
	Harvestfish													-	-	-	-	May-Nov
	Lined seahorse													May-Oct	-	-	-	Jan-Dec
	Spanish mackerel													-	-	-	-	May-Sep



REPTILES & AMPHIBIANS

Subelement	Species	Monthly Presence												Nest	Hatch	Internest	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	Diamondback terrapin													May-Aug	-	-	Apr-Oct	Apr-Oct

INVERTEBRATES

Subelement	Species	Monthly Presence												Spawn	Eggs		Larvae		Juveniles		Adults
		J	F	M	A	M	J	J	A	S	O	N	D		Jun-Sep	Jun-Sep	Jun-Oct	Jun-Oct	Jan-Dec	Jan-Dec	
	Bivalve														Jun-Sep	Jun-Sep	Jun-Oct	Jun-Oct	Jan-Dec	Jan-Dec	
	Eastern oyster														Jun-Sep	Jun-Sep	Jun-Oct	Jun-Oct	Jan-Dec	Jan-Dec	
	Hard clam														Jun-Sep	Jun-Sep	Jun-Oct	Jun-Oct	Jan-Dec	Jan-Dec	
	Softshell clam														May-Dec*	May-Dec*	May-Jan*	May-Jan*	-	-	
	Stout razor clam														Jun-Nov	-	-	-	Jan-Dec	Jan-Dec	
	Squid														-	Apr-Dec	Apr-Dec	Apr-Dec	Apr-Dec	Apr-Dec	
	Blue crab														-	-	-	-	Jan-Dec	Jan-Dec	
	Horseshoe crab														-	-	-	-	Jan-Dec	Jan-Dec	
	Brown shrimp														-	-	-	-	May-Oct	May-Oct	
	Mantis shrimp														-	-	-	-	Jan-Dec	Jan-Dec	
	White shrimp														-	-	-	-	May-Oct	May-Oct	
															-	-	-	-	May-Oct	May-Oct	

MARINE MAMMALS

Subelement	Species	Monthly Presence												Mating	Calving		Pupping		Molt	
		J	F	M	A	M	J	J	A	S	O	N	D		May-Aug	May-Aug	-	-	-	-
	Dolphin														May-Aug	May-Aug	-	-	-	-
	Bottlenose dolphin														-	-	-	-	-	-
	Harbor porpoise														-	-	-	-	-	-
	Harbor seal														-	-	-	-	-	-

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

SHORELINE RESOURCES

ESI POLYGON HABITAT TYPES

<i>ESI Rank</i>	<i>Habitat Classification</i>	<i>Area (Acres)</i>	<i>Area (Sq. Miles)</i>
10A	Salt and Brackish Water Marshes	256.72	0.40
10B	Freshwater Marshes	18.71	0.03
10C	Swamps	793.45	1.24
10D	Scrub and Shrub Wetlands	144.64	0.23
7	Exposed Tidal Flats	69.14	0.11

ESI SHORELINE HABITAT TYPES

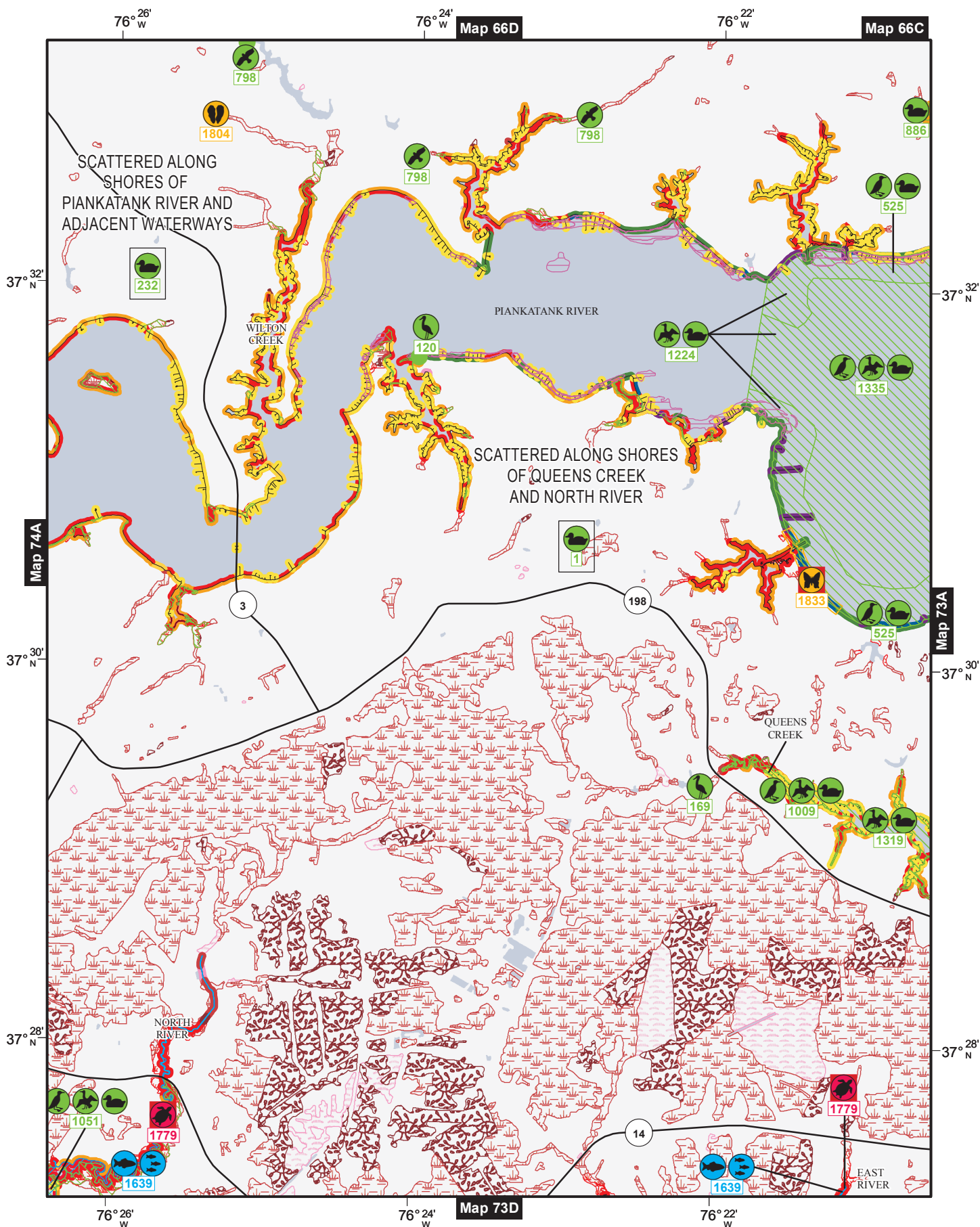
<i>ESI Rank</i>	<i>Shoreline Habitat Classification</i>	<i>Length (Meters)</i>	<i>Length (Miles)</i>	<i>% of ESI Shoreline</i>
10A	Salt and Brackish Water Marshes	78,968.00	49.07	37%
10C	Swamps	2,206.04	1.37	1%
10D	Scrub and Shrub Wetlands	1,103.04	0.69	1%
9A	Sheltered Tidal Flats	923.07	0.57	< 1%
9B	Vegetated Low Banks	49,327.28	30.65	23%
8B	Sheltered, Solid Man-Made Structures	32,409.28	20.14	15%
8C	Sheltered Riprap	10,977.22	6.82	5%
7	Exposed Tidal Flats	6,675.43	4.15	3%
6B	Riprap	12,891.27	8.01	6%
4	Coarse Grained Sand Beaches	105.68	0.07	< 1%
3A	Fine to Medium Grained Sand Beaches	12,422.60	7.72	6%
3B	Scarps and Steep Slopes (Sand)	70.92	0.04	< 1%
1B	Exposed, Solid Man-Made Structures	7,503.93	4.66	3%

Total ESI Shoreline: 215,583.75 Total ESI Shoreline: 133.96
 Total Shoreline: 150,237.40 Total Shoreline: 93.35

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

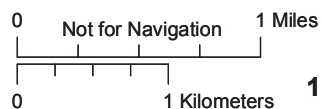




Map 73B
Chesapeake South



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



1:50,000

Map 73B
Chesapeake South

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	MD/VA S F	Concentration	Monthly Presence											
					J	F	M	A	M	J	J	A	S	O	N	D
SAV	Submerged aquatic veg	High Ecological Value		Ephemeral												
SAV	Submerged aquatic veg	High Ecological Value		High												
SAV	Submerged aquatic veg	High Ecological Value		Low												

BIRDS

Map ID	Subelement	Species	Mapping Qualifier	MD/VA S F	Concentration	Monthly Presence											
						J	F	M	A	M	J	J	A	S	O	N	D
1	Waterfowl	American black duck	Nesting		Present												
	Waterfowl	Canada goose	Nesting		Present												
	Waterfowl	Mallard	Nesting		Present												
120	Wading	Great blue heron	Nesting		5 Nests												
169	Wading	Great blue heron	Nesting		15 Nests												
232	Waterfowl	Canada goose	Nesting		Present												
	Waterfowl	Mallard	Nesting		Present												
525	Pelagic	Northern gannet	Wintering		10S												
	Waterfowl	American black duck	Wintering		10S												
	Waterfowl	American coot	Wintering		10S												
	Waterfowl	Blue-winged teal	Migration		Present												
	Waterfowl	Canada goose	Wintering		1,000S												
	Waterfowl	Canvasback	Wintering		100S												
	Waterfowl	Common goldeneye	Wintering		Present												
	Waterfowl	Gadwall	Wintering		Present												
	Waterfowl	Green-winged teal	Wintering		Present												
	Waterfowl	Mallard	Wintering		100S												
	Waterfowl	Ring-necked duck	Wintering		10S												
	Waterfowl	Ruddy duck	Wintering		10,000S												
	Waterfowl	Scaup	Wintering		100S												
	Waterfowl	Tundra swan	Wintering		100S												
798	Raptor	Bald eagle	Nesting		1 Nest												
886	Waterfowl	American black duck	Wintering		10S												
	Waterfowl	Canada goose	Wintering		1,000S												
	Waterfowl	Canvasback	Wintering		100S												
	Waterfowl	Gadwall	Wintering		Present												
	Waterfowl	Mallard	Wintering		100S												
	Waterfowl	Mergansers	Wintering		10S												
1009	Waterfowl	Scaup	Wintering		100S												
	Diving	Common loon	Wintering		10S												

BIRDS (continued)

Map ID	Subelement	Species	Mapping Qualifier	MD/VA		Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt
				S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N	D			
	Diving	Grebes	Wintering			10S													-	-	-
	Pelagic	Northern gannet	Wintering			10S													-	-	-
	Waterfowl	American black duck	Wintering			10S													-	-	-
	Waterfowl	Blue-winged teal	Migration			10S													-	-	-
	Waterfowl	Bufflehead	Wintering			1,000S													-	-	-
	Waterfowl	Green-winged teal	Wintering			10S													-	-	-
	Waterfowl	Scoters	Wintering			100S													-	-	-
	Waterfowl	Tundra swan	Wintering			100S													-	-	-
1051	Diving	Common loon	Wintering			10S													-	-	-
	Diving	Grebes	Wintering			10S													-	-	-
	Diving	Red-throated loon	Wintering			Present													-	-	-
	Pelagic	Northern gannet	Wintering			100S													-	-	-
	Waterfowl	American black duck	Wintering			100S													-	-	-
	Waterfowl	American wigeon	Wintering			Present													-	-	-
	Waterfowl	Blue-winged teal	Migration			10S													-	-	-
	Waterfowl	Brant	Wintering			100S													-	-	-
	Waterfowl	Bufflehead	Wintering			1,000S													-	-	-
	Waterfowl	Canada goose	Wintering			1,000S													-	-	-
	Waterfowl	Canvasback	Wintering			Present													-	-	-
	Waterfowl	Gadwall	Wintering			Present													-	-	-
	Waterfowl	Green-winged teal	Wintering			10S													-	-	-
	Waterfowl	Long-tailed duck	Wintering			Present													-	-	-
	Waterfowl	Mallard	Wintering			100S													-	-	-
	Waterfowl	Ruddy duck	Wintering			10,000S													-	-	-
	Waterfowl	Scaup	Wintering			1,000S													-	-	-
	Waterfowl	Scoters	Wintering			100S													-	-	-
	Waterfowl	Tundra swan	Wintering			100S													-	-	-
1224	Diving	Common loon	Wintering			Present													-	-	-
	Diving	Red-throated loon	Wintering			Present													-	-	-
	Waterfowl	Scoters	Wintering			100S													-	-	-
1319	Diving	D. crested cormorant	Wintering			100S													-	-	-
	Diving	Red-throated loon	Wintering			100S													-	-	-
	Waterfowl	Gadwall	Wintering			10S													-	-	-
	Waterfowl	Ruddy duck	Wintering			Present													-	-	-
	Waterfowl	Scaup	Wintering			10S													-	-	-
1335	Diving	D. crested cormorant	Wintering			100S													-	-	-
	Diving	Grebes	Wintering			10S													-	-	-
	Pelagic	Northern gannet	Wintering			100S													-	-	-
	Waterfowl	Long-tailed duck	Wintering			100S													-	-	-

FISH

Map ID	Subelement	Species	Mapping Qualifier	MD/VA		Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults	
				S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N						D
1639	Estuarine Nursery	Atl. sharpnose shark	Nursery Area			Common													-	-	-	Jun-Sep	Jun-Sep
	Marine Pelagic	Sandbar shark	Nursery Area			Abundant													-	-	-	May-Sep	May-Sep

Chesapeake South: Map 73B

REPTILES & AMPHIBIANS



Map ID	Subelement	Species	Mapping Qualifier	MD/V/A		Monthly Presence												Nest	Hatch	Interest	Juveniles	Adults
				S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N					
1779	Turtle	Leatherback sea turtle	General Distribution	E/E	E	Common												-	-	-	May-Jun	May-Jun
	Turtle	Leatherback sea turtle	General Distribution	E/E	E	Rare												-	-	-	Mar-Dec*	Mar-Dec*

INVERTEBRATES


Map ID	Subelement	Species	Mapping Qualifier	MD/V/A		Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
				S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N					
1804	Bivalve	Northern lance	Vulnerable Occurrence			-												-	-	-	Jan-Dec	Jan-Dec
1833	Insect	NE beach tiger beetle	Vulnerable Occurrence	E/T	T	-												Jun-Aug	Jun-Aug	Jan-Dec	-	Jun-Aug

WIDESPREAD IN MAPPED AREA (> 10 SQUARE KILOMETERS)


BIRDS

Subelement	Species	Mapping Qualifier	MD/V/A		Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt
			S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N				
 	Diving	Grebes	Wintering		Present												-	-	-	-
	Waterfowl	American black duck	Wintering		Present												-	-	-	-
		Bufflehead	Wintering		100S												-	-	-	-
		Canada goose	Wintering		100S												-	-	-	-
		Canvasback	Wintering		10S												-	-	-	-
		Long-tailed duck	Wintering		10S												-	-	-	-
		Mallard	Wintering		10S												-	-	-	-
		Mergansers	Wintering		100S												-	-	-	-
		Ruddy duck	Wintering		1,000S												-	-	-	-
		Tundra swan	Wintering		10S												-	-	-	-

FISH

Subelement	Species	Mapping Qualifier	MD/V/A		Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
			S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N					
	Diadromous	Alewife	Migration		-												-	-	-	Aug-Nov	Feb-Apr
		American shad	Migration		-												-	-	-	Aug-Nov	Feb-Jun
		Atlantic sturgeon	General Distribution	-/E	E	-											-	-	-	-	Jan-Dec
		Blueback herring	Migration		-												-	-	-	Aug-Nov	Mar-Jun
		Shortnose sturgeon	General Distribution	E/E	E	-											-	-	-	Jan-Dec	Jan-Dec
		Striped bass	Migration		-												-	-	-	-	Feb-Jun

REPTILES & AMPHIBIANS

Subelement	Species	Mapping Qualifier	MD/V/A		Monthly Presence												Nest	Hatch	Interest	Juveniles	Adults
			S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N					
	Turtle	Green sea turtle	General Distribution	T/T	T	Common											-	-	-	Jul-Oct	-
		Green sea turtle	General Distribution	T/T	T	Rare											-	-	-	May-Dec*	-
		K. ridley sea turtle	General Distribution	E/E	E	Uncommon											-	-	-	Nov-Dec	-
		K. ridley sea turtle	General Distribution	E/E	E	Common											-	-	-	Apr-Oct	-
		Loggerhead sea turtle	General Distribution	T/T	T	Common											-	-	-	Nov-Dec	Nov-Dec
		Loggerhead sea turtle	General Distribution	T/T	T	Abundant											-	-	-	Apr-Oct	Apr-Oct

Chesapeake South: Map 73B

INVERTEBRATES

	Subelement	Species	Mapping Qualifier	MD/VA		Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
				S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N						D																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
	Crab	Blue crab	Concentration Area			Highly Abundant-Summ																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	

MARINE MAMMALS

Subelement	Species	Mapping Qualifier	MD/VA		Monthly Presence												Mating	Calving	Pupping	Molt																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
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Manatee	West Indian manatee	General Distribution	-/E	E	Rare																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										

ALSO PRESENT IN MAPPED AREA (GENERAL DISTRIBUTION)








BIRDS

Subelement	Species	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt
		J	F	M	A	M	J	J	A	S	O	N	D				
Diving	Brown pelican													-	-	-	-
	Brown pelican													-	-	-	-
Gull/Tern	D. crested cormorant													-	Mar-May	Aug-Nov	-
	D. crested cormorant													-	-	-	-
	Gulls													-	-	-	-
Waterfowl	Terns													-	-	-	-
	Wood duck													Apr-Jul	-	-	Jul-Aug

FISH

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
Diadromous	Alewife													Feb-Apr	Feb-Apr	Feb-Apr	Apr-Oct	Feb-Apr
	American eel													-	-	-	Jan-May	Jan-Dec
	Blueback herring													Mar-Jun	Mar-Jun	Apr-Jun	May-Oct	Mar-Jun
	Gizzard shad													Mar-Jun	-	-	Jan-Dec	Jan-Dec
Estuarine Nursery	Striped bass													-	-	-	Jan-Dec	Jan-Dec
	Atlantic croaker													-	-	Dec-Apr	Jan-Dec	May-Nov
	Atlantic croaker													-	-	Apr-Dec	Jan-Dec	May-Oct
	Atlantic herring													-	-	-	Feb-Jun	Feb-Jun
	Atlantic menhaden													-	-	-	Jan-Dec	Jan-Dec
	Black drum													Apr-Jun	-	-	Apr-Dec	Apr-Dec
	Black sea bass													-	-	-	Apr-Nov	Apr-Nov
	Bluefish													-	-	-	May-Oct	May-Oct
	Kingfishes													-	-	-	-	Apr-Nov
	Northern puffer													-	-	-	Mar-Oct	Mar-Nov
	Northern puffer													-	-	-	Mar-Oct	Mar-Oct
	Pigfish													-	-	-	-	Apr-Nov
	Red drum													-	-	-	-	May-Nov
	Sheepshead													-	-	-	-	Apr-Nov
	Spot													-	-	-	Nov-Apr	Apr-Dec
	Spotted seatrout													May-Jul	-	-	Apr-Nov	Apr-Nov
	Summer flounder													-	-	Feb-May	Apr-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					
	Weakfish													-	-	May-Aug	Jun-Dec	Apr-Dec
	Winter flounder													-	-	-	-	Dec-Mar
	Pipefish													-	-	-	Jan-Dec	Jan-Dec
	Silversides													Mar-Jul	Mar-Jul	Apr-Sep	Jan-Dec	Jan-Dec
	Silversides													Mar-Jul	Mar-Jul	-	Mar-Nov	Mar-Nov
	Anchovies													Apr-Sep	-	-	-	Jan-Dec
	Striped burrfish													-	-	-	May-Oct	May-Oct
	Atlantic spadefish													-	-	-	-	Jun-Sep
	Cleomose skate													-	-	-	-	Jan-Dec
	Cownose ray													Jun-Jul	-	-	May-Oct	May-Oct
	Northern searobin													May-Jul	-	-	-	Apr-Dec
	Red hake													-	-	-	-	Sep-May*
	Silver hake													-	-	-	-	Oct-May
	Spotted hake													-	-	-	Jan-Dec	Jan-Dec
	Butterfish													-	-	-	Jul-Nov	Mar-Nov
	Cobia													-	-	-	-	Jun-Sep
	Harvestfish													-	-	-	-	May-Nov
	Lined seahorse													May-Oct	-	-	-	Jan-Dec
	Spanish mackerel													-	-	-	-	May-Sep

REPTILES & AMPHIBIANS

Subelement	Species	Monthly Presence												Nest	Hatch	Internest	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	Diamondback terrapin													May-Aug	-	-	Apr-Oct	Apr-Oct

INVERTEBRATES

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	Eastern oyster													Jun-Sep	Jun-Sep	Jun-Oct	Jan-Dec	Jan-Dec
	Softshell clam													May-Dec*	May-Dec*	May-Jan*	-	Jan-Dec
	Stout razor clam													Jun-Nov	-	-	Jan-Dec	Jan-Dec
	Squid													-	Apr-Dec	Apr-Dec	Apr-Dec	Apr-Dec
	Blue crab													-	-	-	Jan-Dec	Jan-Dec
	Horseshoe crab													-	-	-	Jan-Dec	Jan-Dec
	Brown shrimp													-	-	-	May-Oct	May-Oct
	Mantis shrimp													-	-	-	Jan-Dec	Jan-Dec
	White shrimp													-	-	-	May-Oct	May-Oct

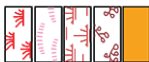
MARINE MAMMALS

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

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	207.78	0.32
10B	Freshwater Marshes	304.97	0.48
10C	Swamps	4,279.91	6.69
10D	Scrub and Shrub Wetlands	1,122.99	1.75
9A	Sheltered Tidal Flats	1.16	0.00



ESI SHORELINE HABITAT TYPES

<i>ESI Rank</i>	<i>Shoreline Habitat Classification</i>	<i>Length (Meters)</i>	<i>Length (Miles)</i>	<i>% of ESI Shoreline</i>
10A	Salt and Brackish Water Marshes	73,964.70	45.96	43%
10B	Freshwater Marshes	441.70	0.27	< 1%
10C	Swamps	2,011.33	1.25	1%
10D	Scrub and Shrub Wetlands	479.92	0.30	< 1%
9A	Sheltered Tidal Flats	4,872.22	3.03	3%
9B	Vegetated Low Banks	51,200.29	31.81	30%
8B	Sheltered, Solid Man-Made Structures	22,465.16	13.96	13%
8C	Sheltered Riprap	5,291.91	3.29	3%
6B	Riprap	7,743.00	4.81	4%
4	Coarse Grained Sand Beaches	93.97	0.06	< 1%
3A	Fine to Medium Grained Sand Beaches	2,203.08	1.37	1%
1B	Exposed, Solid Man-Made Structures	2,520.00	1.57	1%

Total ESI Shoreline: 173,287.26 Total ESI Shoreline: 107.68
 Total Shoreline: 116,285.82 Total Shoreline: 72.26

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 73C
Chesapeake South

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	MD/VA		Concentration	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt
			S	F		J	F	M	A	M	J	J	A	S	O	N	D				
SAV	Submerged aquatic veg	High Ecological Value			Ephemeral													-	-	-	-
SAV	Submerged aquatic veg	High Ecological Value			High													-	-	-	-
SAV	Submerged aquatic veg	High Ecological Value			Low													-	-	-	-

BIRDS

Map ID	Subelement	Species	Mapping Qualifier	MD/VA		Concentration	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt
				S	F		J	F	M	A	M	J	J	A	S	O	N	D				
1	Waterfowl	American black duck	Nesting			Present													Apr-Jul	-	-	-
	Waterfowl	Canada goose	Nesting			Present													Mar-Aug	-	-	Jun-Jul
	Waterfowl	Mallard	Nesting			Present													Mar-Aug	-	-	Jul-Aug
94	Waterfowl	American black duck	Wintering			100S													-	-	-	-
	Waterfowl	American wigeon	Wintering			Present													-	-	-	-
	Waterfowl	Brant	Wintering			100S													-	-	-	-
	Waterfowl	Canada goose	Wintering			1,000S													-	-	-	-
	Waterfowl	Canvasback	Wintering			Present													-	-	-	-
	Waterfowl	Gadwall	Wintering			Present													-	-	-	-
	Waterfowl	Long-tailed duck	Wintering			Present													-	-	-	-
	Waterfowl	Mallard	Wintering			100S													-	-	-	-
	Waterfowl	Ruddy duck	Wintering			10,000S													-	-	-	-
	Waterfowl	Scaup	Wintering			1,000S													-	-	-	-
	Wading	Great blue heron	Nesting			10 Nests													Feb-Jun	-	-	-
	Shorebird	American oystercatcher	Nesting			2 Pairs													Apr-Aug	-	-	-
159	Wading	Great blue heron	Nesting			42 Nests													Feb-Jun	-	-	-
	Raptor	Bald eagle	Nesting			1 Nest													Dec-Jun	-	-	-
	Diving	Common loon	Wintering			Present													-	-	-	-
1262	Diving	Red-throated loon	Wintering			Present													-	-	-	-
	Pelagic	Northern gannet	Wintering			100S													-	-	-	-
	Diving	Red-throated loon	Wintering			Present													-	-	-	-
1263	Pelagic	Northern gannet	Wintering			100S													-	-	-	-
	Waterfowl	American black duck	Wintering			100S													-	-	-	-
	Waterfowl	American wigeon	Wintering			Present													-	-	-	-
	Waterfowl	Brant	Wintering			100S													-	-	-	-
	Waterfowl	Canada goose	Wintering			1,000S													-	-	-	-
	Waterfowl	Canvasback	Wintering			Present													-	-	-	-
	Waterfowl	Gadwall	Wintering			Present													-	-	-	-
	Waterfowl	Long-tailed duck	Wintering			Present													-	-	-	-
	Waterfowl	Mallard	Wintering			100S													-	-	-	-

BIRDS (continued)

Map ID	Subelement	Species	Mapping Qualifier	MD/VA		Concentration	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt
				S	F		J	F	M	A	M	J	J	A	S	O	N	D				
1309	Waterfowl	Ruddy duck	Wintering			10,000S													-	-	-	
	Waterfowl	Scaup	Wintering			1,000S													-	-	-	
	Diving	Common loon	Wintering			100S													-	-	-	
	Diving	Grebes	Wintering			100S													-	-	-	
	Pelagic	Northern gannet	Wintering			100S													-	-	-	
	Waterfowl	Scoters	Wintering			10,000S													-	-	-	

FISH

Map ID	Subelement	Species	Mapping Qualifier	MD/VA		Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
				S	F		J	F	M	A	M	J	J	A	S	O	N	D																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
1604	Diadromous	American shad	Migration			-													-	-																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							

REPTILES & AMPHIBIANS

Map ID	Subelement	Species	Mapping Qualifier	MD/VA		Concentration	Monthly Presence												Nest	Hatch	Internest	Juveniles	Adults
				S	F		J	F	M	A	M	J	J	A	S	O	N	D					
1762	Turtle	Diamondback terrapin	Concentration Area			High												May-Aug	-	-	-	Apr-Oct	Apr-Oct
1779	Turtle	Leatherback sea turtle	General Distribution	E/E	E	Rare												-	-	-	-	Mar-Dec*	Mar-Dec*
	Turtle	Leatherback sea turtle	General Distribution	E/E	E	Common												-	-	-	-	May-Jun	May-Jun

INVERTEBRATES

Map ID	Subelement	Species	Mapping Qualifier	MD/VA		Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
				S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N	D				
1833	Insect	NE beach tiger beetle	Vulnerable Occurrence	E/T	T	-												Jun-Aug	Jun-Aug	Jan-Dec	-	Jun-Aug

MARINE MAMMALS

Map ID	Subelement	Species	Mapping Qualifier	MD/VA		Monthly Presence												Mating	Calving	Pupping	Molt																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
				S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N					D																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
1849	Whale	Humpback whale	General Distribution	E/E	E	Very Rare																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														</

BIRDS

Subelement	Species	Mapping Qualifier	MDVA		Concentration	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt
			S	F		J	F	M	A	M	J	J	A	S	O	N	D				
Diving	Common loon	Wintering			10S													-	-	-	-
	D. crested cormorant	Wintering			100S													-	Mar-May	Aug-Nov	-
	Grebes	Wintering			10S													-	-	-	-
Pelagic	Red-throated loon	Wintering			100S													-	-	-	-
	Northern gannet	Wintering			10S													-	-	-	-
	American black duck	Wintering			10S													-	-	-	-
Waterfowl	Blue-winged teal	Migration			10S													-	Feb-Apr	Aug-Oct	-
	Bufflehead	Wintering			1,000S													-	-	-	-
	Canada goose	Wintering			100S													-	-	-	-
	Gadwall	Wintering			10S													-	-	-	-
	Green-winged teal	Wintering			10S													-	-	-	-
	Long-tailed duck	Wintering			10S													-	-	-	-
	Mallard	Wintering			10S													-	-	-	-
	Mergansers	Wintering			100S													-	-	-	-
	Ruddy duck	Wintering			Present													-	-	-	-
	Scaup	Wintering			10S													-	-	-	-
	Scoters	Wintering			100S													-	-	-	-
	Tundra swan	Wintering			100S													-	-	-	-

FISH

Subelement	Species	Mapping Qualifier	MDVA		Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
			S	F		J	F	M	A	M	J	J	A	S	O	N	D					
Diadromous	Alewife	Migration			-													-	-	-	Aug-Nov	Feb-Apr
	Atlantic sturgeon	General Distribution	-/E	E	-													-	-	-	-	Jan-Dec
	Blueback herring	Migration			-													-	-	-	Aug-Nov	Mar-Jun

REPTILES & AMPHIBIANS

Subelement	Species	Mapping Qualifier	MDVA		Concentration	Monthly Presence												Nest	Hatch	Internest	Juveniles	Adults
			S	F		J	F	M	A	M	J	J	A	S	O	N	D					
Turtle	Green sea turtle	General Distribution	T/T	T	Rare													-	-	-	May-Dec*	-
	Green sea turtle	General Distribution	T/T	T	Common													-	-	-	Jul-Oct	-
	K. ridley sea turtle	General Distribution	E/E	E	Uncommon													-	-	-	Nov-Dec	-
	K. ridley sea turtle	General Distribution	E/E	E	Common													-	-	-	Apr-Oct	-
	Loggerhead sea turtle	General Distribution	T/T	T	Common													-	-	-	Nov-Dec	Nov-Dec
	Loggerhead sea turtle	General Distribution	T/T	T	Abundant													-	-	-	Apr-Oct	Apr-Oct

INVERTEBRATES

Subelement	Species	Mapping Qualifier	MDVA		Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
			S	F		J	F	M	A	M	J	J	A	S	O	N	D					
Crab	Blue crab	Concentration Area			Highly Abundant-Summ													-	-	-	Jun-Oct	Jun-Oct

MARINE MAMMALS

Subelement	Species	Mapping Qualifier	MD/VA		Monthly Presence												Mating	Calving	Pupping	Molt																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
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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				
Diving	Brown pelican													-	-	-	-
	Brown pelican													-	-	-	-
	D. crested cormorant													-	-	-	-
	D. crested cormorant													-	Mar-May	Aug-Nov	-
Gull/Tern	Grebes													-	-	-	-
	Gulls													-	-	-	-
	Terns													-	-	-	-
Pelagic	Storm-petrels													-	-	-	-

FISH

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
Diadromous	Alewife													Feb-Apr	Feb-Apr	Feb-Apr	Apr-Oct	Feb-Apr
	American eel													-	-	-	Jan-May	Jan-Dec
Estuarine Nursery	Blueback herring													Mar-Jun	Mar-Jun	Apr-Jun	May-Oct	Mar-Jun
	Gizzard shad													Mar-Jun	-	-	Jan-Dec	Jan-Dec
	Striped bass													-	-	-	Jan-Dec	Jan-Dec
	Atlantic croaker													-	-	Apr-Dec	Jan-Dec	May-Oct
	Atlantic croaker													-	-	Dec-Apr	Jan-Dec	May-Nov
	Atlantic herring													-	-	-	Feb-Jun	Feb-Jun
	Atlantic menhaden													-	-	-	Jan-Dec	Jan-Dec
	Black drum													Apr-Jun	-	-	Apr-Dec	Apr-Dec
	Black sea bass													-	-	-	Apr-Nov	Apr-Nov
	Bluefish													-	-	-	May-Oct	May-Oct
	Kingfishes													-	-	-	-	Apr-Nov
	Northern puffer													-	-	-	Mar-Oct	Mar-Oct
	Northern puffer													-	-	-	Mar-Oct	Mar-Nov
	Pigfish													-	-	-	-	Apr-Nov
	Red drum													-	-	-	-	May-Nov
	Sheepshead													-	-	-	-	Apr-Nov
	Spot													-	-	-	Nov-Apr	Apr-Dec
	Spotted seatrout													May-Jul	-	-	Apr-Nov	Apr-Nov
	Summer flounder													-	-	Feb-May	Apr-Dec	Jan-Dec
	Weakfish													-	-	May-Aug	Jun-Dec	Apr-Dec
Estuarine Resident	Winter flounder													-	-	-	-	Dec-Mar
	Pipefish													-	-	-	Jan-Dec	Jan-Dec
	Silversides													-	-	-	-	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					
	Silversides													Mar-Jul	Mar-Jul	Apr-Sep	Jan-Dec	Jan-Dec
	Anchovies													Mar-Jul	Mar-Jul	-	Mar-Nov	Mar-Nov
	Striped burrfish													Apr-Sep	-	-	-	Jan-Dec
	Atlantic spadefish													-	-	-	May-Oct	May-Oct
	Cleannose skate													-	-	-	-	Jan-Dec
	Cownose ray													Jun-Jul	-	-	May-Oct	May-Oct
	Northern searobin													May-Jul	-	-	-	Apr-Dec
	Red hake													-	-	-	-	Sep-May*
	Silver hake													-	-	-	-	Oct-May
	Southern stingray													-	-	-	-	May-Oct
	Spotted hake													-	-	-	Jan-Dec	Jan-Dec
	Tautog													Apr-Aug	-	-	-	Jan-Dec
	Butterfish													-	-	-	Jul-Nov	Mar-Nov
	Cobia													-	-	-	-	Jun-Sep
	Harvestfish													-	-	-	-	May-Nov
	Lined seahorse													May-Oct	-	-	-	Jan-Dec
	Spanish mackerel													-	-	-	-	May-Sep
	Spiny dogfish													-	-	-	Nov-May	Nov-May



REPTILES & AMPHIBIANS

Subelement	Species	Monthly Presence												Nest	Hatch	Internest	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	Diamondback terrapin													May-Aug	-	-	Apr-Oct	Apr-Oct

INVERTEBRATES

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	Eastern oyster													Jun-Sep	Jun-Sep	Jun-Oct	Jan-Dec	Jan-Dec
	Hard clam													Jun-Sep	Jun-Sep	Jun-Oct	Jan-Dec	Jan-Dec
	Softshell clam													May-Dec*	May-Dec*	May-Jan*	-	Jan-Dec
	Stout razor clam													Jun-Nov	-	-	Jan-Dec	Jan-Dec
	Squid													-	Apr-Dec	Apr-Dec	Apr-Dec	Apr-Dec
	Blue crab													-	-	-	Jan-Dec	Jan-Dec
	Horseshoe crab													-	-	-	Jan-Dec	Jan-Dec
	Brown shrimp													-	-	-	May-Oct	May-Oct
	Mantis shrimp													-	-	-	Jan-Dec	Jan-Dec
	White shrimp													-	-	-	May-Oct	May-Oct

MARINE MAMMALS

Subelement	Species	Monthly Presence												Calving	Pupping	Molt
		J	F	M	A	M	J	J	A	S	O	N	D	May-Aug	May-Aug	
	Bottlenose dolphin															-
	Bottlenose dolphin															-
	Harbor porpoise															-
	Harbor seal															-
																-

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

SHORELINE RESOURCES

ESI POLYGON HABITAT TYPES		
ESI Rank	Habitat Classification	Area (Sq. Miles)
10A	Salt and Brackish Water Marshes	3.43
10B	Freshwater Marshes	0.39
10C	Swamps	8.13
10D	Scrub and Shrub Wetlands	0.62
9A	Sheltered Tidal Flats	0.02
7	Exposed Tidal Flats	0.07

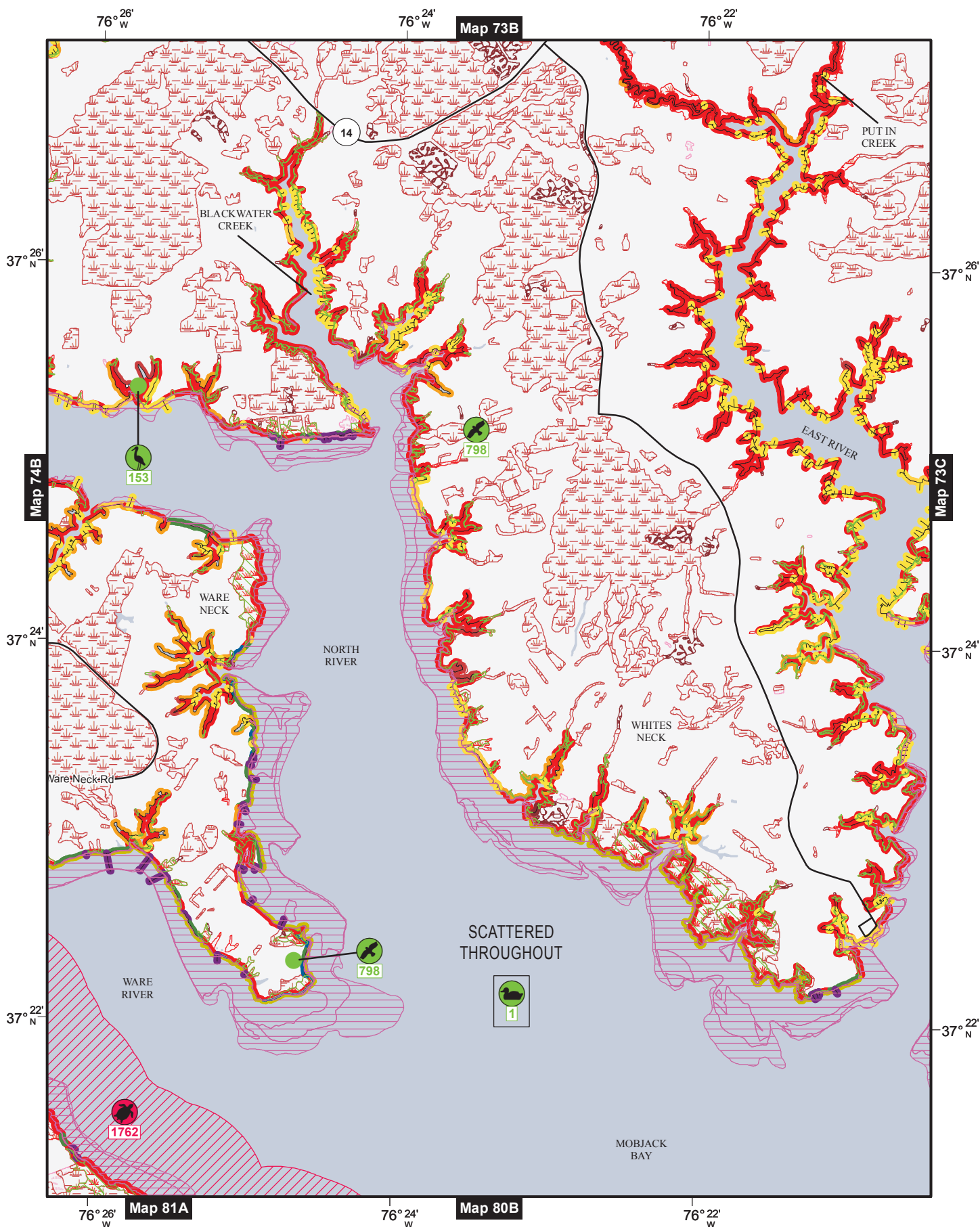
ESI SHORELINE HABITAT TYPES		
ESI Rank	Shoreline Habitat Classification	% of ESI Shoreline
10A	Salt and Brackish Water Marshes	66%
10B	Freshwater Marshes	< 1%
10C	Swamps	< 1%
10D	Scrub and Shrub Wetlands	1%
9A	Sheltered Tidal Flats	9%
9B	Vegetated Low Banks	8%
8B	Sheltered, Solid Man-Made Structures	4%
8C	Sheltered Riprap	2%
7	Exposed Tidal Flats	4%
6B	Riprap	1%
5	Mixed Sand and Gravel Beaches	< 1%
4	Coarse Grained Sand Beaches	< 1%
3A	Fine to Medium Grained Sand Beaches	5%
1B	Exposed, Solid Man-Made Structures	< 1%

Total ESI Shoreline: 280,864.22 Total ESI Shoreline: 174.52
 Total Shoreline: 216,979.46 Total Shoreline: 134.82

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



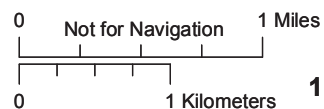


Map 73D

Chesapeake South



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



1:50,000

Map 73D
Chesapeake South

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	MD/VA		Concentration	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt
			S	F		J	F	M	A	M	J	J	A	S	O	N	D				
SAV	Submerged aquatic veg	High Ecological Value			Ephemeral													-	-	-	-
SAV	Submerged aquatic veg	High Ecological Value			High													-	-	-	-
SAV	Submerged aquatic veg	High Ecological Value			Low													-	-	-	-

BIRDS

Map ID	Subelement	Species	Mapping Qualifier	MD/VA		Concentration	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt
				S	F		J	F	M	A	M	J	J	A	S	O	N	D				
1	Waterfowl	American black duck	Nesting			Present													Apr-Jul	-	-	-
	Waterfowl	Canada goose	Nesting			Present													Mar-Aug	-	-	Jun-Jul
	Waterfowl	Mallard	Nesting			Present													Mar-Aug	-	-	Jul-Aug
153	Wading	Great blue heron	Nesting			4 Nests													Feb-Jun	-	-	-
798	Raptor	Bald eagle	Nesting			1 Nest													Dec-Jun	-	-	-

REPTILES & AMPHIBIANS

Map ID	Subelement	Species	Mapping Qualifier	MD/VA		Concentration	Monthly Presence												Nest	Hatch	Internest	Juveniles	Adults
				S	F		J	F	M	A	M	J	J	A	S	O	N	D					
1762	Turtle	Diamondback terrapin	Concentration Area			High													May-Aug	-	-	Apr-Oct	Apr-Oct

WIDESPREAD IN MAPPED AREA (> 10 SQUARE KILOMETERS)




BIRDS

Subelement	Species	Mapping Qualifier	MD/VA		Concentration	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt
			S	F		J	F	M	A	M	J	J	A	S	O	N	D				
	Diving	Common loon			10S													-	-	-	-
		Common loon			Present													-	-	-	-
		Grebes			10S													-	-	-	-
 	Pelagic	Red-throated loon			Present													-	-	-	-
		Northern gannet			100S													-	-	-	-
		American black duck			100S													-	-	-	-
		American wigeon			Present													-	-	-	-
		Blue-winged teal			10S													-	Feb-Apr	Aug-Oct	-
		Brant			100S													-	-	-	-
		Bufflehead			1,000S													-	-	-	-
		Canada goose			1,000S													-	-	-	-
		Canvasback			Present													-	-	-	-
		Gadwall			Present													-	-	-	-
		Green-winged teal			10S													-	-	-	-


BIRDS (continued)

Subelement	Species	Mapping Qualifier	MD/VA		Concentration	Monthly Presence												Nest	Eggs	Larvae	Juveniles	Adults
			S	F		J	F	M	A	M	J	J	A	S	O	N	D					
	Long-tailed duck	Wintering			10S													-	-	-	-	-
	Long-tailed duck	Wintering			Present													-	-	-	-	-
	Mallard	Wintering			100S													-	-	-	-	-
	Mergansers	Wintering			100S													-	-	-	-	-
	Ruddy duck	Wintering			10,000S													-	-	-	-	-
	Scaup	Wintering			1,000S													-	-	-	-	-
	Scoters	Wintering			100S													-	-	-	-	-
	Tundra swan	Wintering			100S													-	-	-	-	-

FISH

Subelement	Species	Mapping Qualifier	MD/VA		Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
			S	F		J	F	M	A	M	J	J	A	S	O	N	D					
	Diadromous Alewife	Migration			-													-	-	-	Aug-Nov	Feb-Apr
	Atlantic sturgeon	General Distribution			-/E													-	-	-	-	Jan-Dec
	Blueback herring	Migration			-													-	-	-	Aug-Nov	Mar-Jun
	Estuarine Nursery Atl. sharpnose shark	Nursery Area			Common													-	-	-	Jun-Sep	Jun-Sep
	Marine Pelagic Sandbar shark	Nursery Area			Abundant													-	-	-	May-Sep	May-Sep

REPTILES & AMPHIBIANS

Subelement	Species	Mapping Qualifier	MD/VA		Concentration	Monthly Presence												Nest	Hatch	Internest	Juveniles	Adults
			S	F		J	F	M	A	M	J	J	A	S	O	N	D					
	Turtle	General Distribution			Common													-	-	-	Jul-Oct	-
	Green sea turtle	General Distribution			Rare													-	-	-	May-Dec*	-
	Green sea turtle	General Distribution			Uncommon													-	-	-	Nov-Dec	-
	K. ridley sea turtle	General Distribution			Common													-	-	-	Apr-Oct	-
	K. ridley sea turtle	General Distribution			Common													-	-	-	May-Jun	May-Jun
	Leatherback sea turtle	General Distribution			Rare													-	-	-	Mar-Dec*	Mar-Dec*
	Leatherback sea turtle	General Distribution			Abundant													-	-	-	Apr-Oct	Apr-Oct
	Loggerhead sea turtle	General Distribution			Common													-	-	-	Nov-Dec	Nov-Dec


INVERTEBRATES

Subelement	Species	Mapping Qualifier	MD/VA		Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
			S	F		J	F	M	A	M	J	J	A	S	O	N	D					
	Crab	Concentration Area			Highly Abundant-Summ													-	-	-	Jun-Oct	Jun-Oct







MARINE MAMMALS

Subelement	Species	Mapping Qualifier	MD/VA		Concentration	Monthly Presence												Mating	Calving	Pupping	Molt																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
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BIRDS

Subelement	Species	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	Brown pelican													-	-	-	-	-
	Brown pelican													-	-	-	-	-
	D. crested cormorant													-	Mar-May	Aug-Nov	-	-
	Grebes													-	-	-	-	-
	Gulls													-	-	-	-	-
	Terns													-	-	-	-	-




FISH

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	Alewife													Feb-Apr	Feb-Apr	Feb-Apr	Apr-Oct	Feb-Apr
	American eel													Mar-Jun	Mar-Jun	Apr-Jun	Jan-May	Jan-Dec
	Striped bass													-	-	-	Jan-Oct	Mar-Jun
	Atlantic croaker													-	-	Apr-Dec	Jan-Dec	Jan-Dec
	Atlantic herring													-	-	-	Feb-Jun	May-Oct
	Atlantic menhaden													-	-	-	Jan-Dec	Feb-Jun
	Black drum													Apr-Jun	-	-	Apr-Dec	Jan-Dec
	Black sea bass													-	-	-	Apr-Nov	Apr-Nov
	Bluefish													-	-	-	May-Oct	May-Oct
	Kingfishes													-	-	-	-	Apr-Nov
	Northern puffer													-	-	-	Mar-Oct	Mar-Oct
	Pigfish													-	-	-	-	Apr-Nov
	Red drum													-	-	-	-	May-Nov
	Spot													-	-	-	-	Apr-Dec
	Spotted seatrout													May-Jul	-	-	Nov-Apr	Apr-Nov
	Summer flounder													-	-	Feb-May	Apr-Dec	Jan-Dec
	Weakfish													-	-	May-Aug	Jun-Dec	Apr-Dec
	Pipefish													-	-	-	Jan-Dec	Jan-Dec
	Silversides													Mar-Jul	Mar-Jul	Apr-Sep	Jan-Dec	Jan-Dec
	Anchovies													Apr-Sep	-	-	-	Jan-Dec
	Striped burrfish													-	-	-	May-Oct	May-Oct
	Northern searobin													May-Jul	-	-	-	Apr-Dec
	Spotted hake													-	-	-	Jan-Dec	Jan-Dec
	Butterfish													-	-	-	Jul-Nov	Mar-Nov
	Lined seahorse													May-Oct	-	-	-	Jan-Dec
	Spanish mackerel													-	-	-	-	May-Sep

REPTILES & AMPHIBIANS

Subelement	Species	Monthly Presence												Nest	Hatch	Interest	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	Diamondback terrapin													May-Aug	-	-	Apr-Oct	Apr-Oct

INVERTEBRATES

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	Eastern oyster													Jun-Sep	Jun-Sep	Jun-Oct	Jan-Dec	Jan-Dec
	Hard clam													Jun-Sep	Jun-Sep	Jun-Oct	Jan-Dec	Jan-Dec
	Softshell clam													May-Dec*	May-Dec*	May-Jan*	-	Jan-Dec
	Stout razor clam													Jun-Nov	-	-	Jan-Dec	Jan-Dec
	Squid													-	Apr-Dec	Apr-Dec	Apr-Dec	Apr-Dec
	Blue crab													-	-	-	Jan-Dec	Jan-Dec
	Horseshoe crab													-	-	-	Jan-Dec	Jan-Dec
	Mantis shrimp													-	-	-	Jan-Dec	Jan-Dec
	White shrimp													-	-	-	May-Oct	May-Oct

MARINE MAMMALS

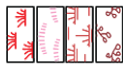
Subelement	Species	Monthly Presence												Mating	Calving	Pupping	Molt
		J	F	M	A	M	J	J	A	S	O	N	D				
	Bottlenose dolphin													-	-	-	-

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	585.28	0.91
10B	Freshwater Marshes	22.45	0.04
10C	Swamps	3,365.34	5.26
10D	Scrub and Shrub Wetlands	169.01	0.26



ESI SHORELINE HABITAT TYPES

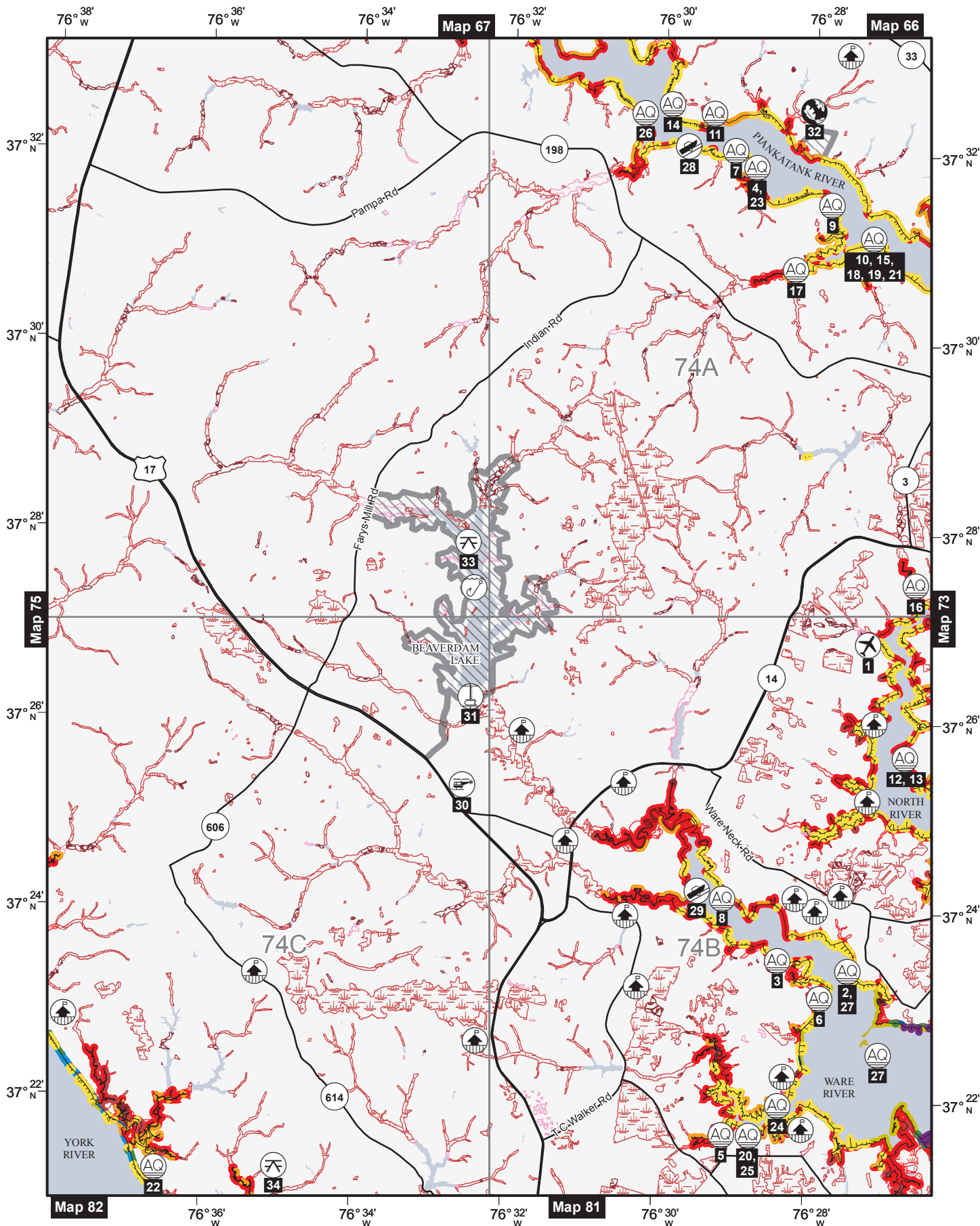
<i>ESI Rank</i>	<i>Shoreline Habitat Classification</i>	<i>Length (Meters)</i>	<i>Length (Miles)</i>	<i>% of ESI Shoreline</i>
10A	Salt and Brackish Water Marshes	144,945.45	90.07	67%
10B	Freshwater Marshes	72.98	0.05	< 1%
10C	Swamps	2,585.76	1.61	1%
10D	Scrub and Shrub Wetlands	864.36	0.54	< 1%
9A	Sheltered Tidal Flats	662.53	0.41	< 1%
9B	Vegetated Low Banks	21,589.20	13.41	10%
8B	Sheltered, Solid Man-Made Structures	15,989.51	9.94	7%
8C	Sheltered Riprap	5,643.17	3.51	3%
7	Exposed Tidal Flats	15,855.02	9.85	7%
6B	Riprap	4,886.55	3.04	2%
3A	Fine to Medium Grained Sand Beaches	1,804.23	1.12	1%
1B	Exposed, Solid Man-Made Structures	2,281.58	1.42	1%

Total ESI Shoreline: 217,180.34 Total ESI Shoreline: 134.95
 Total Shoreline: 172,285.79 Total Shoreline: 107.05

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 74 Chesapeake South



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

0 2 Miles
Not for Navigation
0 2 Kilometers

1:100,000



Map 74
Chesapeake South

HUMAN USE RESOURCES

DISPLAYED ON MAP (POINTS)			
Map ID	Type	Name	Contact
1	AIRPORT	HANDY STRIP	
2	AQUACULTURE	OYSTER COMMERCIAL VIGLIOTTA, JOHN RF#96-0072	CHIP NEIKIRK, VIRGINIA MARINE RESOURCES COMM. 757-247-2254
3	AQUACULTURE	OYSTER NON-COMM BERNARD, THOMAS E. RF#01-0837	CHIP NEIKIRK, VIRGINIA MARINE RESOURCES COMM. 757-247-2254
4	AQUACULTURE	OYSTER NON-COMM CAIN RF#98-1553	CHIP NEIKIRK, VIRGINIA MARINE RESOURCES COMM. 757-247-2254
5	AQUACULTURE	OYSTER NON-COMM CARROLL RF#98-1810	CHIP NEIKIRK, VIRGINIA MARINE RESOURCES COMM. 757-247-2254
6	AQUACULTURE	OYSTER NON-COMM CLEMENTS RF#00-1007	CHIP NEIKIRK, VIRGINIA MARINE RESOURCES COMM. 757-247-2254
7	AQUACULTURE	OYSTER NON-COMM CRUM, TERRY L. RF#2000-1769	CHIP NEIKIRK, VIRGINIA MARINE RESOURCES COMM. 757-247-2254
8	AQUACULTURE	OYSTER NON-COMM ERICSON RF#98-0869	CHIP NEIKIRK, VIRGINIA MARINE RESOURCES COMM. 757-247-2254
9	AQUACULTURE	OYSTER NON-COMM ESTES RF#00-1654	CHIP NEIKIRK, VIRGINIA MARINE RESOURCES COMM. 757-247-2254
10	AQUACULTURE	OYSTER NON-COMM FALLS RF#00-0410	CHIP NEIKIRK, VIRGINIA MARINE RESOURCES COMM. 757-247-2254
11	AQUACULTURE	OYSTER NON-COMM LANIK, THOMAS RF#001122	CHIP NEIKIRK, VIRGINIA MARINE RESOURCES COMM. 757-247-2254
12	AQUACULTURE	OYSTER NON-COMM LAYER RF#01-0597	CHIP NEIKIRK, VIRGINIA MARINE RESOURCES COMM. 757-247-2254
13	AQUACULTURE	OYSTER NON-COMM LAYER RF#02-0348	CHIP NEIKIRK, VIRGINIA MARINE RESOURCES COMM. 757-247-2254
14	AQUACULTURE	OYSTER NON-COMM LEIGERS, VERA LEE RF#98-1878	CHIP NEIKIRK, VIRGINIA MARINE RESOURCES COMM. 757-247-2254
15	AQUACULTURE	OYSTER NON-COMM MULVILE RF#001665	CHIP NEIKIRK, VIRGINIA MARINE RESOURCES COMM. 757-247-2254
16	AQUACULTURE	OYSTER NON-COMM NYGARD, GEORGE M. RF#2000-1815	CHIP NEIKIRK, VIRGINIA MARINE RESOURCES COMM. 757-247-2254
17	AQUACULTURE	OYSTER NON-COMM PARTIN, JOHN C. RF#98-1334	CHIP NEIKIRK, VIRGINIA MARINE RESOURCES COMM. 757-247-2254
18	AQUACULTURE	OYSTER NON-COMM SIMON RF#99-1718	CHIP NEIKIRK, VIRGINIA MARINE RESOURCES COMM. 757-247-2254
19	AQUACULTURE	OYSTER NON-COMM SIMON RF#991790	CHIP NEIKIRK, VIRGINIA MARINE RESOURCES COMM. 757-247-2254
20	AQUACULTURE	OYSTER NON-COMM SINDLE RF#99-1921	CHIP NEIKIRK, VIRGINIA MARINE RESOURCES COMM. 757-247-2254
21	AQUACULTURE	OYSTER NON-COMM SLEDD, RICHARD H. RF#00-0509	CHIP NEIKIRK, VIRGINIA MARINE RESOURCES COMM. 757-247-2254
22	AQUACULTURE	OYSTER NON-COMM SORABELLA RF#99-2148	CHIP NEIKIRK, VIRGINIA MARINE RESOURCES COMM. 757-247-2254
23	AQUACULTURE	OYSTER NON-COMM TYLER RF#98-2020	CHIP NEIKIRK, VIRGINIA MARINE RESOURCES COMM. 757-247-2254
24	AQUACULTURE	OYSTER NON-COMM WASSOM, JOHN AND ANN RF#99-2092	CHIP NEIKIRK, VIRGINIA MARINE RESOURCES COMM. 757-247-2254
25	AQUACULTURE	OYSTER NON-COMM WELCH RF#98-2023	CHIP NEIKIRK, VIRGINIA MARINE RESOURCES COMM. 757-247-2254
26	AQUACULTURE	OYSTER NON-COMM WESSON, JAMES A. RF#2000-1645	CHIP NEIKIRK, VIRGINIA MARINE RESOURCES COMM. 757-247-2254
27	AQUACULTURE	VARIOUS WARD OYSTER COMPANY RF#2000-1772	CHIP NEIKIRK, VIRGINIA MARINE RESOURCES COMM. 757-247-2254
28	BOAT RAMP	DEEP POINT	LENE PENNINGTON, VDGIF 804-367-0058
29	BOAT RAMP	WAREHOUSE	LENE PENNINGTON, VDGIF 804-367-0058
30	HELIPORT	RIVERSIDE WALTER REED HOSPITAL	
31	LOCK AND DAM	BEAVERDAM RESERVOIR DAM	

DISPLAYED ON MAP (POLYGONS)			
Map ID	Type	Name	Contact
32	NATURE CONSERVANCY	DRAGON RUN	THE NATURE CONSERVANCY 703-841-5300
33	PARK	BEAVERDAM PARK	GLOUCESTER COUNTY
34	PARK	MIDDLE PENINSULA STATE PARK	VA DEPT OF CONSERVATION AND RECREATION

JURISDICTIONS

COUNTY: GLOUCESTER COUNTY, MATHEWS COUNTY, MIDDLESEX COUNTY, YORK COUNTY
COAST GUARD: DISTRICT 5, SECTOR HAMPTON ROADS
USACE: NORTH ATLANTIC DIVISION, NORFOLK DISTRICT

FEMA:
EPA:

REGION I
 REGION 3

SHORELINE RESOURCES

ESI POLYGON HABITAT TYPES

ESI Rank	Habitat Classification	Area (Acres)	Area (Sq. Miles)
10A	Salt and Brackish Water Marshes	953.03	1.49
10B	Freshwater Marshes	309.92	0.48
10C	Swamps	6,550.05	10.23
10D	Scrub and Shrub Wetlands	535.18	0.84
9A	Sheltered Tidal Flats	1.73	0.00
7	Exposed Tidal Flats	14.76	0.02



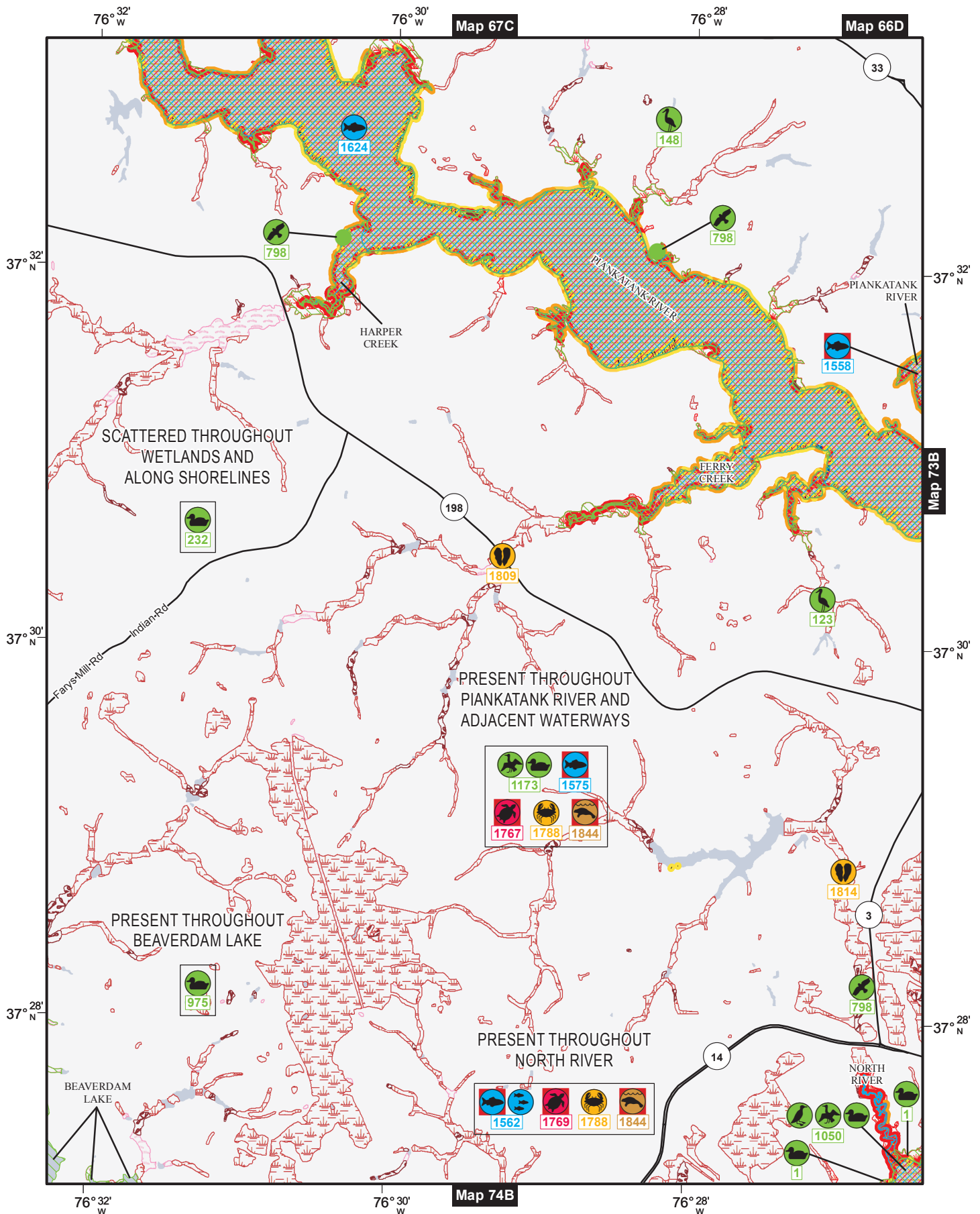
ESI SHORELINE HABITAT TYPES

ESI Rank	Shoreline Habitat Classification	Length (Meters)	Length (Miles)	% of ESI Shoreline
10A	Salt and Brackish Water Marshes	164,570.83	102.26	58%
10B	Freshwater Marshes	663.58	0.41	< 1%
10C	Swamps	3,729.03	2.32	1%
10D	Scrub and Shrub Wetlands	1,281.85	0.80	< 1%
9A	Sheltered Tidal Flats	14,703.81	9.14	5%
9B	Vegetated Low Banks	36,967.52	22.97	13%
8B	Sheltered, Solid Man-Made Structures	31,297.74	19.45	11%
8C	Sheltered Riprap	9,586.59	5.96	3%
7	Exposed Tidal Flats	9,669.82	6.01	3%
6B	Riprap	2,217.78	1.38	1%
4	Coarse Grained Sand Beaches	4,376.89	2.72	2%
3A	Fine to Medium Grained Sand Beaches	795.50	0.49	< 1%
1B	Exposed, Solid Man-Made Structures	1,677.69	1.04	1%
Total ESI Shoreline:		281,538.62	174.94	
Total Shoreline:		215,330.23	133.80	

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

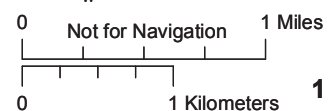




Map 74A
Chesapeake South



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



1:50,000



Map 74A
Chesapeake South

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	MD/VA	S	F	Concentration	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt
								J	F	M	A	M	J	J	A	S	O	N	D				
1	Waterfowl	American black duck	Nesting				Present													Apr-Jul	-	-	-
	Waterfowl	Canada goose	Nesting				Present													Mar-Aug	-	-	Jun-Jul
	Waterfowl	Mallard	Nesting				Present													Mar-Aug	-	-	Jul-Aug
123	Wading	Great blue heron	Nesting				14 Nests													Feb-Jun	-	-	-
148	Wading	Great blue heron	Nesting				32 Nests													Feb-Jun	-	-	-
232	Waterfowl	Canada goose	Nesting				Present													Mar-Aug	-	-	Jun-Jul
	Waterfowl	Mallard	Nesting				Present													Mar-Aug	-	-	Jul-Aug
798	Raptor	Bald eagle	Nesting				1 Nest													Dec-Jun	-	-	-
975	Waterfowl	American coot	Wintering				10S													-	-	-	-
	Waterfowl	American wigeon	Wintering				Present													-	-	-	-
	Waterfowl	Bufflehead	Wintering				Present													-	-	-	-
	Waterfowl	Canada goose	Wintering				10S													-	-	-	-
	Waterfowl	Gadwall	Wintering				Present													-	-	-	-
	Waterfowl	Mallard	Wintering				10S													-	-	-	-
	Waterfowl	Mergansers	Wintering				Present													-	-	-	-
	Waterfowl	Ring-necked duck	Wintering				10S													-	-	-	-
	Waterfowl	Ruddy duck	Wintering				10S													-	-	-	-
1050	Diving	Common loon	Wintering				10S													-	-	-	-
	Diving	Grebes	Wintering				10S													-	-	-	-
	Diving	Red-throated loon	Wintering				Present													-	-	-	-
	Pelagic	Northern gannet	Wintering				100S													-	-	-	-
	Waterfowl	American black duck	Wintering				100S													-	-	-	-
	Waterfowl	American wigeon	Wintering				Present													-	-	-	-
	Waterfowl	Blue-winged teal	Migration				10S													-	Feb-Apr	Aug-Oct	-
	Waterfowl	Brant	Wintering				100S													-	-	-	-
	Waterfowl	Bufflehead	Wintering				1,000S													-	-	-	-
	Waterfowl	Canada goose	Wintering				1,000S													-	-	-	-
	Waterfowl	Canvasback	Wintering				Present													-	-	-	-
	Waterfowl	Gadwall	Wintering				Present													-	-	-	-
	Waterfowl	Green-winged teal	Wintering				10S													-	-	-	-
	Waterfowl	Long-tailed duck	Wintering				Present													-	-	-	-
	Waterfowl	Mallard	Wintering				100S													-	-	-	-
	Waterfowl	Mergansers	Wintering				100S													-	-	-	-
	Waterfowl	Ruddy duck	Wintering				10,000S													-	-	-	-
	Waterfowl	Scaup	Wintering				1,000S													-	-	-	-
	Waterfowl	Scoters	Wintering				100S													-	-	-	-
	Waterfowl	Tundra swan	Wintering				100S													-	-	-	-

BIRDS (continued)

Map ID	Subelement	Species	Mapping Qualifier	MD/VA		Monthly Presence																Nest	Mig.(S)	Mig.(F)	Molt
				S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N	D							
1173	Diving	Grebes	Wintering			Present													-	-	-	-			
	Waterfowl	American black duck	Wintering			Present													-	-	-	-			
	Waterfowl	Bufflehead	Wintering			100S													-	-	-	-			
	Waterfowl	Canada goose	Wintering			100S													-	-	-	-			
	Waterfowl	Canvasback	Wintering			10S													-	-	-	-			
	Waterfowl	Long-tailed duck	Wintering			10S													-	-	-	-			
	Waterfowl	Mallard	Wintering			10S													-	-	-	-			
	Waterfowl	Mergansers	Wintering			100S													-	-	-	-			
	Waterfowl	Ruddy duck	Wintering			1,000S													-	-	-	-			
	Waterfowl	Tundra swan	Wintering			10S													-	-	-	-			

FISH

Map ID	Subelement	Species	Mapping Qualifier	MD/VA		Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
				S	F		J	F	M	A	M	J	J	A	S	O	N	D					
1558	Diadromous	Alewife	Migration			-											-	-	Aug-Nov	Feb-Apr			
	Diadromous	American shad	Migration			-											-	-	Aug-Nov	Feb-Jun			
	Diadromous	Atlantic sturgeon	General Distribution	-/E	E	-											-	-	-	Jan-Dec			
	Diadromous	Blueback herring	Migration			-											-	-	Aug-Nov	Mar-Jun			
	Diadromous	Shortnose sturgeon	General Distribution	E/E	E	-											-	-	Jan-Dec	Jan-Dec			
1562	Diadromous	Striped bass	Migration			-											-	-	-	Feb-Jun			
	Diadromous	Alewife	Migration			-											-	-	Aug-Nov	Feb-Apr			
	Diadromous	Atlantic sturgeon	General Distribution	-/E	E	-											-	-	-	Jan-Dec			
	Diadromous	Blueback herring	Migration			-											-	-	Aug-Nov	Mar-Jun			
	Estuarine Nursery	Atl. sharpnose shark	Nursery Area			Common											-	-	Jun-Sep	Jun-Sep			
1575	Marine Pelagic	Sandbar shark	Nursery Area			Abundant											-	-	May-Sep	May-Sep			
	Diadromous	Atlantic sturgeon	General Distribution	-/E	E	-											-	-	-	Jan-Dec			
	Diadromous	Shortnose sturgeon	General Distribution	E/E	E	-											-	-	Jan-Dec	Jan-Dec			
1624	Diadromous	Alewife	Migration			-											-	-	Aug-Nov	Feb-Apr			
	Diadromous	American shad	Migration			-											-	-	Aug-Nov	Feb-Jun			
	Diadromous	Blueback herring	Migration			-											-	-	Aug-Nov	Mar-Jun			
	Diadromous	Striped bass	Migration			-											-	-	-	Feb-Jun			

REPTILES & AMPHIBIANS

Map ID	Subelement	Species	Mapping Qualifier	MD/VA		Monthly Presence												Nest	Hatch	Interest	Juveniles	Adults	
				S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N						D
1767	Turtle	Green sea turtle	General Distribution	T/T	T	Common													-	-	-	Jul-Oct	-
	Turtle	Green sea turtle	General Distribution	T/T	T	Rare													-	-	-	May-Dec*	-
1769	Turtle	Green sea turtle	General Distribution	T/T	T	Rare													-	-	-	May-Dec*	-
	Turtle	Green sea turtle	General Distribution	T/T	T	Common													-	-	-	Jul-Oct	-
	Turtle	K. ridley sea turtle	General Distribution	E/E	E	Uncommon													-	-	-	Nov-Dec	-
	Turtle	K. ridley sea turtle	General Distribution	E/E	E	Common													-	-	-	Apr-Oct	-
	Turtle	Leatherback sea turtle	General Distribution	E/E	E	Common													-	-	-	May-Jun	May-Jun
	Turtle	Leatherback sea turtle	General Distribution	E/E	E	Rare													-	-	-	Mar-Dec*	Mar-Dec*
	Turtle	Loggerhead sea turtle	General Distribution	T/T	T	Common													-	-	-	Nov-Dec	Nov-Dec
	Turtle	Loggerhead sea turtle	General Distribution	T/T	T	Abundant													-	-	-	Apr-Oct	Apr-Oct

INVERTEBRATES

Map ID	Subelement	Species	Mapping Qualifier	MD/VA		Monthly Presence												Eggs	Larvae	Juveniles	Adults			
				S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N					D		
1788	Crab	Blue crab	Concentration Area			Highly Abundant-Summ													-	-	Jun-Oct	Jun-Oct	Jan-Dec	Jan-Dec
1809	Bivalve	Carolina slabshell	Vulnerable Occurrence			-													-	-	Jan-Dec	Jan-Dec	Jan-Dec	Jan-Dec
	Bivalve	Carolina spike	Vulnerable Occurrence			-													-	-	Jan-Dec	Jan-Dec	Jan-Dec	Jan-Dec
	Bivalve	Eastern elliptio	Vulnerable Occurrence			-													-	-	Jan-Dec	Jan-Dec	Jan-Dec	Jan-Dec
	Bivalve	Elliptio complex	Vulnerable Occurrence			-													-	-	Jan-Dec	Jan-Dec	Jan-Dec	Jan-Dec
1814	Bivalve	Eastern elliptio	Vulnerable Occurrence			-													-	-	Jan-Dec	Jan-Dec	Jan-Dec	Jan-Dec

MARINE MAMMALS



Map ID	Subelement	Species	Mapping Qualifier	MD/VA		Monthly Presence												Calving	Pupping	Molt
				S	F	Concentration														
1844	Manatee	West Indian manatee	General Distribution	-/E	E	Rare												-	-	-

ALSO PRESENT IN MAPPED AREA (GENERAL DISTRIBUTION)

BIRDS

Subelement	Species	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt
		J	F	M	A	M	J	J	A	S	O	N	D				
	Diving													-	-	-	-
	Brown pelican													-	-	-	-
	D. crested cormorant													-	Mar-May	Aug-Nov	-
	Gulls													-	-	-	-
	Terns													-	-	-	-
	Waterfowl													Apr-Jul	-	-	Jul-Aug

FISH

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	Alewife													Feb-Apr	Feb-Apr	Feb-Apr	Jan-May	Feb-Apr
	American eel													-	-	-	Jan-May	Jan-Dec
	Blueback herring													Mar-Jun	Mar-Jun	Apr-Jun	May-Oct	Mar-Jun
	Gizzard shad													Mar-Jun	Mar-Jun	-	Jan-Dec	Jan-Dec
	Striped bass													-	-	-	Jan-Dec	Jan-Dec
	Atlantic croaker													-	-	Apr-Dec	Jan-Dec	May-Oct
	Atlantic croaker													-	-	Dec-Apr	Jan-Dec	May-Nov
	Atlantic herring													-	-	-	Feb-Jun	Feb-Jun
	Atlantic menhaden													-	-	-	Jan-Dec	Jan-Dec
	Black drum													Apr-Jun	-	-	Apr-Dec	Apr-Dec
	Black sea bass													-	-	-	Apr-Nov	Apr-Nov
	Bluefish													-	-	-	May-Oct	May-Oct
	Kingfishes													-	-	-	Apr-Nov	Apr-Nov
	Northern puffer													-	-	-	Mar-Oct	Mar-Oct
	Northern puffer													-	-	-	Mar-Oct	Mar-Nov
	Pigfish													-	-	-	-	Apr-Nov
	Red drum													-	-	-	-	May-Nov
	Sheepshead													-	-	-	-	Apr-Nov

FISH (continued)

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	Spot													-	-	-	Nov-Apr	Apr-Dec
	Spotted seatrout													May-Jul	-	-	Apr-Nov	Apr-Nov
	Summer flounder													-	-	Feb-May	Apr-Dec	Jan-Dec
	Weakfish													-	-	May-Aug	Jun-Dec	Apr-Dec
	Winter flounder													-	-	-	-	Dec-Mar
Estuarine Resident	Pipefish													-	-	-	Jan-Dec	Jan-Dec
	Silversides													Mar-Jul	Mar-Jul	Apr-Sep	Jan-Dec	Jan-Dec
	Silversides													Mar-Jul	Mar-Jul	-	Mar-Nov	Mar-Nov
Fish	Anchovies													Apr-Sep	-	-	-	Jan-Dec
	Striped burrfish													-	-	-	May-Oct	May-Oct
	Atlantic spadefish													-	-	-	-	Jun-Sep
Marine Benthic	Clearnose skate													-	-	-	-	Jan-Dec
	Cownose ray													Jun-Jul	-	-	May-Oct	May-Oct
	Northern searobin													May-Jul	-	-	-	Apr-Dec
	Red hake													-	-	-	-	Sep-May*
	Silver hake													-	-	-	-	Oct-May
	Spotted hake													-	-	-	Jan-Dec	Jan-Dec
Marine Pelagic	Butterfish													-	-	-	Jul-Nov	Mar-Nov
	Cobia													-	-	-	-	Jun-Sep
	Harvestfish													-	-	-	-	May-Nov
	Lined seahorse													May-Oct	-	-	-	Jan-Dec
	Spanish mackerel													-	-	-	-	May-Sep

REPTILES & AMPHIBIANS

Subelement	Species	Monthly Presence												Nest	Hatch	Internest	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
Turtle	Diamondback terrapin													May-Aug	-	-	Apr-Oct	Apr-Oct

INVERTEBRATES

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
Bivalve	Eastern oyster													Jun-Sep	Jun-Sep	Jun-Oct	Jan-Dec	Jan-Dec
	Softshell clam													May-Dec*	May-Dec*	May-Jan*	-	Jan-Dec
Cephalopod	Stout razor clam													Jun-Nov	-	-	Jan-Dec	Jan-Dec
	Squid													-	Apr-Dec	Apr-Dec	Apr-Dec	Apr-Dec
	Blue crab													-	-	-	Jan-Dec	Jan-Dec
Crab	Horseshoe crab													-	-	-	Jan-Dec	Jan-Dec
	Brown shrimp													-	-	-	May-Oct	May-Oct
	Mantis shrimp													-	-	-	Jan-Dec	Jan-Dec
Shrimp	White shrimp													-	-	-	May-Oct	May-Oct

MARINE MAMMALS

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


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	198.49	0.31
10B	Freshwater Marshes	108.59	0.17
10C	Swamps	1,892.72	2.96
10D	Scrub and Shrub Wetlands	129.58	0.20

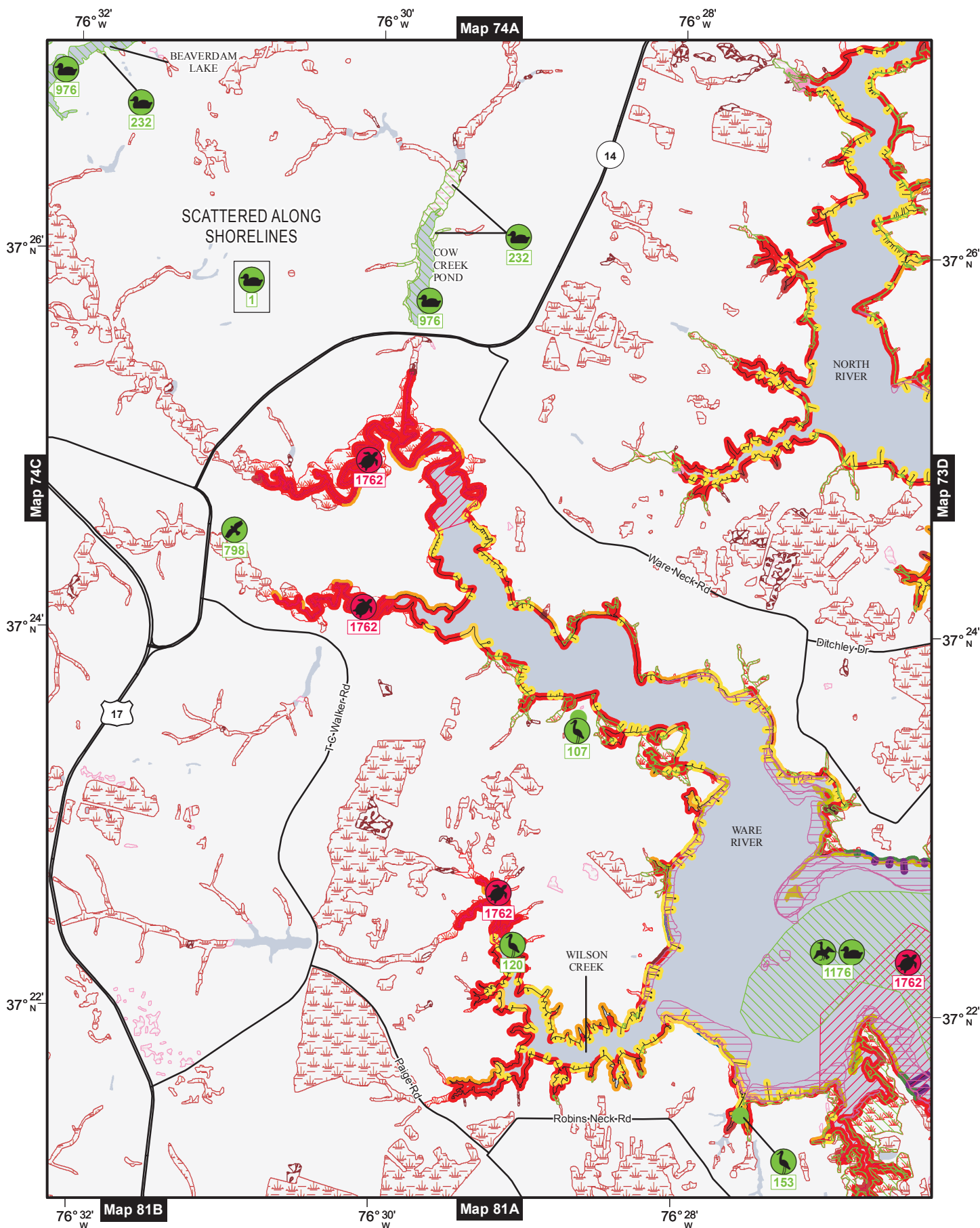
ESI SHORELINE HABITAT TYPES

ESI Rank	Shoreline Habitat Classification	Length (Meters)	Length (Miles)	% of ESI Shoreline
 10A	Salt and Brackish Water Marshes	38,443.74	23.89	47%
10C	Swamps	702.00	0.44	1%
10D	Scrub and Shrub Wetlands	732.38	0.46	1%
9B	Vegetated Low Banks	23,617.18	14.68	29%
8B	Sheltered, Solid Man-Made Structures	15,062.90	9.36	18%
8C	Sheltered Riprap	3,771.67	2.34	5%
3A	Fine to Medium Grained Sand Beaches	140.89	0.09	< 1%
Total ESI Shoreline:		82,470.76	Total ESI Shoreline:	51.24
		58,996.46	Total Shoreline:	36.66

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 74B
Chesapeake South



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

0 1 Miles
Not for Navigation
0 1 Kilometers
1:50,000

Map 74B
Chesapeake South

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	MD/VA		Monthly Presence												
			S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N	D
<div></div>	SAV	Submerged aquatic veg			Ephemeral												
<div></div>	SAV	Submerged aquatic veg			High												
<div></div>	SAV	Submerged aquatic veg			Low												




BIRDS

Map ID	Subelement	Species	Mapping Qualifier	MD/VA		Monthly Presence																Molt
				S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N	D				
1	Waterfowl	American black duck	Nesting			Present													Apr-Jul	-	-	
	Waterfowl	Canada goose	Nesting			Present													Mar-Aug	-	Jun-Jul	
	Waterfowl	Mallard	Nesting			Present													Mar-Aug	-	Jul-Aug	
107	Wading	Great blue heron	Nesting			22 Nests													Feb-Jun	-	-	
120	Wading	Great blue heron	Nesting			5 Nests													Feb-Jun	-	-	
153	Wading	Great blue heron	Nesting			4 Nests													Feb-Jun	-	-	
232	Waterfowl	Canada goose	Nesting			Present													Mar-Aug	-	Jun-Jul	
	Waterfowl	Mallard	Nesting			Present													Mar-Aug	-	Jul-Aug	
798	Raptor	Bald eagle	Nesting			1 Nest													Dec-Jun	-	-	
976	Waterfowl	American coot	Wintering			10S													-	-	-	
	Waterfowl	Bufflehead	Wintering			Present													-	-	-	
	Waterfowl	Canada goose	Wintering			10S													-	-	-	
	Waterfowl	Mallard	Wintering			10S													-	-	-	
	Waterfowl	Mergansers	Wintering			Present													-	-	-	
	Waterfowl	Ring-necked duck	Wintering			10S													-	-	-	
	Waterfowl	Ruddy duck	Wintering			10S													-	-	-	
	Waterfowl	Common loon	Wintering			Present													-	-	-	
1176	Diving	Long-tailed duck	Wintering			10S													-	-	-	




REPTILES & AMPHIBIANS

Map ID	Subelement	Species	Mapping Qualifier	MD/VA		Monthly Presence												Nest	Hatch	Interest	Juveniles	Adults																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
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1762	Turtle	Diamondback terrapin	Concentration Area			High																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	</


BIRDS

Subelement	Species	Mapping Qualifier	MD/VA S F	Concentration	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt
					J	F	M	A	M	J	J	A	S	O	N	D				
	Diving	Common loon															-	-	-	-
		Grebes															-	-	-	-
	Pelagic	Red-throated loon															-	-	-	-
		Northern gannet															-	-	-	-
	Waterfowl	American black duck															-	-	-	-
		American wigeon															-	-	-	-
		Blue-winged teal															-	Feb-Apr	Aug-Oct	-
		Brant															-	-	-	-
		Bufflehead															-	-	-	-
		Canada goose															-	-	-	-
		Canvasback															-	-	-	-
		Gadwall															-	-	-	-
		Green-winged teal															-	-	-	-
		Long-tailed duck															-	-	-	-
		Mallard															-	-	-	-
		Mergansers															-	-	-	-
		Ruddy duck															-	-	-	-
		Scaup															-	-	-	-
		Scoters															-	-	-	-
		Tundra swan															-	-	-	-

FISH

Subelement	Species	Mapping Qualifier	MD/VA S F	Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
					J	F	M	A	M	J	J	A	S	O	N	D					
	Diadromous	Alewife															-	-	-	Aug-Nov	Feb-Apr
		Atlantic sturgeon															-	-	-	-	Jan-Dec
	Estuarine Nursery	Blueback herring															-	-	-	Aug-Nov	Mar-Jun
		Atl. sharpnose shark															-	-	-	Jun-Sep	Jun-Sep
	Marine Pelagic	Sandbar shark															-	-	-	May-Sep	May-Sep

REPTILES & AMPHIBIANS

Subelement	Species	Mapping Qualifier	MD/VA S F	Concentration	Monthly Presence												Nest	Hatch	Internest	Juveniles	Adults
					J	F	M	A	M	J	J	A	S	O	N	D					
	Turtle	Green sea turtle															-	-	-	May-Dec*	-
		Green sea turtle															-	-	-	Jul-Oct	-
		K. ridley sea turtle															-	-	-	Apr-Oct	-
		K. ridley sea turtle															-	-	-	Nov-Dec	-
		Leatherback sea turtle															-	-	-	Mar-Dec*	Mar-Dec*
		Leatherback sea turtle															-	-	-	May-Jun	May-Jun
		Loggerhead sea turtle															-	-	-	Apr-Oct	Apr-Oct
		Loggerhead sea turtle															-	-	-	Nov-Dec	Nov-Dec

INVERTEBRATES

Subelement	Species	Mapping Qualifier	MD/VA		Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults	
			S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N						D
Crab	Blue crab	Concentration Area			Highly Abundant-Summ													-	-	-	Jun-Oct	Jun-Oct

MARINE MAMMALS

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

ALSO PRESENT IN MAPPED AREA (GENERAL DISTRIBUTION)

BIRDS



Subelement	Species	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt
		J	F	M	A	M	J	J	A	S	O	N	D				
Diving	Brown pelican													-	-	-	-
	Brown pelican													-	-	-	-
	D. crested cormorant													-	Mar-May	Aug-Nov	-
	Grebes													-	-	-	-
Gull/Tern	Gulls													-	-	-	-
	Terns													-	-	-	-
Waterfowl	Wood duck													Apr-Jul	-	-	Jul-Aug

FISH

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
Diadromous	Alewife													Feb-Apr	Feb-Apr	Feb-Apr	Jan-May	Feb-Apr
	American eel													-	-	-	Jan-May	Jan-Dec
	Blueback herring													Mar-Jun	Mar-Jun	Apr-Jun	May-Oct	Mar-Jun
	Striped bass													-	-	-	Jan-Dec	Jan-Dec
Estuarine Nursery	Atlantic croaker													-	-	Apr-Dec	Jan-Dec	May-Oct
	Atlantic herring													-	-	-	Feb-Jun	Feb-Jun
	Atlantic menhaden													-	-	-	Jan-Dec	Jan-Dec
	Black drum													Apr-Jun	-	-	Apr-Dec	Apr-Dec
	Black sea bass													-	-	-	Apr-Nov	Apr-Nov
	Bluefish													-	-	-	May-Oct	May-Oct
	Kingfishes													-	-	-	-	Apr-Nov
	Northern puffer													-	-	-	Mar-Oct	Mar-Oct
	Pigfish													-	-	-	-	Apr-Nov
	Red drum													-	-	-	-	May-Nov
	Spot													-	-	-	-	Nov-Apr
	Spotted seatrout													May-Jul	-	-	Apr-Nov	Apr-Nov
	Summer flounder													-	-	Feb-May	Apr-Dec	Jan-Dec
	Weakfish													-	-	May-Aug	Jun-Dec	Apr-Dec
Estuarine Resident	Pipefish													-	-	-	Jan-Dec	Jan-Dec
	Silversides													Mar-Jul	Mar-Jul	Apr-Sep	Jan-Dec	Jan-Dec
Fish	Anchovies													Apr-Sep	-	-	-	Jan-Dec

Chesapeake South: Map 74B

FISH (continued)

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
 Marine Benthic	Striped burrfish													-	-	-	May-Oct	May-Oct
	Northern searobin													May-Jul	-	-	-	Apr-Dec
 Marine Pelagic	Spotted hake													-	-	-	Jan-Dec	Jan-Dec
	Butterfish													-	-	-	Jul-Nov	Mar-Nov
	Lined seahorse													May-Oct	-	-	-	Jan-Dec
	Spanish mackerel													-	-	-	-	May-Sep

REPTILES & AMPHIBIANS

Subelement	Species	J	F	M	A	M	J	J	A	S	O	N	D	Nest	Hatch	Interest	Juveniles	Adults
 Turtle	Diamondback terrapin													May-Aug	-	-	Apr-Oct	Apr-Oct

INVERTEBRATES

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
 Bivalve	Eastern oyster													Jun-Sep	Jun-Sep	Jun-Oct	Jan-Dec	Jan-Dec
	Softshell clam													May-Dec*	May-Dec*	May-Jan*	-	Jan-Dec
	Stout razor clam													Jun-Nov	-	-	Jan-Dec	Jan-Dec
 Cephalopod	Squid													-	Apr-Dec	Apr-Dec	Apr-Dec	Apr-Dec
	Blue crab													-	-	-	Jan-Dec	Jan-Dec
	Horseshoe crab													-	-	-	Jan-Dec	Jan-Dec
 Shrimp	Mantis shrimp													-	-	-	Jan-Dec	Jan-Dec
	White shrimp													-	-	-	May-Oct	May-Oct

MARINE MAMMALS

Subelement	Species	J	F	M	A	M	J	J	A	S	O	N	D	Mating	Calving	Pupping	Molt
 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>
10A	Salt and Brackish Water Marshes	566.72	0.89
10B	Freshwater Marshes	79.08	0.12
10C	Swamps	2,093.94	3.27
10D	Scrub and Shrub Wetlands	109.41	0.17
7	Exposed Tidal Flats	12.24	0.02



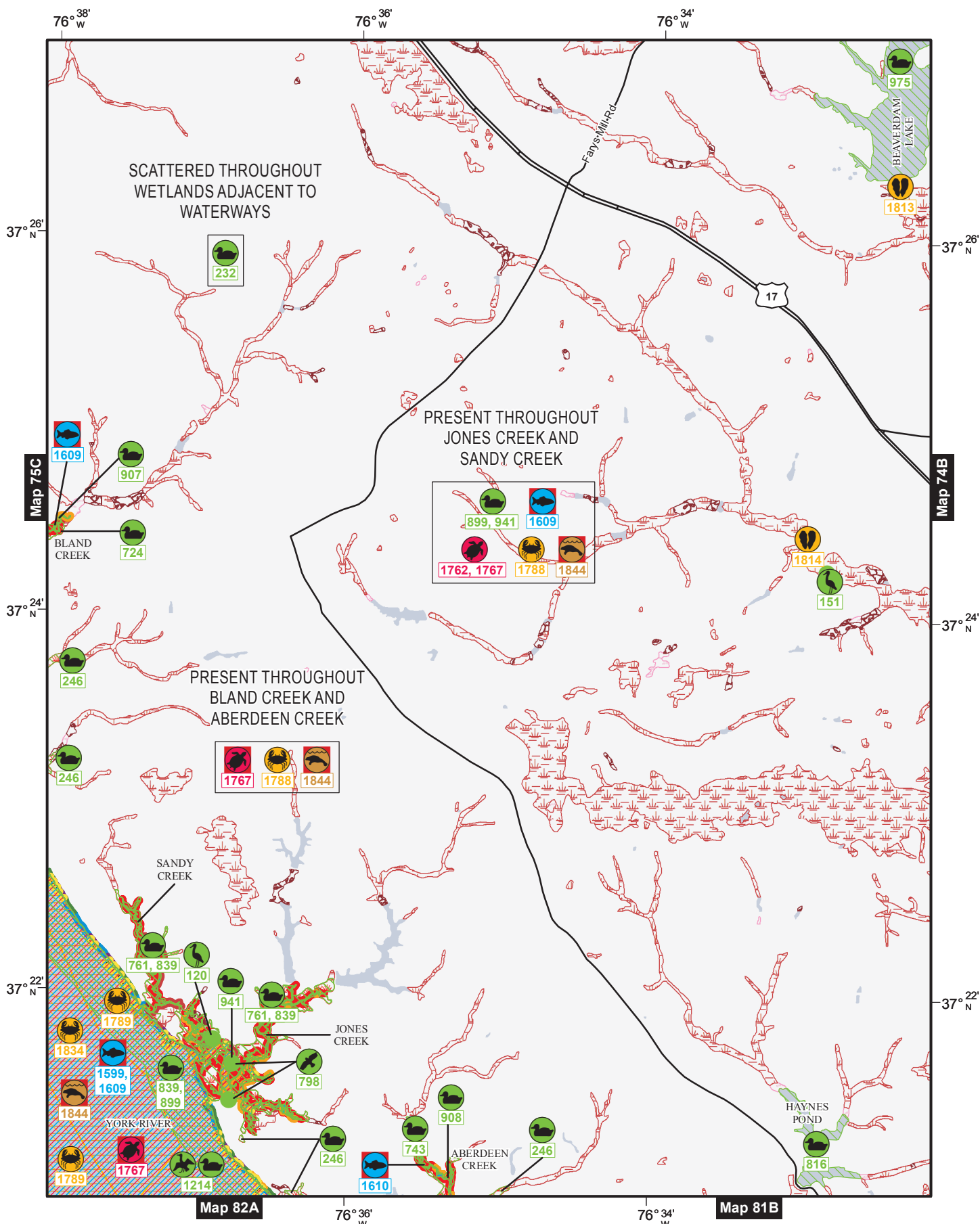
ESI SHORELINE HABITAT TYPES

<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	99,804.66	62.02	68%
10B	Freshwater Marshes	663.58	0.41	< 1%
10C	Swamps	1,179.14	0.73	1%
10D	Scrub and Shrub Wetlands	458.44	0.28	< 1%
9A	Sheltered Tidal Flats	1,925.52	1.20	1%
9B	Vegetated Low Banks	11,535.68	7.17	8%
8B	Sheltered, Solid Man-Made Structures	14,903.24	9.26	10%
8C	Sheltered Riprap	5,740.70	3.57	4%
7	Exposed Tidal Flats	9,157.90	5.69	6%
6B	Riprap	947.40	0.59	1%
3A	Fine to Medium Grained Sand Beaches	654.61	0.41	< 1%
1B	Exposed, Solid Man-Made Structures	600.78	0.37	< 1%
Total ESI Shoreline:		147,571.64	91.70	
Total Shoreline:		123,023.65	76.44	

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 74C
Chesapeake South



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

0 1 Miles
Not for Navigation
0 1 Kilometers

1:50,000



Map 74C
Chesapeake South

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	MD/VA	S	F	Concentration	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt
								J	F	M	A	M	J	J	A	S	O	N	D				
120	Wading	Great blue heron	Nesting				5 Nests													Feb-Jun	-	-	-
151	Wading	Great blue heron	Nesting				28 Nests													Feb-Jun	-	-	-
232	Waterfowl	Canada goose	Nesting				Present													Mar-Aug	-	-	Jun-Jul
246	Waterfowl	Mallard	Nesting				Present													Mar-Aug	-	-	Jul-Aug
	Waterfowl	American black duck	Wintering				100S													-	-	-	-
	Waterfowl	Canada goose	Nesting				Present													Mar-Aug	-	-	Jun-Jul
	Waterfowl	Canada goose	Wintering				100S													-	-	-	-
	Waterfowl	Mallard	Nesting				Present													Mar-Aug	-	-	Jul-Aug
	Waterfowl	Mallard	Wintering				100S													-	-	-	-
	Waterfowl	Tundra swan	Wintering				10S													-	-	-	-
	Waterfowl	American black duck	Wintering				100S													-	-	-	-
724	Waterfowl	American wigeon	Wintering				Present													-	-	-	-
	Waterfowl	Blue-winged teal	Migration				100S													-	Feb-Apr	Aug-Oct	-
	Waterfowl	Canada goose	Wintering				1,000S													-	-	-	-
	Waterfowl	Gadwall	Wintering				Present													-	-	-	-
	Waterfowl	Green-winged teal	Wintering				100S													-	-	-	-
	Waterfowl	Mallard	Wintering				100S													-	-	-	-
	Waterfowl	American black duck	Wintering				100S													-	-	-	-
	Waterfowl	Canada goose	Wintering				100S													-	-	-	-
	Waterfowl	Mallard	Wintering				100S													-	-	-	-
	Waterfowl	Tundra swan	Wintering				10S													-	-	-	-
	Waterfowl	American black duck	Wintering				100S													-	-	-	-
	Waterfowl	Mallard	Wintering				100S													-	-	-	-
761	Waterfowl	Tundra swan	Wintering				10S													-	-	-	-
	Waterfowl	Bald eagle	Nesting				1 Nest													Dec-Jun	-	-	-
798	Raptor	Bufflehead	Wintering				10S													-	-	-	-
816	Waterfowl	Canada goose	Wintering				10S													-	-	-	-
	Waterfowl	Gadwall	Wintering				10S													-	-	-	-
	Waterfowl	Mallard	Wintering				10S													-	-	-	-
	Waterfowl	Mergansers	Wintering				10S													-	-	-	-
	Waterfowl	Ring-necked duck	Wintering				10S													-	-	-	-
	Waterfowl	Ruddy duck	Wintering				10S													-	-	-	-
	Waterfowl	Canada goose	Wintering				100S													-	-	-	-
839	Waterfowl	Mergansers	Wintering				10S													-	-	-	-
899	Waterfowl	Bufflehead	Wintering				100S													-	-	-	-
907	Waterfowl	Canvasback	Wintering				100S													-	-	-	-
	Waterfowl	Mergansers	Wintering				10S													-	-	-	-

BIRDS (continued)

Map ID	Subelement	Species	Mapping Qualifier	MD/VFA		Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt
				S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N	D			
	Waterfowl	Ring-necked duck	Wintering			10S													-	-	-
	Waterfowl	Ruddy duck	Wintering			100S													-	-	-
908	Waterfowl	Bufflehead	Wintering			100S													-	-	-
	Waterfowl	Mergansers	Wintering			10S													-	-	-
	Waterfowl	Ruddy duck	Wintering			100S													-	-	-
941	Waterfowl	Bufflehead	Wintering			100S													-	-	-
	Waterfowl	Ruddy duck	Wintering			100S													-	-	-
	Waterfowl	American coot	Wintering			10S													-	-	-
975	Waterfowl	American wigeon	Wintering			Present													-	-	-
	Waterfowl	Bufflehead	Wintering			Present													-	-	-
	Waterfowl	Canada goose	Wintering			10S													-	-	-
	Waterfowl	Gadwall	Wintering			Present													-	-	-
	Waterfowl	Mallard	Wintering			10S													-	-	-
	Waterfowl	Mergansers	Wintering			Present													-	-	-
	Waterfowl	Ring-necked duck	Wintering			10S													-	-	-
	Waterfowl	Ruddy duck	Wintering			10S													-	-	-
1214	Diving	Common loon	Wintering			Present													-	-	-
	Diving	Grebes	Wintering			10S													-	-	-
	Waterfowl	American black duck	Wintering			10S													-	-	-
	Waterfowl	Bufflehead	Wintering			10S													-	-	-
	Waterfowl	Canvasback	Wintering			1,000S													-	-	-
	Waterfowl	Common goldeneye	Wintering			Present													-	-	-
	Waterfowl	Mallard	Wintering			10S													-	-	-
	Waterfowl	Redhead	Wintering			10S													-	-	-
	Waterfowl	Ruddy duck	Wintering			1,000S													-	-	-
	Waterfowl	Scaup	Wintering			100S													-	-	-

FISH

Map ID	Subelement	Species	Mapping Qualifier	MD/VFA		Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
				S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N	D				
1599	Diadromous	Alewife	Migration			-													-	-	Aug-Nov	Feb-Apr
	Diadromous	American shad	Migration			-													-	-	Aug-Nov	Feb-Jun
	Diadromous	Atlantic sturgeon	Migration			-													-	-	-	Jun-Nov
	Diadromous	Blueback herring	Migration			-													-	-	Aug-Nov	Mar-Jun
1609	Diadromous	Hickory shad	Migration			-													-	-	Jun-Sep	Feb-May
	Diadromous	Atlantic sturgeon	General Distribution			-													-	-	Jan-Dec	Jan-Dec
	Diadromous	Striped bass	Nursery Area			-													-	-	Mar-May	-
1610	Diadromous	Alewife	Migration			-													-	-	Aug-Nov	Feb-Apr
	Diadromous	Atlantic sturgeon	General Distribution			-													-	-	Jan-Dec	Jan-Dec
	Diadromous	Blueback herring	Migration			-													-	-	Aug-Nov	Mar-Jun
	Diadromous	Striped bass	Nursery Area			-													-	-	Mar-May	-

REPTILES & AMPHIBIANS

Map ID	Subelement	Species	Mapping Qualifier	MD/VA		Monthly Presence												Nest	Hatch	Internest	Juveniles	Adults
				S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N					
1762	Turtle	Diamondback terrapin	Concentration Area			High												May-Aug	-	-	Apr-Oct	Apr-Oct
1767	Turtle	Green sea turtle	General Distribution	T/T	T	Common												-	-	-	Jul-Oct	-
	Turtle	Green sea turtle	General Distribution	T/T	T	Rare												-	-	-	May-Dec*	-

INVERTEBRATES

Map ID	Subelement	Species	Mapping Qualifier	MD/VA		Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
				S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N					
1788	Crab	Blue crab	Concentration Area			Highly Abundant-Summ												-	-	-	Jun-Oct	Jun-Oct
1789	Crab	Blue crab	Concentration Area			Highly Abundant												-	-	-	Jun-Mar*	Jun-Mar*
1813	Bivalve	Eastern elliptio	Vulnerable Occurrence			-												-	-	-	Jan-Dec	Jan-Dec
	Bivalve	Eastern floater	Vulnerable Occurrence			-												-	-	-	Jan-Dec	Jan-Dec
1814	Bivalve	Eastern elliptio	Vulnerable Occurrence			-												-	-	-	Jan-Dec	Jan-Dec
1834	Crab	Blue crab	Concentration Area			Highly Abundant-Wint												-	-	-	Dec-Mar	Dec-Mar

MARINE MAMMALS



Map ID	Subelement	Species	Mapping Qualifier	MD/VA		Monthly Presence												Mating	Calving	Pupping	Molt
				S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N				
1844	Manatee	West Indian manatee	General Distribution	-/E	E	Rare												-	-	-	-

ALSO PRESENT IN MAPPED AREA (GENERAL DISTRIBUTION)

BIRDS

Subelement	Species	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt
		J	F	M	A	M	J	J	A	S	O	N	D				
 Diving	D. crested cormorant													-	Mar-May	Aug-Nov	-
 Waterfowl	Wood duck													Apr-Jul	-	-	Jul-Aug

FISH

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
 Diadromous	Alewife													Feb-Apr	Feb-Apr	Feb-Apr	Apr-Oct	Feb-Apr
	American eel													-	-	-	Jan-May	Jan-Dec
	Blueback herring													Mar-Jun	Mar-Jun	Apr-Jun	May-Oct	Mar-Jun
 Estuarine Nursery	Striped bass													-	-	-	Jan-Dec	Jan-Dec
	Atlantic croaker													-	-	Apr-Dec	Jan-Dec	May-Oct
	Atlantic herring													-	-	-	-	Jan-Jun
	Atlantic menhaden													-	-	-	Jan-Dec	Jan-Dec
	Black drum													Apr-Jun	-	-	Apr-Dec	Apr-Dec
	Bluefish													-	-	-	May-Oct	May-Oct
	Kingfishes													-	-	-	-	Apr-Nov
	Northern puffer													-	-	-	Mar-Oct	Mar-Oct
	Pigfish													-	-	-	-	Apr-Nov
	Red drum													-	-	-	-	May-Nov
	Spot													-	-	-	Nov-Apr	Apr-Dec

Chesapeake South: Map 74C

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-Jul	-	-	Apr-Nov	Apr-Nov
	Summer flounder													-	-	Feb-May	Apr-Dec	Jan-Dec
	Weakfish													-	-	May-Aug	Jun-Dec	Apr-Dec
	White perch													-	-	-	Jan-Dec	Jan-Dec
	Pipefish													-	-	-	Jan-Dec	Jan-Dec
	Silversides													Mar-Jul	Mar-Jul	Apr-Sep	Jan-Dec	Jan-Dec
	Anchovies													Apr-Sep	-	-	-	Jan-Dec
	Sunfish													Mar-Jul	-	-	-	Jan-Dec
	Northern searobin													-	-	-	-	Jan-Dec
	Spotted hake													-	-	-	-	Apr-Sep
	Butterfish													-	-	-	Jan-Dec	Jan-Dec
	Harvestfish													-	-	-	Jul-Nov	Mar-Nov
	Lined seahorse													May-Oct	-	-	-	May-Nov
	Spanish mackerel													-	-	-	-	Jan-Dec
														-	-	-	-	May-Sep

REPTILES & AMPHIBIANS

Subelement	Species	Monthly Presence												Nest	Hatch	Interest	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
Turtle	Diamondback terrapin													May-Aug	-	-	Apr-Oct	Apr-Oct

INVERTEBRATES

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
Bivalve	Eastern oyster													Jun-Sep	Jun-Sep	Jun-Oct	Jan-Dec	Jan-Dec
	Softshell clam													May-Dec*	May-Dec*	May-Jan*	-	Jan-Dec
	Stout razor clam													Jun-Nov	-	-	Jan-Dec	Jan-Dec
Cephalopod	Squid													-	Apr-Dec	Apr-Dec	Apr-Dec	Apr-Dec
Crab	Blue crab													-	-	-	Jan-Dec	Jan-Dec
Shrimp	Brown shrimp													-	-	-	May-Oct	May-Oct
	Mantis shrimp													-	-	-	Jan-Dec	Jan-Dec
	White shrimp													-	-	-	May-Oct	May-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	185.64	0.29
10B	Freshwater Marshes	26.35	0.04
10C	Swamps	1,664.97	2.60
10D	Scrub and Shrub Wetlands	101.26	0.16
9A	Sheltered Tidal Flats	1.73	0.00
7	Exposed Tidal Flats	2.52	0.00

ESI SHORELINE HABITAT TYPES

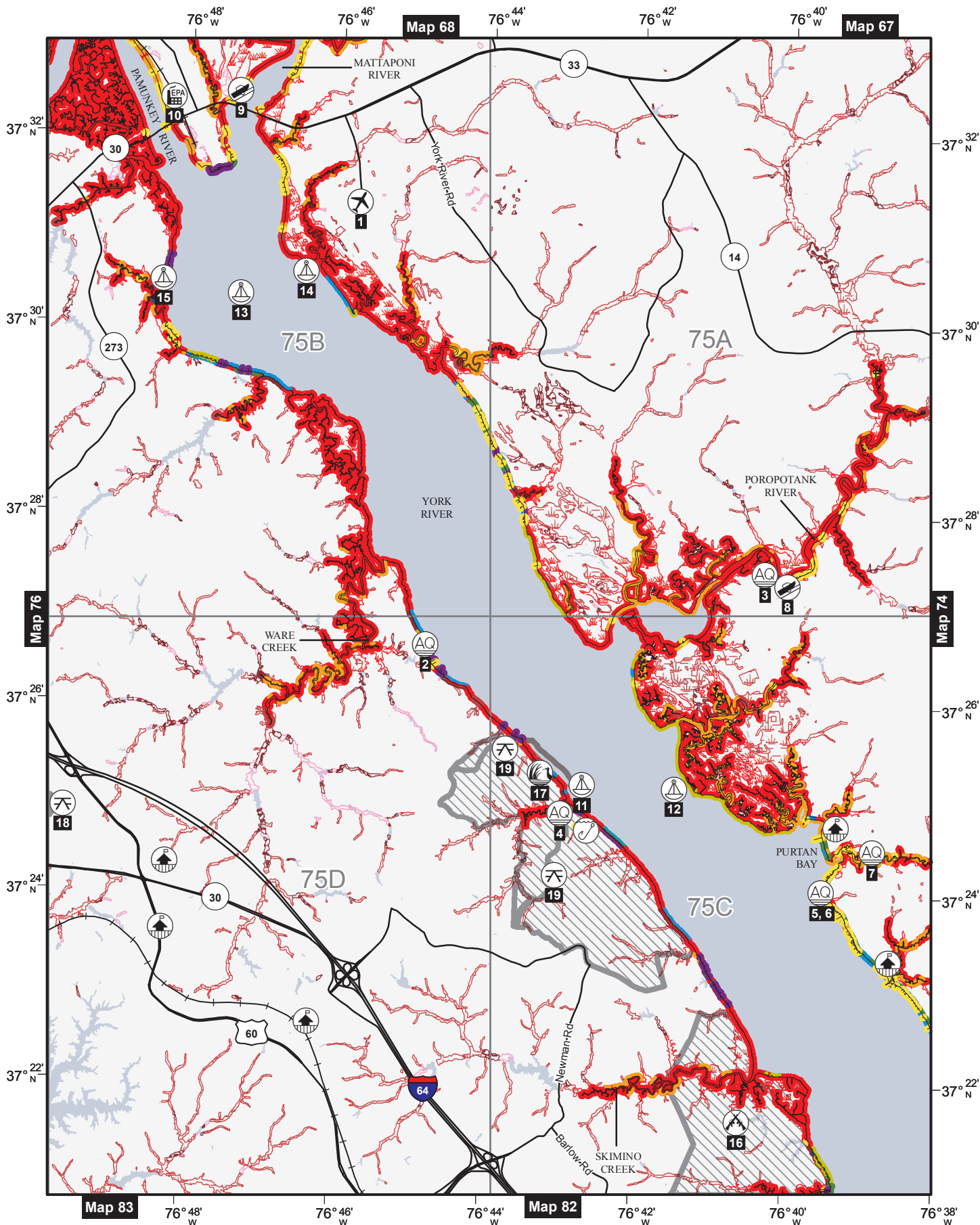
ESI Rank	Shoreline Habitat Classification	Length (Meters)	Length (Miles)	% of ESI Shoreline
10A	Salt and Brackish Water Marshes	25,783.34	16.02	51%
10C	Swamps	1,733.89	1.08	3%
10D	Scrub and Shrub Wetlands	91.03	0.06	< 1%
9A	Sheltered Tidal Flats	12,778.29	7.94	25%
9B	Vegetated Low Banks	1,814.66	1.13	4%
8B	Sheltered, Solid Man-Made Structures	1,331.60	0.83	3%
8C	Sheltered Riprap	74.23	0.05	< 1%
7	Exposed Tidal Flats	511.92	0.32	1%
6B	Riprap	1,270.38	0.79	2%
4	Coarse Grained Sand Beaches	4,376.89	2.72	9%
1B	Exposed, Solid Man-Made Structures	1,076.91	0.67	2%

Total ESI Shoreline: 50,843.15 Total ESI Shoreline: 31.59
Total Shoreline: 32,771.04 Total Shoreline: 20.36

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 75

Chesapeake South



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

0 Not for Navigation 2 Miles
0 2 Kilometers

1:100,000



Map 75
Chesapeake South

HUMAN USE RESOURCES

DISPLAYED ON MAP (POINTS)				
Map ID	Type	Name	Contact	Phone
1	AIRPORT	MIDDLE PENINSULA RGNL		
2	AQUACULTURE	OYSTER NON-COMM ARMSTRONG RF#99-1038	CHIP NEIKIRK, VIRGINIA MARINE RESOURCES COMM.	757-247-2254
3	AQUACULTURE	OYSTER NON-COMM BURCHNER, JAMES H., JR. RF#01-1925	CHIP NEIKIRK, VIRGINIA MARINE RESOURCES COMM.	757-247-2254
4	AQUACULTURE	OYSTER NON-COMM CHES BAY NERR RF#98-1773	CHIP NEIKIRK, VIRGINIA MARINE RESOURCES COMM.	757-247-2254
5	AQUACULTURE	OYSTER NON-COMM FLORY, SHARLENE RF#00-2104	CHIP NEIKIRK, VIRGINIA MARINE RESOURCES COMM.	757-247-2254
6	AQUACULTURE	OYSTER NON-COMM LEWIS, BARBARA RF#00-2027	CHIP NEIKIRK, VIRGINIA MARINE RESOURCES COMM.	757-247-2254
7	AQUACULTURE	OYSTER NON-COMM SANFORD, DAN RF#01-1452	CHIP NEIKIRK, VIRGINIA MARINE RESOURCES COMM.	757-247-2254
8	BOAT RAMP	TANYARD	LENE PENNINGTON, VDGIF	804-367-0058
9	BOAT RAMP	WEST POINT	LENE PENNINGTON, VDGIF	804-367-0058
10	EPA FACILITY	WEST POINT MILL	ENVIRONMENTAL MANAGER	804-843-5270
11	REPEATED MEASUREMENT SITE	DB - NERRS WEATHER STATION, CHESAPEAKE BAY, VA	NATIONAL COASTAL DATA DEVELOPMENT CENTER	866-732-2382
12	REPEATED MEASUREMENT SITE	WQ - STATION LE4.1	CHESAPEAKE BAY PROGRAM	800-968-7229
13	REPEATED MEASUREMENT SITE	WQ - STATION RET4.3	CHESAPEAKE BAY PROGRAM	800-968-7229
14	REPEATED MEASUREMENT SITE	WQ - STATION RET4.3N	CHESAPEAKE BAY PROGRAM	800-968-7229
15	REPEATED MEASUREMENT SITE	WQ - STATION RET4.3S	CHESAPEAKE BAY PROGRAM	800-968-7229

DISPLAYED ON MAP (POLYGONS)				
Map ID	Type	Name	Contact	Phone
16	MILITARY	CP PEARY		
17	NATIONAL ESTUARINE RESEARCH RESERVE	CHESAPEAKE BAY VIRGINIA RESERVE	CHESAPEAKE BAY VIRGINIA RESERVE	804-684-7135
18	PARK	UPPER COUNTY PARK	JAMES CITY COUNTY	
19	PARK	YORK RIVER STATE PARK	VA DEPT OF CONSERVATION AND RECREATION	

JURISDICTIONS

COUNTY: GLOUC. CO., JAMES CITY CO., K. AND Q. CO., K. WILL. CO., NEW KENT CO., YORK CO. **FEMA:** REGION I
COAST GUARD: DISTRICT 5, SECTOR HAMPTON ROADS **EPA:** REGION 3
USACE: NORTH ATLANTIC DIVISION, NORFOLK DISTRICT

SHORELINE RESOURCES

ESI POLYGON HABITAT TYPES

ESI Rank	Habitat Classification	Area (Acres)	Area (Sq. Miles)
10A	Salt and Brackish Water Marshes	6,006.65	9.39
10B	Freshwater Marshes	232.41	0.36
10C	Swamps	3,136.34	4.90
10D	Scrub and Shrub Wetlands	574.60	0.90
7	Exposed Tidal Flats	1.58	0.00



ESI SHORELINE HABITAT TYPES

ESI Rank	Shoreline Habitat Classification	Length (Meters)	Length (Miles)	% of ESI Shoreline
10A	Salt and Brackish Water Marshes	489,196.48	303.97	70%
10B	Freshwater Marshes	183.16	0.11	< 1%
10C	Swamps	3,709.91	2.31	1%
10D	Scrub and Shrub Wetlands	5,189.32	3.22	1%
9A	Sheltered Tidal Flats	131,870.29	81.94	19%
9B	Vegetated Low Banks	24,094.59	14.97	3%
8B	Sheltered, Solid Man-Made Structures	7,996.19	4.97	1%
8C	Sheltered Riprap	1,183.56	0.74	< 1%
7	Exposed Tidal Flats	11,053.38	6.87	2%
6B	Riprap	5,846.17	3.63	1%
5	Mixed Sand and Gravel Beaches	723.04	0.45	< 1%
4	Coarse Grained Sand Beaches	10,470.17	6.51	2%
3A	Fine to Medium Grained Sand Beaches	741.99	0.46	< 1%
3B	Scarps and Steep Slopes (Sand)	175.93	0.11	< 1%
1A	Exposed, Rocky Shores	723.04	0.45	< 1%
1B	Exposed, Solid Man-Made Structures	4,610.17	2.86	1%

Total ESI Shoreline: 697,767.40 Total ESI Shoreline: 433.57
 Total Shoreline: 525,130.21 Total Shoreline: 326.30

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 75A
Chesapeake South

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	MD/NVA	S	F	Concentration	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt
								J	F	M	A	M	J	J	A	S	O	N	D				
150	Wading	Great blue heron	Nesting				10 Nests													Feb-Jun	-	-	-
232	Waterfowl	Canada goose	Nesting				Present													Mar-Aug	-	-	Jun-Jul
	Waterfowl	Mallard	Nesting				Present													Mar-Aug	-	-	Jul-Aug
	Waterfowl	American black duck	Wintering				100S													-	-	-	-
	Waterfowl	American wigeon	Wintering				Present													-	-	-	-
	Waterfowl	Blue-winged teal	Migration				100S													-	Feb-Apr	Aug-Oct	-
	Waterfowl	Canada goose	Nesting				Present													Mar-Aug	-	-	Jun-Jul
	Waterfowl	Canada goose	Wintering				1,000S													-	-	-	-
	Waterfowl	Gadwall	Wintering				Present													-	-	-	-
	Waterfowl	Green-winged teal	Wintering				100S													-	-	-	-
	Waterfowl	Mallard	Nesting				Present													Mar-Aug	-	-	Jul-Aug
243	Waterfowl	Mallard	Wintering				100S													-	-	-	-
	Waterfowl	American black duck	Wintering				100S													-	-	-	-
	Waterfowl	Blue-winged teal	Migration				Present													-	Feb-Apr	Aug-Oct	-
	Waterfowl	Bufflehead	Wintering				10S													-	-	-	-
	Waterfowl	Canada goose	Nesting				Present													Mar-Aug	-	-	Jun-Jul
	Waterfowl	Canada goose	Wintering				100S													-	-	-	-
	Waterfowl	Canvasback	Wintering				100S													-	-	-	-
	Waterfowl	Green-winged teal	Wintering				Present													-	-	-	-
	Waterfowl	Mallard	Nesting				Present													Mar-Aug	-	-	Jul-Aug
	Waterfowl	Mallard	Wintering				10S													-	-	-	-
	Waterfowl	Mergansers	Wintering				10S													-	-	-	-
	Waterfowl	Ruddy duck	Wintering				100S													-	-	-	-
	Waterfowl	Tundra swan	Wintering				Present													-	-	-	-
	Waterfowl	American black duck	Wintering				100S													-	-	-	-
	Waterfowl	American wigeon	Wintering				Present													-	-	-	-
724	Waterfowl	Blue-winged teal	Migration				100S													-	Feb-Apr	Aug-Oct	-
	Waterfowl	Canada goose	Wintering				1,000S													-	-	-	-
	Waterfowl	Gadwall	Wintering				Present													-	-	-	-
	Waterfowl	Green-winged teal	Wintering				100S													-	-	-	-
	Waterfowl	Mallard	Wintering				100S													-	-	-	-
729	Waterfowl	American black duck	Wintering				100S													-	-	-	-
	Waterfowl	Blue-winged teal	Migration				Present													-	Feb-Apr	Aug-Oct	-
	Waterfowl	Bufflehead	Wintering				10S													-	-	-	-
	Waterfowl	Canada goose	Wintering				100S													-	-	-	-
	Waterfowl	Canvasback	Wintering				100S													-	-	-	-
	Waterfowl	Green-winged teal	Wintering				Present													-	-	-	-

BIRDS (continued)

Map ID	Subelement	Species	Mapping Qualifier	MD/VA		Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt
				S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N	D			
	Waterfowl	Mallard	Wintering			10S													-	-	-
	Waterfowl	Mergansers	Wintering			10S													-	-	-
	Waterfowl	Ruddy duck	Wintering			100S													-	-	-
	Waterfowl	Tundra swan	Wintering			Present													-	-	-
798	Raptor	Bald eagle	Nesting			1 Nest												Dec-Jun	-	-	-
899	Waterfowl	Mergansers	Wintering			10S													-	-	-
907	Waterfowl	Bufflehead	Wintering			100S													-	-	-
	Waterfowl	Canvasback	Wintering			100S													-	-	-
	Waterfowl	Mergansers	Wintering			10S													-	-	-
	Waterfowl	Ring-necked duck	Wintering			10S													-	-	-
	Waterfowl	Ruddy duck	Wintering			100S													-	-	-
938	Waterfowl	Bufflehead	Wintering			100S													-	-	-
	Waterfowl	Canvasback	Wintering			100S													-	-	-
	Waterfowl	Ring-necked duck	Wintering			10S													-	-	-
	Waterfowl	Ruddy duck	Wintering			100S													-	-	-
1211	Diving	Common loon	Wintering			Present													-	-	-
	Diving	Grebes	Wintering			10S													-	-	-
	Waterfowl	American black duck	Wintering			10S													-	-	-
	Waterfowl	Bufflehead	Wintering			10S													-	-	-
	Waterfowl	Canada goose	Wintering			100S													-	-	-
	Waterfowl	Canvasback	Wintering			1,000S													-	-	-
	Waterfowl	Common goldeneye	Wintering			Present													-	-	-
	Waterfowl	Mallard	Wintering			10S													-	-	-
	Waterfowl	Mergansers	Wintering			10S													-	-	-
	Waterfowl	Redhead	Wintering			10S													-	-	-
	Waterfowl	Ruddy duck	Wintering			1,000S													-	-	-
1212	Waterfowl	Scaup	Wintering			100S													-	-	-
	Diving	Common loon	Wintering			Present													-	-	-
	Diving	Grebes	Wintering			10S													-	-	-
	Waterfowl	American black duck	Wintering			10S													-	-	-
	Waterfowl	Bufflehead	Wintering			10S													-	-	-
	Waterfowl	Canada goose	Wintering			100S													-	-	-
	Waterfowl	Canvasback	Wintering			1,000S													-	-	-
	Waterfowl	Common goldeneye	Wintering			Present													-	-	-
	Waterfowl	Mallard	Wintering			10S													-	-	-
	Waterfowl	Redhead	Wintering			10S													-	-	-
	Waterfowl	Ruddy duck	Wintering			1,000S													-	-	-
	Waterfowl	Scaup	Wintering			100S													-	-	-

FISH

Map ID	Subelement	Species	Mapping Qualifier	MD/VA		Concentration	Monthly Presence												Eggs	Larvae	Juveniles	Adults
				S	F		J	F	M	A	M	J	J	A	S	O	N	D				
1601	Diadromous	Atlantic sturgeon	Migration	-/E	E	-													-	-	-	Jun-Nov
	Diadromous	Hickory shad	Migration			-													-	-	Jun-Sep	Feb-May
1609	Diadromous	Atlantic sturgeon	General Distribution	-/E	E	-													-	-	Jan-Dec	Jan-Dec
	Diadromous	Striped bass	Nursery Area			-													-	-	Jan-Dec	-
1614	Diadromous	Alewife	Nursery Area			-													-	-	Apr-Oct	Feb-Apr
	Diadromous	American shad	Nursery Area			-													-	-	Mar-Jul	Feb-Jun
1620	Diadromous	Blueback herring	Nursery Area			-													-	-	Apr-Jun	Mar-Jun
	Diadromous	Alewife	Migration			-													-	-	Aug-Nov	Feb-Apr
1621	Diadromous	Blueback herring	Migration			-													-	-	Aug-Nov	Mar-Jun
	Diadromous	Alewife	Migration			-													-	-	Aug-Nov	Feb-Apr
	Diadromous	American shad	Migration			-													-	-	Aug-Nov	Feb-Jun
	Diadromous	Blueback herring	Migration			-													-	-	Aug-Nov	Mar-Jun

REPTILES & AMPHIBIANS

Map ID	Subelement	Species	Mapping Qualifier	MD/VA		Monthly Presence												Nest	Hatch	Internest	Juveniles	Adults	
				S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N						D
1767	Turtle	Green sea turtle	General Distribution	T/T	T	Common													-	-	-	Jul-Oct	-
	Turtle	Green sea turtle	General Distribution	T/T	T	Rare													-	-	-	May-Dec*	-

INVERTEBRATES

Map ID	Subelement	Species	Mapping Qualifier	MD/VA		Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults			
				S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N						D		
1788	Crab	Blue crab	Concentration Area			Highly Abundant-Summ													-	-	-	Jun-Oct	Jun-Oct	Jun-Mar*	Jun-Mar*
1789	Crab	Blue crab	Concentration Area			Highly Abundant													-	-	-	Jun-Mar*	Jun-Mar*	Jun-Mar*	Jun-Mar*
1834	Crab	Blue crab	Concentration Area			Highly Abundant-Wint													-	-	-	Dec-Mar	Dec-Mar	Dec-Mar	Dec-Mar

MARINE MAMMALS

Map ID	Subelement	Species	Mapping Qualifier	MD/VA		Concentration	Monthly Presence												Mating	Calving	Pupping	Molt																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
				S	F		J	F	M	A	M	J	J	A	S	O	N	D																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
1844	Manatee	West Indian manatee	General Distribution	-/E	E	Rare																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									</







ALSO PRESENT IN MAPPED AREA (GENERAL DISTRIBUTION)

BIRDS

Subelement	Species	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt
		J	F	M	A	M	J	J	A	S	O	N	D				
 Diving	D. crested cormorant													-	Mar-May	Aug-Nov	-

FISH

Monthly Presence

Subelement	Species	J	F	M	A	M	J	J	A	S	O	N	D	Spawn	Eggs	Larvae	Juveniles	Adults
	Diadromous													Feb-Apr	Feb-Apr	Feb-Apr	Apr-Oct	Feb-Apr
	Alewife													-	-	-	Jan-May	Jan-Dec
	American eel													Mar-Jun	Mar-Jun	Apr-Jun	Jan-May	Jan-Dec
	Blueback herring													-	-	-	Jan-Oct	Mar-Jun
	Striped bass													-	-	-	Jan-Dec	Jan-Dec
	Atlantic croaker													-	-	Dec-Apr	Jan-Dec	May-Nov
	Atlantic herring													-	-	-	-	Jan-Jun
	Atlantic menhaden													-	-	-	Jan-Dec	Jan-Dec
	Bluefish													-	-	-	May-Oct	May-Oct
	Kingfishes													-	-	-	-	Apr-Nov
	Red drum													-	-	-	-	May-Nov
	Sheepshead													-	-	-	-	Apr-Nov
	Spot													-	-	-	Nov-Apr	Apr-Dec
	Spotted seatrout													May-Jul	-	-	Apr-Nov	Apr-Nov
	Summer flounder													-	-	-	Apr-Oct	Jan-Dec
	Weakfish													-	-	May-Aug	Jun-Dec	Apr-Dec
	White perch													-	-	-	Jan-Dec	Jan-Dec
	Pipefish													-	-	-	Jan-Dec	Jan-Dec
	Silversides													Mar-Jul	Mar-Jul	Apr-Sep	Jan-Dec	Jan-Dec
	Anchovies													Apr-Sep	-	-	-	Jan-Dec
	Blue catfish													May-Jun	May-Jun	May-Jun	Jan-Dec	Jan-Dec
	Bullhead catfish													Apr-Jun	-	-	-	Jan-Dec
	Longnose gar													May-Jun	-	-	Jan-Dec	Jan-Dec
	Sunfish													Mar-Jul	-	-	-	Jan-Dec
	Tessellated darter													Apr-Jun	-	-	-	Jan-Dec
	Yellow perch													-	-	-	Jan-Dec	Jan-Dec
	Northern searobin													-	-	-	-	Apr-Sep
	Spotted hake													-	-	-	Dec-Jun	Dec-Jun
	Butterfish													-	-	-	Jul-Nov	Mar-Nov
	Harvestfish													-	-	-	-	May-Nov
	Spanish mackerel													-	-	-	-	May-Sep

INVERTEBRATES

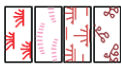
Monthly Presence

Subelement	Species	J	F	M	A	M	J	J	A	S	O	N	D	Spawn	Eggs	Larvae	Juveniles	Adults
	Bivalve													Jun-Sep	Jun-Sep	Jun-Oct	Jan-Dec	Jan-Dec
	Eastern oyster													May-Dec*	May-Dec*	May-Jan*	-	Jan-Dec
	Softshell clam													Jun-Nov	-	-	Jan-Dec	Jan-Dec
	Cephalopod													-	Apr-Dec	Apr-Dec	Apr-Dec	Apr-Dec
	Crab													-	-	-	Jan-Dec	Jan-Dec
	Shrimp													-	-	-	May-Oct	May-Oct
	Brown shrimp													-	-	-	Jan-Dec	Jan-Dec
	Mantis shrimp													-	-	-	-	May-Oct
	White shrimp													-	-	-	May-Oct	May-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	1,215.34	1.90
10B	Freshwater Marshes	30.10	0.05
10C	Swamps	1,078.08	1.68
10D	Scrub and Shrub Wetlands	249.48	0.39



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	73,324.61	45.56	65%
10C	Swamps	1,151.46	0.72	1%
10D	Scrub and Shrub Wetlands	404.63	0.25	< 1%
9A	Sheltered Tidal Flats	27,220.18	16.91	24%
9B	Vegetated Low Banks	5,323.59	3.31	5%
8B	Sheltered, Solid Man-Made Structures	1,407.25	0.87	1%
7	Exposed Tidal Flats	2,072.73	1.29	2%
6B	Riprap	334.20	0.21	< 1%
4	Coarse Grained Sand Beaches	545.23	0.34	< 1%
1B	Exposed, Solid Man-Made Structures	1,045.14	0.65	1%

Total ESI Shoreline: 112,829.02 Total ESI Shoreline: 70.11
 Total Shoreline: 76,714.03 Total Shoreline: 47.67

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 75B
Chesapeake South

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	MD/VA	S	F	Concentration	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt
								J	F	M	A	M	J	J	A	S	O	N	D				
149	Wading	Great blue heron	Nesting				18 Nests													Feb-Jun	-	-	-
153	Wading	Great blue heron	Nesting				4 Nests													Feb-Jun	-	-	-
232	Waterfowl	Canada goose	Nesting				Present													Mar-Aug	-	-	Jun-Jul
248	Waterfowl	Mallard	Nesting				Present													Mar-Aug	-	-	Jul-Aug
	Waterfowl	American black duck	Wintering				100S													-	-	-	-
	Waterfowl	American wigeon	Wintering				Present													-	-	-	-
	Waterfowl	Blue-winged teal	Migration				10S													-	Feb-Apr	Aug-Oct	-
250	Waterfowl	Canada goose	Nesting				10S													Mar-Aug	-	-	Jun-Jul
	Waterfowl	Gadwall	Wintering				10S													-	-	-	-
	Waterfowl	Green-winged teal	Wintering				10S													-	-	-	-
	Waterfowl	Mallard	Nesting				Present													Mar-Aug	-	-	Jul-Aug
	Waterfowl	Mallard	Wintering				100S													-	-	-	-
	Waterfowl	Tundra swan	Wintering				100S													-	-	-	-
	Waterfowl	American black duck	Wintering				100S													-	-	-	-
	Waterfowl	Blue-winged teal	Migration				Present													-	Feb-Apr	Aug-Oct	-
	Waterfowl	Canada goose	Nesting				Present													Mar-Aug	-	-	Jun-Jul
	Waterfowl	Canvasback	Wintering				100S													-	-	-	-
251	Waterfowl	Green-winged teal	Wintering				Present													-	-	-	-
	Waterfowl	Mallard	Nesting				Present													Mar-Aug	-	-	Jul-Aug
	Waterfowl	Ruddy duck	Wintering				100S													-	-	-	-
	Waterfowl	Tundra swan	Wintering				Present													-	-	-	-
	Waterfowl	American black duck	Wintering				100S													-	-	-	-
	Waterfowl	Blue-winged teal	Migration				Present													-	Feb-Apr	Aug-Oct	-
	Waterfowl	Canada goose	Nesting				Present													Mar-Aug	-	-	Jun-Jul
	Waterfowl	Green-winged teal	Wintering				Present													-	-	-	-
	Waterfowl	Mallard	Nesting				Present													Mar-Aug	-	-	Jul-Aug
	Waterfowl	Ruddy duck	Wintering				100S													-	-	-	-
252	Waterfowl	Tundra swan	Wintering				Present													-	-	-	-
	Waterfowl	American black duck	Wintering				1,000S													-	-	-	-
	Waterfowl	American coot	Wintering				Present													-	-	-	-
	Waterfowl	American wigeon	Wintering				100S													-	-	-	-
	Waterfowl	Blue-winged teal	Migration				1,000S													-	Feb-Apr	Aug-Oct	-
	Waterfowl	Canada goose	Nesting				Present													Mar-Aug	-	-	Jun-Jul
	Waterfowl	Canada goose	Wintering				1,000S													-	-	-	-
	Waterfowl	Gadwall	Wintering				100S													-	-	-	-
	Waterfowl	Green-winged teal	Wintering				1,000S													-	-	-	-
	Waterfowl	Mallard	Nesting				Present													Mar-Aug	-	-	Jul-Aug

BIRDS (continued)

Map ID	Subelement	Species	Mapping Qualifier	MD/VA	S	F	Concentration	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt
								J	F	M	A	M	J	J	A	S	O	N	D				
	Waterfowl	Mallard	Wintering				1,000S													-	-	-	-
	Waterfowl	Northern pintail	Wintering				100S													-	-	-	-
270	Waterfowl	American coot	Wintering				Present													-	-	-	-
	Waterfowl	Blue-winged teal	Migration				1,000S													-	Feb-Apr	Aug-Oct	-
	Waterfowl	Canada goose	Nesting				Present												Mar-Aug	-	-	-	Jun-Jul
	Waterfowl	Canada goose	Wintering				1,000S													-	-	-	-
	Waterfowl	Gadwall	Wintering				100S													-	-	-	-
	Waterfowl	Green-winged teal	Wintering				1,000S													-	-	-	-
	Waterfowl	Mallard	Nesting				Present												Mar-Aug	-	-	-	Jul-Aug
	Waterfowl	Northern pintail	Wintering				100S													-	-	-	-
673	Waterfowl	American coot	Wintering				100S													-	-	-	-
	Waterfowl	Blue-winged teal	Migration				100S													-	Feb-Apr	Aug-Oct	-
	Waterfowl	Bufflehead	Wintering				100S													-	-	-	-
	Waterfowl	Canada goose	Wintering				10,000S													-	-	-	-
	Waterfowl	Canvasback	Wintering				100S													-	-	-	-
	Waterfowl	Gadwall	Wintering				1,000S													-	-	-	-
	Waterfowl	Green-winged teal	Wintering				100S													-	-	-	-
	Waterfowl	Mergansers	Wintering				100S													-	-	-	-
	Waterfowl	Northern pintail	Wintering				1,000S													-	-	-	-
	Waterfowl	Ring-necked duck	Wintering				1,000S													-	-	-	-
	Waterfowl	Tundra swan	Wintering				100S													-	-	-	-
674	Waterfowl	American coot	Wintering				100S													-	-	-	-
	Waterfowl	Blue-winged teal	Migration				100S													-	Feb-Apr	Aug-Oct	-
	Waterfowl	Bufflehead	Wintering				100S													-	-	-	-
	Waterfowl	Canada goose	Wintering				10,000S													-	-	-	-
	Waterfowl	Gadwall	Wintering				1,000S													-	-	-	-
	Waterfowl	Green-winged teal	Wintering				100S													-	-	-	-
	Waterfowl	Mergansers	Wintering				100S													-	-	-	-
	Waterfowl	Northern pintail	Wintering				1,000S													-	-	-	-
	Waterfowl	Ring-necked duck	Wintering				1,000S													-	-	-	-
	Waterfowl	Tundra swan	Wintering				100S													-	-	-	-
705	Raptor	Peregrine falcon	Nesting				-													Feb-Jun	-	-	-
760	Waterfowl	American black duck	Wintering				100S													-	-	-	-
	Waterfowl	American wigeon	Wintering				Present													-	-	-	-
	Waterfowl	Blue-winged teal	Migration				10S													-	Feb-Apr	Aug-Oct	-
	Waterfowl	Gadwall	Wintering				10S													-	-	-	-
	Waterfowl	Green-winged teal	Wintering				10S													-	-	-	-
	Waterfowl	Mallard	Wintering				100S													-	-	-	-
	Waterfowl	Tundra swan	Wintering				100S													-	-	-	-
763	Waterfowl	American black duck	Wintering				100S													-	-	-	-
	Waterfowl	Blue-winged teal	Migration				Present													-	Feb-Apr	Aug-Oct	-
	Waterfowl	Canvasback	Wintering				100S													-	-	-	-
	Waterfowl	Green-winged teal	Wintering				Present													-	-	-	-
	Waterfowl	Ruddy duck	Wintering				100S													-	-	-	-

BIRDS (continued)

Map ID	Subelement	Species	Mapping Qualifier	MD/VA		Concentration	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt
				S	F		J	F	M	A	M	J	J	A	S	O	N	D				
779	Waterfowl	Tundra swan	Wintering			Present													-			-
	Waterfowl	American black duck	Wintering			1,000S													-			-
	Waterfowl	American wigeon	Wintering			100S													-			-
	Waterfowl	Mallard	Wintering			1,000S													-			-
787	Waterfowl	Blue-winged teal	Migration			100S													-			-
	Waterfowl	Green-winged teal	Wintering			100S													-			-
798	Raptor	Bald eagle	Nesting			1 Nest													Dec-Jun			-
928	Waterfowl	Bufflehead	Wintering			100S													-			-
	Waterfowl	Common goldeneye	Wintering			10S													-			-
	Waterfowl	Ring-necked duck	Wintering			100S													-			-
	Waterfowl	Scaup	Wintering			10S													-			-
1075	Waterfowl	Canvasback	Wintering			100S													-			-

FISH



Map ID	Subelement	Species	Mapping Qualifier	MD/VA		Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults	
				S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N						D
1482	Estuarine Nursery	White perch	Spawning Area			-													Mar-May	Mar-May	Apr-Jun	-	Mar-May
1483	Estuarine Nursery	White perch	Spawning Area			-													Mar-May	Mar-May	Apr-Jun	-	Mar-May
	Freshwater	Yellow perch	Spawning Area			-													Feb-Mar	Feb-Mar	Mar-Apr	-	Feb-Mar

INVERTEBRATES

Map ID	Subelement	Species	Mapping Qualifier	MD/VA		Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults	
				S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N						D
1788	Crab	Blue crab	Concentration Area			Highly Abundant-Summ													-	-	-	Jun-Oct	Jun-Oct
1789	Crab	Blue crab	Concentration Area			Highly Abundant													-	-	-	Jun-Mar*	Jun-Mar*
1834	Crab	Blue crab	Concentration Area			Highly Abundant-Wint													-	-	-	Dec-Mar	Dec-Mar



WIDESPREAD IN MAPPED AREA (> 10 SQUARE KILOMETERS)

BIRDS

	Subelement	Species	Mapping Qualifier	MD/VA		Concentration	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt
				S	F		J	F	M	A	M	J	J	A	S	O	N	D				
	Diving	Common loon	Wintering			Present													-	-	-	
		Grebes	Wintering			10S													-	-	-	
	Waterfowl	American black duck	Wintering			10S													-	-	-	
		Bufflehead	Wintering			10S													-	-	-	
		Canada goose	Wintering			100S													-	-	-	
		Canvasback	Wintering			1,000S													-	-	-	
		Common goldeneye	Wintering			Present													-	-	-	
		Mallard	Wintering			10S													-	-	-	
		Mergansers	Wintering			10S													-	-	-	
		Redhead	Wintering			10S													-	-	-	
		Ruddy duck	Wintering			1,000S													-	-	-	
		Scaup	Wintering			100S													-	-	-	

Chesapeake South: Map 75B

FISH

Subelement	Species	Mapping Qualifier	MDVA		Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
			S	F		J	F	M	A	M	J	J	A	S	O	N	D					
	Diadromous	Alewife			-													-	-	Feb-Apr	Apr-Oct	-
		Alewife			-													-	-	Feb-Apr	Apr-Oct	Feb-Apr
		Alewife			-													Feb-Apr	Feb-Apr	-	-	Feb-Apr
		American shad			-													-	-	Mar-Jul	Mar-Oct	Feb-Jun
		American shad			-													-	-	Mar-Jul	Mar-Oct	-
		American shad			-													Feb-Jun	Feb-Jun	-	-	Feb-Jun
		Atlantic sturgeon	-/E	E	-													-	-	Jan-Dec	Jan-Dec	Jan-Dec
		Atlantic sturgeon	-/E	E	-													-	-	-	-	Jun-Nov
		Blueback herring			-													-	-	Apr-Jun	May-Oct	-
		Blueback herring			-													-	-	Apr-Jun	May-Oct	Mar-Jun
		Blueback herring			-													Mar-Jun	Mar-Jun	-	-	Mar-Jun
		Hickory shad			-													-	-	-	Jun-Sep	Feb-May
		Hickory shad			-													-	-	Apr-Jun	Apr-Oct	-
		Hickory shad			-													Feb-May	Feb-May	-	-	Feb-May
		Striped bass			-													-	-	Mar-May	Jan-Dec	-
		Striped bass			-													Mar-May	Mar-May	-	-	Feb-Jun
		White perch			-													-	-	Apr-Jun	Jan-Dec	-
		White perch			-													-	-	-	-	-
		White perch			-													-	-	-	-	-
		White perch			-													-	-	-	-	-

REPTILES & AMPHIBIANS


Subelement	Species	Mapping Qualifier	MDVA		Concentration	Monthly Presence												Nest	Hatch	Internest	Juveniles	Adults
			S	F		J	F	M	A	M	J	J	A	S	O	N	D					
	Turtle	General Distribution	T/T	T	Rare													-	-	-	May-Dec*	-
	Green sea turtle	General Distribution	T/T	T	Common													-	-	-	Jul-Oct	-

MARINE MAMMALS

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







ALSO PRESENT IN MAPPED AREA (GENERAL DISTRIBUTION)

BIRDS

Subelement	Species	Mapping Qualifier	MDVA		Concentration	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt
			S	F		J	F	M	A	M	J	J	A	S	O	N	D				
	Diving	D. crested cormorant																-	Mar-May	Aug-Nov	-
	Waterfowl	Wood duck																Apr-Jul	-	-	Jul-Aug

FISH

Monthly Presence

Subelement	Species	J	F	M	A	M	J	J	A	S	O	N	D	Spawn	Eggs	Larvae	Juveniles	Adults
	Alewife													Feb-Apr	Feb-Apr	Feb-Apr	Apr-Oct	Feb-Apr
	American eel													-	-	-	Jan-May	Jan-Dec
	Blueback herring													Mar-Jun	Mar-Jun	Apr-Jun	May-Oct	Mar-Jun
	Gizzard shad													Mar-Jun	-	-	Jan-Dec	Jan-Dec
	Striped bass													-	-	-	Jan-Dec	Jan-Dec
	Atlantic croaker													-	-	Dec-Apr	Jan-Dec	May-Nov
	Atlantic croaker													-	-	Apr-Dec	Jan-Dec	May-Oct
	Atlantic herring													-	-	-	-	Jan-Jun
	Atlantic menhaden													-	-	-	Jan-Dec	Jan-Dec
	Bluefish													-	-	-	May-Oct	May-Oct
	Kingfishes													-	-	-	-	Apr-Nov
	Red drum													-	-	-	-	May-Nov
	Sheepshead													-	-	-	-	Apr-Nov
	Spot													-	-	-	Nov-Apr	Apr-Dec
	Spotted seatrout													May-Jul	-	-	Jan-Dec	Apr-Nov
	Summer flounder													-	-	-	Apr-Oct	Jan-Dec
	Weakfish													-	-	May-Aug	Jun-Dec	Apr-Dec
	White perch													-	-	-	Jan-Dec	Jan-Dec
	Pipefish													Mar-Jul	Mar-Jul	Apr-Sep	Jan-Dec	Jan-Dec
	Silversides													Apr-Sep	-	-	-	Jan-Dec
	Anchovies													Mar-Jul	-	-	Jan-Dec	-
	Black crappie													May-Jun	May-Jun	May-Jun	Jan-Dec	Jan-Dec
	Blue catfish													Apr-Jun	-	-	-	Jan-Dec
	Bullhead catfish													Feb-Apr	-	-	-	Jan-Dec
	Chain pickerel													May-Jun	-	-	Jan-Dec	Jan-Dec
	Channel catfish													May-Jun	-	-	Jan-Dec	Jan-Dec
	Common carp													May-Jun	-	-	-	Jan-Dec
	Golden shiner													Apr-Aug	-	-	Jan-Dec	Jan-Dec
	Largemouth bass													Mar-May	-	-	-	Jan-Dec
	Longnose gar													May-Jun	-	-	Jan-Dec	Jan-Dec
	Redfin pickerel													Feb-Mar	-	-	Jan-Dec	Jan-Dec
	Spotfin shiner													Jun-Aug	-	-	-	Jan-Dec
	Spottail shiner													May-Aug	-	-	-	Jan-Dec
	Sunfish													Mar-Jul	-	-	-	Jan-Dec
	Tessellated darter													Apr-Jun	-	-	-	Jan-Dec
	Yellow perch													-	-	-	Jan-Dec	Jan-Dec
	Northern searobin													-	-	-	-	Apr-Sep
	Spotted hake													-	-	-	Dec-Jun	Dec-Jun
	Butterfish													-	-	-	Jul-Nov	Mar-Nov
	Harvestfish													-	-	-	-	May-Nov
	Spanish mackerel													-	-	-	-	May-Sep

INVERTEBRATES

	Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
			J	F	M	A	M	J	J	A	S	O	N	D					
	Bivalve	Eastern oyster													Jun-Sep	Jun-Sep	Jun-Oct	Jan-Dec	Jan-Dec
		Softshell clam													May-Dec*	May-Dec*	May-Jan*	Jan-Dec	Jan-Dec
	Stout razor clam														Jun-Nov	-	-	Jan-Dec	Jan-Dec
	Cephalopod	Squid													-	Apr-Dec	Apr-Dec	Apr-Dec	Apr-Dec
	Crab	Blue crab														-	-	Jan-Dec	Jan-Dec
		Brown shrimp														-	-	May-Oct	May-Oct
	Shrimp	Mantis shrimp													-	-	-	Jan-Dec	Jan-Dec
		White shrimp														-	-	May-Oct	May-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	2,526.20	3.95
10B	Freshwater Marshes	77.73	0.12
10C	Swamps	420.48	0.66
10D	Scrub and Shrub Wetlands	69.50	0.11

ESI SHORELINE HABITAT TYPES

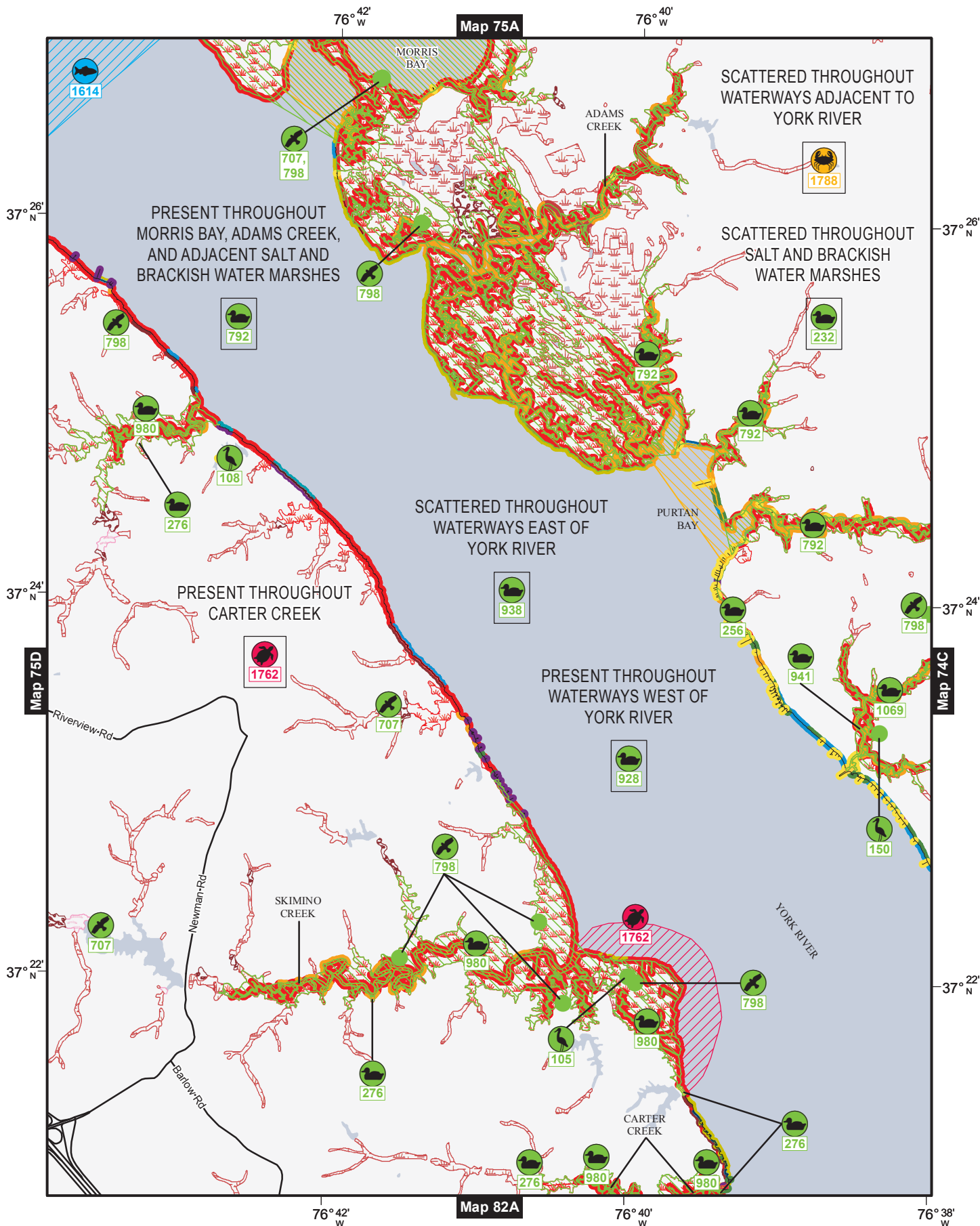
ESI Rank	Shoreline Habitat Classification	Length (Meters)	Length (Miles)	% of ESI Shoreline
10A	Salt and Brackish Water Marshes	219,731.24	136.54	89%
10C	Swamps	917.24	0.57	< 1%
10D	Scrub and Shrub Wetlands	541.06	0.34	< 1%
9A	Sheltered Tidal Flats	1,484.50	0.92	1%
9B	Vegetated Low Banks	10,455.97	6.50	4%
8B	Sheltered, Solid Man-Made Structures	3,517.47	2.19	1%
8C	Sheltered Riprap	769.55	0.48	< 1%
7	Exposed Tidal Flats	1,628.92	1.01	1%
6B	Riprap	2,099.05	1.30	1%
4	Coarse Grained Sand Beaches	4,379.65	2.72	2%
3B	Scarps and Steep Slopes (Sand)	56.65	0.04	< 1%
1B	Exposed, Solid Man-Made Structures	1,835.78	1.14	1%

Total ESI Shoreline: 247,417.07 Total ESI Shoreline: 153.74
Total Shoreline: 235,218.32 Total Shoreline: 146.16

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

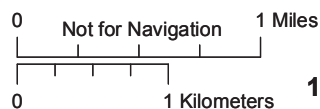




Map 75C
Chesapeake South



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



1:50,000

Map 75C
Chesapeake South

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	MD/VA	S	F	Concentration	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt
								J	F	M	A	M	J	J	A	S	O	N	D				
105	Wading	Great blue heron	Nesting				13 Nests													Feb-Jun	-	-	-
108	Wading	Great blue heron	Nesting				6 Nests													Feb-Jun	-	-	-
150	Wading	Great blue heron	Nesting				10 Nests													Feb-Jun	-	-	-
232	Waterfowl	Canada goose	Nesting				Present													Mar-Aug	-	-	Jun-Jul
	Waterfowl	Mallard	Nesting				Present													Mar-Aug	-	-	Jul-Aug
256	Waterfowl	American wigeon	Wintering				Present													-	-	-	-
	Waterfowl	Blue-winged teal	Migration				100S													-	Feb-Apr	Aug-Oct	-
	Waterfowl	Canada goose	Nesting				Present													Mar-Aug	-	-	Jun-Jul
	Waterfowl	Canada goose	Wintering				1,000S													-	-	-	-
	Waterfowl	Gadwall	Wintering				Present													-	-	-	-
	Waterfowl	Green-winged teal	Wintering				100S													-	-	-	-
	Waterfowl	Mallard	Nesting				Present													Mar-Aug	-	-	Jul-Aug
276	Waterfowl	American wigeon	Wintering				Present													-	-	-	-
	Waterfowl	Blue-winged teal	Migration				10S													-	Feb-Apr	Aug-Oct	-
	Waterfowl	Canada goose	Nesting				Present													Mar-Aug	-	-	Jun-Jul
	Waterfowl	Gadwall	Wintering				10S													-	-	-	-
	Waterfowl	Green-winged teal	Wintering				10S													-	-	-	-
	Waterfowl	Mallard	Nesting				Present													Mar-Aug	-	-	Jul-Aug
	Waterfowl	Tundra swan	Wintering				100S													-	-	-	-
707	Raptor	Bald eagle	Roosting				-													-	-	-	-
792	Waterfowl	American wigeon	Wintering				Present													-	-	-	-
	Waterfowl	Blue-winged teal	Migration				100S													-	Feb-Apr	Aug-Oct	-
	Waterfowl	Canada goose	Wintering				1,000S													-	-	-	-
	Waterfowl	Gadwall	Wintering				Present													-	-	-	-
	Waterfowl	Green-winged teal	Wintering				100S													-	-	-	-
798	Raptor	Bald eagle	Nesting				1 Nest													Dec-Jun	-	-	-
928	Waterfowl	Bufflehead	Wintering				100S													-	-	-	-
	Waterfowl	Common goldeneye	Wintering				10S													-	-	-	-
	Waterfowl	Ring-necked duck	Wintering				100S													-	-	-	-
938	Waterfowl	Scaup	Wintering				10S													-	-	-	-
	Waterfowl	Bufflehead	Wintering				100S													-	-	-	-
	Waterfowl	Canvasback	Wintering				100S													-	-	-	-
	Waterfowl	Ring-necked duck	Wintering				10S													-	-	-	-
	Waterfowl	Ruddy duck	Wintering				100S													-	-	-	-
941	Waterfowl	Bufflehead	Wintering				100S													-	-	-	-
	Waterfowl	Ruddy duck	Wintering				100S													-	-	-	-
980	Waterfowl	American wigeon	Wintering				Present													-	-	-	-

BIRDS (continued)

Map ID	Subelement	Species	Mapping Qualifier	MD/VA		Monthly Presence												Nest	Eggs	Larvae	Juveniles	Adults
				S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N	D				
	Waterfowl	Blue-winged teal	Migration			10S												-	Feb-Apr	Aug-Oct	-	-
	Waterfowl	Gadwall	Wintering			10S												-	-	-	-	-
	Waterfowl	Green-winged teal	Wintering			10S												-	-	-	-	-
	Waterfowl	Tundra swan	Wintering			100S												-	-	-	-	-
1069	Waterfowl	Tundra swan	Wintering			10S												-	-	-	-	-

FISH

Map ID	Subelement	Species	Mapping Qualifier	MD/VA		Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
				S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N	D				
1614	Diadromous	Alewife	Nursery Area			-												-	-	Feb-Apr	Apr-Oct	Feb-Apr
	Diadromous	American shad	Nursery Area			-												-	-	Mar-Jul	Mar-Oct	Feb-Jun
	Diadromous	Blueback herring	Nursery Area			-												-	-	Apr-Jun	May-Oct	Mar-Jun

REPTILES & AMPHIBIANS

Map ID	Subelement	Species	Mapping Qualifier	MD/VA		Monthly Presence												Nest	Hatch	Internest	Juveniles	Adults
				S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N	D				
1762	Turtle	Diamondback terrapin	Concentration Area			High												May-Aug	-	-	Apr-Oct	Apr-Oct

INVERTEBRATES


Map ID	Subelement	Species	Mapping Qualifier	MD/VA		Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
				S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N	D				
1788	Crab	Blue crab	Concentration Area			Highly Abundant-Summ												-	-	-	Jun-Oct	Jun-Oct

WIDESPREAD IN MAPPED AREA (> 10 SQUARE KILOMETERS)

BIRDS

Map ID	Subelement	Species	Mapping Qualifier	MD/VA		Monthly Presence												Nest	Eggs	Larvae	Juveniles	Adults
				S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N	D				
	Diving	Common loon	Wintering			Present												-	-	-	-	-
		Grebes	Wintering			10S												-	-	-	-	-
	Waterfowl	American black duck	Wintering			100S												-	-	-	-	-
		American black duck	Wintering			10S												-	-	-	-	-
		Bufflehead	Wintering			10S												-	-	-	-	-
		Canada goose	Wintering			100S												-	-	-	-	-
		Canvasback	Wintering			1,000S												-	-	-	-	-
		Common goldeneye	Wintering			Present												-	-	-	-	-
		Mallard	Wintering			100S												-	-	-	-	-
		Mallard	Wintering			10S												-	-	-	-	-
		Mergansers	Wintering			10S												-	-	-	-	-
		Redhead	Wintering			10S												-	-	-	-	-
		Ruddy duck	Wintering			1,000S												-	-	-	-	-
		Scaup	Wintering			100S												-	-	-	-	-

FISH

Subelement	Species	Mapping Qualifier	MD/VA		Concentration	Monthly Presence												Eggs	Larvae	Juveniles	Adults
			S	F		J	F	M	A	M	J	J	A	S	O	N	D				
	Diadromous	Alewife			Migration													-	-	Aug-Nov	Feb-Apr
	American shad	Migration			Migration													-	-	Aug-Nov	Feb-Jun
	Atlantic sturgeon	General Distribution	-/E	E														-	Jan-Dec	Jan-Dec	Jan-Dec
	Atlantic sturgeon	Migration	-/E	E														-	-	-	Jun-Nov
	Blueback herring	Migration																-	-	Aug-Nov	Mar-Jun
	Hickory shad	Migration																-	-	Jun-Sep	Feb-May
	Striped bass	Nursery Area																-	Mar-May	Jan-Dec	-

REPTILES & AMPHIBIANS

Subelement	Species	Mapping Qualifier	MD/VA		Concentration	Monthly Presence												Hatch	Interest	Juveniles	Adults
			S	F		J	F	M	A	M	J	J	A	S	O	N	D				
	Green sea turtle	General Distribution																-	-	Jul-Oct	-
	Green sea turtle	General Distribution	T/T	T														-	-	May-Dec*	-

INVERTEBRATES



Subelement	Species	Mapping Qualifier	MD/VA		Concentration	Monthly Presence												Eggs	Larvae	Juveniles	Adults
			S	F		J	F	M	A	M	J	J	A	S	O	N	D				
	Blue crab	Concentration Area			Highly Abundant													-	-	Jun-Mar*	Jun-Mar*
	Blue crab	Concentration Area			Highly Abundant-Wint													-	-	Dec-Mar	Dec-Mar

MARINE MAMMALS



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

ALSO PRESENT IN MAPPED AREA (GENERAL DISTRIBUTION)

BIRDS

Subelement	Species	Mapping Qualifier	MD/VA		Concentration	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt
			S	F		J	F	M	A	M	J	J	A	S	O	N	D				
	Diving	D. crested cormorant																-	Mar-May	Aug-Nov	-
	Wading	Clapper rail																May-Aug	-	-	-
	Waterfowl	Wood duck																Apr-Jul	-	-	Jul-Aug
																		-	-	-	-

FISH

Subelement	Species	Mapping Qualifier	MD/VA		Concentration	Monthly Presence												Eggs	Larvae	Juveniles	Adults
			S	F		J	F	M	A	M	J	J	A	S	O	N	D				
	Diadromous	Alewife																Feb-Apr	Feb-Apr	Apr-Oct	Feb-Apr
	American eel																	-	-	Jan-May	Jan-Dec
	Blueback herring																	Mar-Jun	Apr-Jun	May-Oct	Jan-Jun
	Striped bass																	-	-	Jan-Dec	Jan-Dec
	Estuarine Nursery	Atlantic croaker																-	Dec-Apr	Jan-Dec	May-Nov
	Atlantic croaker																	-	Apr-Dec	Jan-Dec	May-Oct
	Atlantic herring																	-	-	-	Jan-Jun

FISH (continued)

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	Atlantic menhaden													-	-	-	Jan-Dec	Jan-Dec
	Black drum													Apr-Jun	-	-	Apr-Dec	Apr-Dec
	Bluefish													-	-	-	May-Oct	May-Oct
	Kingfishes													-	-	-	-	Apr-Nov
	Northern puffer													-	-	-	Mar-Oct	Mar-Oct
	Pigfish													-	-	-	-	Apr-Nov
	Red drum													-	-	-	-	May-Nov
	Sheepshead													-	-	-	-	Apr-Nov
	Spot													-	-	-	Nov-Apr	Apr-Dec
	Spotted seatrout													May-Jul	-	-	Apr-Nov	Apr-Nov
	Summer flounder													-	-	-	Apr-Oct	Jan-Dec
	Summer flounder													-	-	Feb-May	Apr-Dec	Jan-Dec
	Weakfish													-	-	May-Aug	Jun-Dec	Apr-Dec
	White perch													-	-	-	Jan-Dec	Jan-Dec
	Pipefish													-	-	-	Jan-Dec	Jan-Dec
Estuarine Resident	Silversides													Mar-Jul	Mar-Jul	Apr-Sep	Jan-Dec	Jan-Dec
Fish	Anchovies													Apr-Sep	-	-	-	Jan-Dec
	Blue catfish													May-Jun	May-Jun	May-Jun	Jan-Dec	Jan-Dec
	Bullhead catfish													Apr-Jun	-	-	-	Jan-Dec
	Longnose gar													May-Jun	-	-	Jan-Dec	Jan-Dec
	Sunfish													Mar-Jul	-	-	-	Jan-Dec
	Tessellated darter													Apr-Jun	-	-	-	Jan-Dec
Marine Benthic	Yellow perch													-	-	-	Jan-Dec	Jan-Dec
	Northern searobin													-	-	-	-	Apr-Sep
	Spotted hake													-	-	-	Jan-Dec	Jan-Dec
Marine Pelagic	Spotted hake													-	-	-	Dec-Jun	Dec-Jun
	Butterfish													-	-	-	Jul-Nov	Mar-Nov
	Harvestfish													-	-	-	-	May-Nov
	Lined seahorse													May-Oct	-	-	-	Jan-Dec
	Spanish mackerel													-	-	-	-	May-Sep

REPTILES & AMPHIBIANS

Subelement	Species	Monthly Presence												Nest	Hatch	Internest	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
Turtle	Diamondback terrapin													May-Aug	-	-	Apr-Oct	Apr-Oct

INVERTEBRATES

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
Bivalve	Eastern oyster													Jun-Sep	Jun-Sep	Jun-Oct	Jan-Dec	Jan-Dec
	Softshell clam													May-Dec*	May-Dec*	May-Jan*	-	Jan-Dec
Cephalopod	Stout razor clam													Jun-Nov	-	-	Jan-Dec	Jan-Dec
	Squid													-	Apr-Dec	Apr-Dec	Apr-Dec	Apr-Dec
Crab	Blue crab													-	-	-	Jan-Dec	Jan-Dec

INVERTEBRATES (continued)

Subelement	Species	Monthly Presence												Eggs	Larvae	Juveniles		Adults	
		J	F	M	A	M	J	J	A	S	O	N	D			May-Oct	Jan-Dec	May-Oct	Jan-Dec
Shrimp	Brown shrimp													-	-				
	Mantis shrimp													-	-				
	White 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)	Area (Sq. Miles)
10A	Salt and Brackish Water Marshes	2,039.73	3.19
10B	Freshwater Marshes	20.07	0.03
10C	Swamps	843.74	1.32
10D	Scrub and Shrub Wetlands	69.04	0.11
7	Exposed Tidal Flats	1.58	0.00

ESI SHORELINE HABITAT TYPES

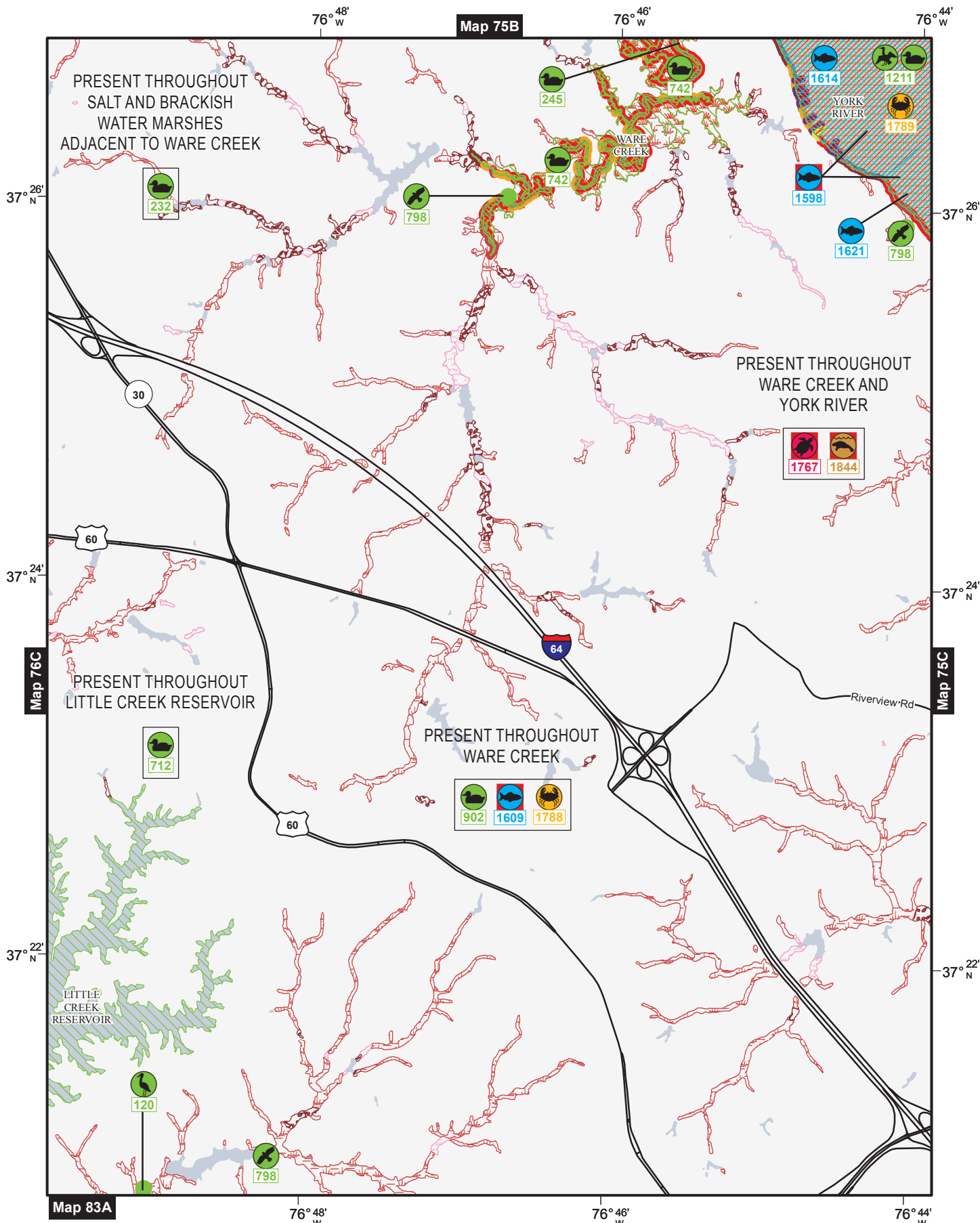
ESI Rank	Shoreline Habitat Classification	Length (Meters)	Length (Miles)	% of ESI Shoreline
10A	Salt and Brackish Water Marshes	174,024.54	108.13	56%
10C	Swamps	871.94	0.54	< 1%
10D	Scrub and Shrub Wetlands	3,078.69	1.91	1%
9A	Sheltered Tidal Flats	103,165.61	64.10	33%
9B	Vegetated Low Banks	5,798.24	3.60	2%
8B	Sheltered, Solid Man-Made Structures	2,983.34	1.85	1%
8C	Sheltered Riprap	342.76	0.21	< 1%
7	Exposed Tidal Flats	7,351.73	4.57	2%
6B	Riprap	3,058.68	1.90	1%
5	Mixed Sand and Gravel Beaches	723.04	0.45	< 1%
4	Coarse Grained Sand Beaches	4,322.05	2.69	1%
3A	Fine to Medium Grained Sand Beaches	741.99	0.46	< 1%
3B	Scarps and Steep Slopes (Sand)	119.28	0.07	< 1%
1A	Exposed, Rocky Shores	723.04	0.45	< 1%
1B	Exposed, Solid Man-Made Structures	945.00	0.59	< 1%

Total ESI Shoreline: 308,249.95 Total ESI Shoreline: 191.54
Total Shoreline: 186,941.44 Total Shoreline: 116.16

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



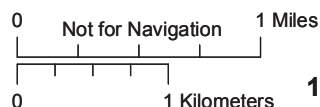


Map 75D

Chesapeake South



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



1:50,000



Map 75D
Chesapeake South

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	MD/VFA	S	F	Concentration	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt
								J	F	M	A	M	J	J	A	S	O	N	D				
120	Wading	Great blue heron	Nesting				5 Nests													Feb-Jun	-	-	-
232	Waterfowl	Canada goose	Nesting				Present													Mar-Aug	-	-	Jun-Jul
	Waterfowl	Mallard	Nesting				Present													Mar-Aug	-	-	Jul-Aug
	Waterfowl	American black duck	Wintering				100S													-	-	-	-
	Waterfowl	American wigeon	Wintering				Present													-	-	-	-
	Waterfowl	Blue-winged teal	Migration				10S													-	Feb-Apr	Aug-Oct	-
	Waterfowl	Canada goose	Nesting				Present													Mar-Aug	-	-	Jun-Jul
	Waterfowl	Canada goose	Wintering				100S													-	-	-	-
	Waterfowl	Gadwall	Wintering				10S													-	-	-	-
	Waterfowl	Green-winged teal	Wintering				10S													-	-	-	-
	Waterfowl	Mallard	Nesting				Present													Mar-Aug	-	-	Jul-Aug
	Waterfowl	Mallard	Wintering				100S													-	-	-	-
	Waterfowl	Tundra swan	Wintering				100S													-	-	-	-
	Waterfowl	American black duck	Wintering				100S													-	-	-	-
	Waterfowl	American wigeon	Wintering				100S													-	-	-	-
	Waterfowl	Blue-winged teal	Migration				100S													-	Feb-Apr	Aug-Oct	-
	Waterfowl	Bufflehead	Wintering				10S													-	-	-	-
	Waterfowl	Canada goose	Wintering				100S													-	-	-	-
	Waterfowl	Gadwall	Wintering				100S													-	-	-	-
	Waterfowl	Green-winged teal	Wintering				100S													-	-	-	-
	Waterfowl	Mallard	Wintering				100S													-	-	-	-
742	Waterfowl	Mergansers	Wintering				10S													-	-	-	-
	Waterfowl	Ring-necked duck	Wintering				1,000S													-	-	-	-
	Waterfowl	Scaup	Wintering				10S													-	-	-	-
	Waterfowl	American black duck	Wintering				100S													-	-	-	-
	Waterfowl	American wigeon	Wintering				Present													-	-	-	-
	Waterfowl	Blue-winged teal	Migration				10S													-	Feb-Apr	Aug-Oct	-
	Waterfowl	Canada goose	Wintering				100S													-	-	-	-
	Waterfowl	Gadwall	Wintering				10S													-	-	-	-
	Waterfowl	Green-winged teal	Wintering				10S													-	-	-	-
	Waterfowl	Mallard	Wintering				100S													-	-	-	-
798	Waterfowl	Tundra swan	Wintering				100S													-	-	-	-
	Raptor	Bald eagle	Nesting				1 Nest													Dec-Jun	-	-	-
	Waterfowl	Bufflehead	Wintering				100S													-	-	-	-
	Waterfowl	Canvasback	Wintering				1,000S													-	-	-	-
	Waterfowl	Common goldeneye	Wintering				10S													-	-	-	-
	Waterfowl	Mergansers	Wintering				10S													-	-	-	-

BIRDS (continued)

Map ID	Subelement	Species	Mapping Qualifier	MD/VA		Monthly Presence												Nest	Mig.(S)	Mig.(F)	Juveniles	Adults
				S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N					
1211	Waterfowl	Ring-necked duck	Wintering			100S												-	-	-	-	-
	Waterfowl	Ruddy duck	Wintering			1,000S												-	-	-	-	-
	Waterfowl	Scaup	Wintering			10S												-	-	-	-	-
	Diving	Common loon	Wintering			Present												-	-	-	-	-
	Diving	Grebes	Wintering			10S												-	-	-	-	-
	Waterfowl	American black duck	Wintering			10S												-	-	-	-	-
	Waterfowl	Bufflehead	Wintering			10S												-	-	-	-	-
	Waterfowl	Canada goose	Wintering			100S												-	-	-	-	-
	Waterfowl	Canvasback	Wintering			1,000S												-	-	-	-	-
	Waterfowl	Common goldeneye	Wintering			Present												-	-	-	-	-
	Waterfowl	Mallard	Wintering			10S												-	-	-	-	-
	Waterfowl	Mergansers	Wintering			10S												-	-	-	-	-
	Waterfowl	Redhead	Wintering			10S												-	-	-	-	-
	Waterfowl	Ruddy duck	Wintering			1,000S												-	-	-	-	-
	Waterfowl	Scaup	Wintering			100S												-	-	-	-	-

FISH

Map ID	Subelement	Species	Mapping Qualifier	MD/VA		Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
				S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N					
1598	Diadromous	Atlantic sturgeon	General Distribution	-/E	E	-												-	-	-	Jan-Dec	Jan-Dec
	Diadromous	Atlantic sturgeon	Migration	-/E	E	-												-	-	-	Jun-Sep	Jun-Nov
	Diadromous	Hickory shad	Migration			-												-	-	-	Jan-Dec	Feb-May
	Diadromous	Striped bass	Nursery Area			-												-	-	-	Jan-Dec	Jan-Dec
1609	Diadromous	Atlantic sturgeon	General Distribution	-/E	E	-												-	-	-	Jan-Dec	Jan-Dec
	Diadromous	Striped bass	Nursery Area			-												-	-	-	Jan-Dec	Jan-Dec
	Diadromous	Alewife	Nursery Area			-												-	-	-	Apr-Oct	Feb-Apr
1614	Diadromous	American shad	Nursery Area			-												-	-	-	Mar-Jul	Mar-Jun
	Diadromous	Blueback herring	Nursery Area			-												-	-	-	Apr-Jun	May-Oct
	Diadromous	Alewife	Migration			-												-	-	-	Aug-Nov	Feb-Apr
1621	Diadromous	American shad	Migration			-												-	-	-	Aug-Nov	Feb-Apr
	Diadromous	Blueback herring	Migration			-												-	-	-	Aug-Nov	Feb-Apr
	Diadromous	Blueback herring	Migration			-												-	-	-	Aug-Nov	Mar-Jun

REPTILES & AMPHIBIANS

Map ID	Subelement	Species	Mapping Qualifier	MD/VA		Monthly Presence												Nest	Hatch	Internest	Juveniles	Adults
				S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N					
1767	Turtle	Green sea turtle	General Distribution	T/T	T	Common												-	-	-	Jul-Oct	-
	Turtle	Green sea turtle	General Distribution	T/T	T	Rare												-	-	-	May-Dec*	-

INVERTEBRATES

Map ID	Subelement	Species	Mapping Qualifier	MD/VA		Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
				S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N					
1788	Crab	Blue crab	Concentration Area			Highly Abundant-Summ												-	-	-	Jun-Oct	Jun-Oct
1789	Crab	Blue crab	Concentration Area			Highly Abundant												-	-	-	Jun-Mar*	Jun-Mar*

MARINE MAMMALS

Map ID	Subelement	Species	Mapping Qualifier General Distribution	MD/VA S F -/E	Concentration Rare	Monthly Presence												Mating	Calving	Pupping	Molt
						J	F	M	A	M	J	J	A	S	O	N	D				

1844	Manatee	West Indian manatee	General Distribution	-/E	Rare													-	-	-	-
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ALSO PRESENT IN MAPPED AREA (GENERAL DISTRIBUTION)

BIRDS

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





	Diving													-	Mar-May	Aug-Nov	-
	Waterfowl													Apr-Jul	-	-	Jul-Aug

FISH

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					

	Diadromous													Feb-Apr	Feb-Apr	Feb-Apr	Apr-Oct	Feb-Apr
	Alewife													-	-	-	Jan-May	Jan-Dec
	American eel													Mar-Jun	Mar-Jun	Apr-Jun	May-Oct	Mar-Jun
	Blueback herring													-	-	-	Jan-Dec	Jan-Dec
	Striped bass													-	-	Dec-Apr	Jan-Dec	May-Nov
	Atlantic croaker													-	-	-	Jan-Jun	Jan-Jun
	Atlantic herring													-	-	-	-	-
	Atlantic menhaden													-	-	-	Jan-Dec	Jan-Dec
	Bluefish													-	-	-	May-Oct	May-Oct
	Kingfishes													-	-	-	-	Apr-Nov
	Red drum													-	-	-	-	May-Nov
	Sheepshead													-	-	-	-	Apr-Nov
	Spot													-	-	-	-	Apr-Nov
	Spotted seatrout													-	-	-	Nov-Apr	Apr-Dec
	Summer flounder													May-Jul	-	-	Apr-Nov	Apr-Nov
	Weakfish													-	-	-	Apr-Oct	Jan-Dec
	White perch													-	-	May-Aug	Jun-Dec	Apr-Dec
	Pipefish													-	-	-	Jan-Dec	Jan-Dec
	Silversides													Mar-Jul	Mar-Jul	Apr-Sep	Jan-Dec	Jan-Dec
	Anchovies													Apr-Sep	-	-	-	Jan-Dec
	Blue catfish													May-Jun	May-Jun	May-Jun	Jan-Dec	Jan-Dec
	Bullhead catfish													Apr-Jun	-	-	-	Jan-Dec
	Longnose gar													May-Jun	-	-	Jan-Dec	Jan-Dec
	Sunfish													May-Jun	-	-	Jan-Dec	Jan-Dec
	Tessellated darter													May-Jun	-	-	-	Jan-Dec
	Yellow perch													Apr-Jun	-	-	Jan-Dec	Jan-Dec
	Northern searobin													Mar-Jul	-	-	-	Jan-Dec
	Spotted hake													Apr-Jun	-	-	-	Jan-Dec
	Butterfish													May-Jun	-	-	-	Jan-Dec
	Harvestfish													Apr-Jun	-	-	-	Jan-Dec
	Spanish mackerel													-	-	-	Jan-Dec	Jan-Dec
														-	-	-	-	Apr-Sep
														-	-	-	Dec-Jun	Dec-Jun
														-	-	-	Jul-Nov	Mar-Nov
														-	-	-	-	May-Nov
														-	-	-	-	May-Sep

INVERTEBRATES

Subelement	Species	Monthly Presence												Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D				
	Bivalve													Jun-Sep	Jun-Oct	Jan-Dec	Jan-Dec
	Eastern oyster													May-Dec*	May-Jan*	-	Jan-Dec
	Stout razor clam													Jun-Nov	-	Jan-Dec	Jan-Dec
	Squid													-	Apr-Dec	Apr-Dec	Apr-Dec
	Crab													-	-	Jan-Dec	Jan-Dec
	Brown shrimp													-	-	May-Oct	May-Oct
	Mantis shrimp													-	-	Jan-Dec	Jan-Dec
	White shrimp													-	-	May-Oct	May-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	225.38	0.35
10B	Freshwater Marshes	104.51	0.16
10C	Swamps	794.04	1.24
10D	Scrub and Shrub Wetlands	186.58	0.29

ESI SHORELINE HABITAT TYPES

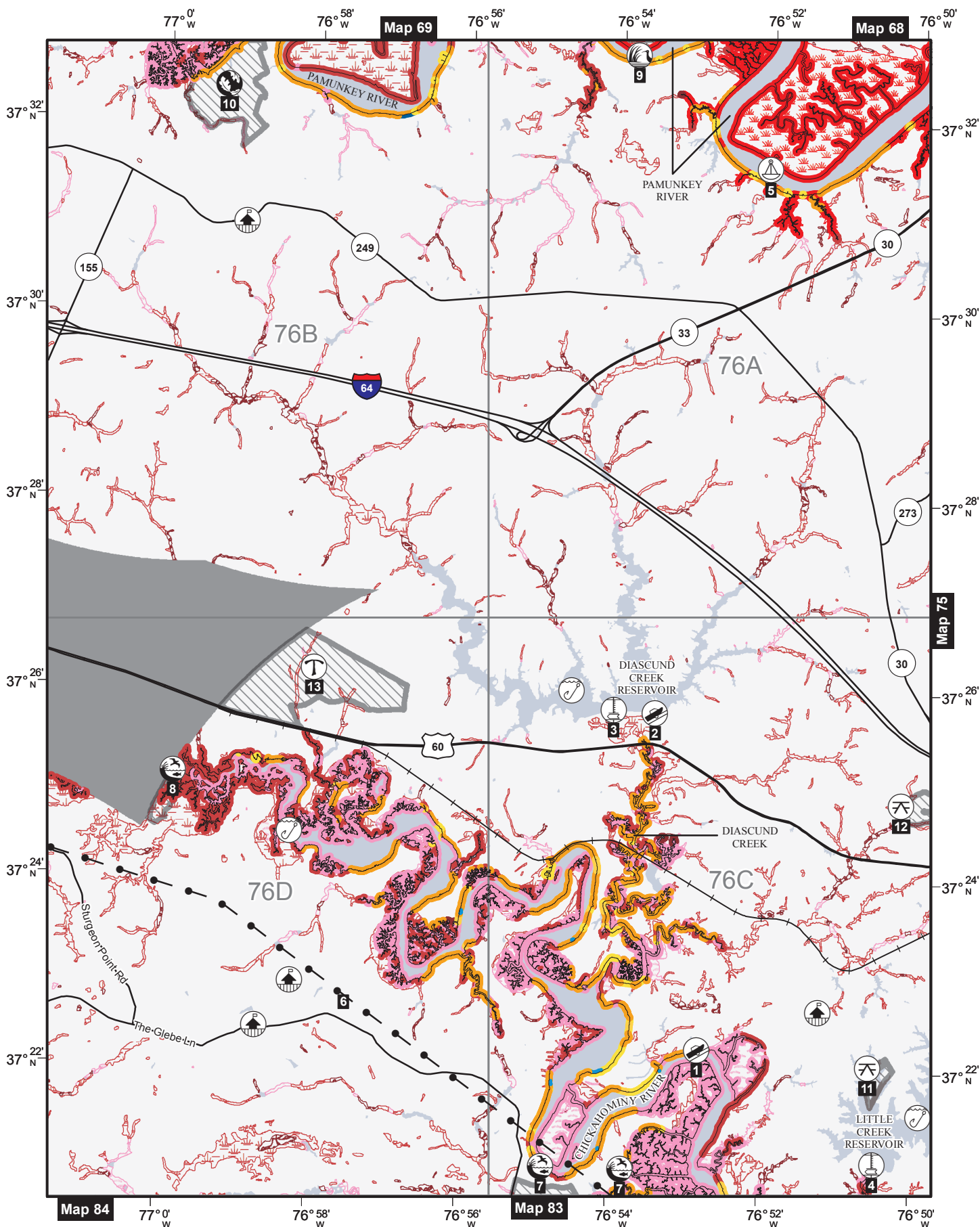
ESI Rank	Shoreline Habitat Classification	Length (Meters)	Length (Miles)	% of ESI Shoreline
10A	Salt and Brackish Water Marshes	22,116.09	13.74	76%
10B	Freshwater Marshes	183.16	0.11	1%
10C	Swamps	769.26	0.48	3%
10D	Scrub and Shrub Wetlands	1,164.94	0.72	4%
9B	Vegetated Low Banks	2,516.79	1.56	9%
8B	Sheltered, Solid Man-Made Structures	88.12	0.05	< 1%
8C	Sheltered Riprap	71.26	0.04	< 1%
6B	Riprap	354.25	0.22	1%
4	Coarse Grained Sand Beaches	1,223.24	0.76	4%
1B	Exposed, Solid Man-Made Structures	784.25	0.49	3%

Total ESI Shoreline: 29,271.36 Total ESI Shoreline: 18.19
Total Shoreline: 26,256.42 Total Shoreline: 16.31

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

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





Map 76

Chesapeake South



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

0 Not for Navigation 2 Miles
0 2 Kilometers

1:100,000



Map 76
Chesapeake South

HUMAN USE RESOURCES

DISPLAYED ON MAP (POINTS)			
Map ID	Type	Name	Phone
1	BOAT RAMP	BRICKYARD BOAT RAMP	JAMES CITY COUNTY JAMES CITY COUNTY
2	BOAT RAMP	DIASCUND RESERVOIR BOAT RAMP	
3	LOCK AND DAM	DIASCUND CREEK DAM	800-968-7229
4	LOCK AND DAM	LITTLE CREEK DAM	
5	REPEATED MEASUREMENT SITE	WQ - STATION RET4.1	

DISPLAYED ON MAP (LINES)		
Map ID	Type	Phone
6	PIPELINE	

DISPLAYED ON MAP (POLYGONS)			
Map ID	Type	Name	Phone
7	MANAGEMENT AREA	CHICKAHOMINY WILDLIFE MANAGEMENT AREA	804-367-0068
8	MANAGEMENT AREA	GAME FARM MARSH WILDLIFE MANAGEMENT AREA	
9	NATIONAL ESTUARINE RESEARCH RESERVE	CHESAPEAKE BAY VIRGINIA RESERVE	804-684-7135 703-841-5300
10	NATURE CONSERVANCY	THE NATURE CONSERVANCY	
11	PARK	CUMBERLAND MARSH	JAMES CITY COUNTY JAMES CITY COUNTY
12	PARK	LITTLE CREEK PARK	
		UPPER COUNTY PARK	
13	TRIBAL LAND	EASTERN CHICKAHOMINY SDTSA	

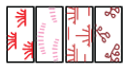
JURISDICTIONS

COUNTY: CHARLES CITY CO., JAMES CITY CO., KING WILLIAM CO., NEW KENT CO. **FEMA:** REGION I
COAST GUARD: DISTRICT 5, SECTOR HAMPTON ROADS **EPA:** REGION 3
USACE: NORTH ATLANTIC DIVISION, NORFOLK DISTRICT

SHORELINE RESOURCES

ESI POLYGON HABITAT TYPES

ESI Rank	Habitat Classification	Area (Acres)	Area (Sq. Miles)
10A	Salt and Brackish Water Marshes	1,678.23	2.62
10B	Freshwater Marshes	2,783.22	4.35
10C	Swamps	4,880.31	7.63
10D	Scrub and Shrub Wetlands	710.29	1.11



ESI SHORELINE HABITAT TYPES

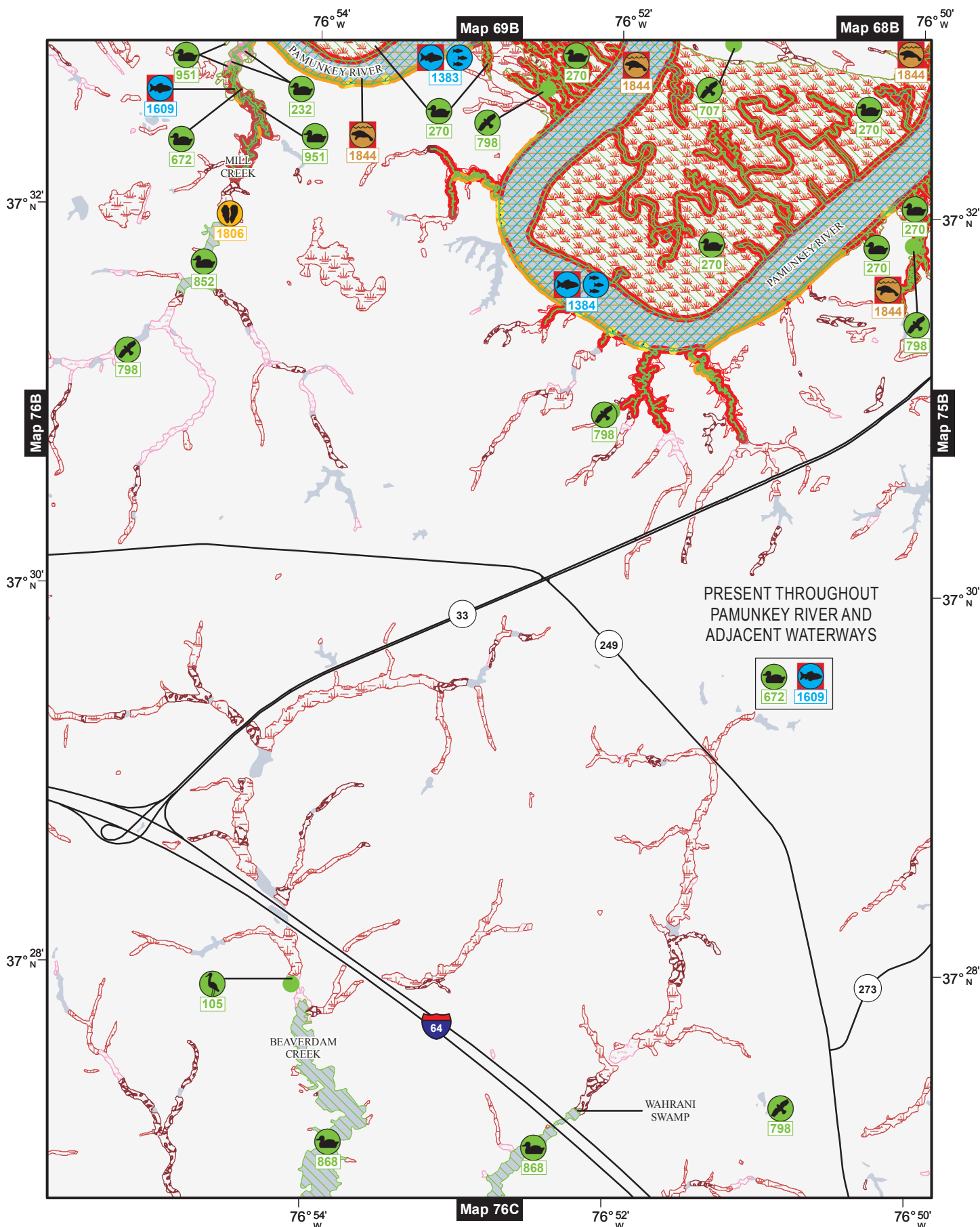
ESI Rank	Shoreline Habitat Classification	Length (Meters)	Length (Miles)	% of ESI Shoreline
10A	Salt and Brackish Water Marshes	80,977.17	50.32	12%
10B	Freshwater Marshes	387,367.43	240.70	58%
10C	Swamps	140,767.33	87.47	21%
10D	Scrub and Shrub Wetlands	2,059.67	1.28	< 1%
9B	Vegetated Low Banks	42,418.62	26.36	6%
8B	Sheltered, Solid Man-Made Structures	7,855.14	4.88	1%
8C	Sheltered Riprap	2,166.89	1.35	< 1%
4	Coarse Grained Sand Beaches	518.85	0.32	< 1%
3B	Scarps and Steep Slopes (Sand)	451.86	0.28	< 1%

Total ESI Shoreline: 664,582.96 Total ESI Shoreline: 412.95
 Total Shoreline: 560,044.39 Total Shoreline: 348.00

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

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





Map 76A
Chesapeake South



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

0 Not for Navigation 1 Miles
0 1 Kilometers

1:50,000



Map 76A
Chesapeake South

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	MD/VA	S	F	Concentration	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt
								J	F	M	A	M	J	J	A	S	O	N	D				
105	Wading	Great blue heron	Nesting				13 Nests													Feb-Jun	-	-	-
232	Waterfowl	Canada goose	Nesting				Present													Mar-Aug	-	-	Jun-Jul
	Waterfowl	Mallard	Nesting				Present													Mar-Aug	-	-	Jul-Aug
	Waterfowl	American coot	Wintering				Present													-	-	-	-
	Waterfowl	Blue-winged teal	Migration				1,000S													-	Feb-Apr	Aug-Oct	-
	Waterfowl	Canada goose	Nesting				Present													Mar-Aug	-	-	Jun-Jul
	Waterfowl	Canada goose	Wintering				1,000S													-	-	-	-
	Waterfowl	Gadwall	Wintering				100S													-	-	-	-
	Waterfowl	Green-winged teal	Wintering				1,000S													-	-	-	-
	Waterfowl	Mallard	Nesting				Present													Mar-Aug	-	-	Jul-Aug
	Waterfowl	Northern pintail	Wintering				100S													-	-	-	-
672	Waterfowl	American coot	Wintering				100S													-	-	-	-
	Waterfowl	Blue-winged teal	Migration				100S													-	Feb-Apr	Aug-Oct	-
	Waterfowl	Bufflehead	Wintering				100S													-	-	-	-
	Waterfowl	Canada goose	Wintering				10,000S													-	-	-	-
	Waterfowl	Canvasback	Wintering				100S													-	-	-	-
	Waterfowl	Gadwall	Wintering				1,000S													-	-	-	-
	Waterfowl	Green-winged teal	Wintering				100S													-	-	-	-
	Waterfowl	Mergansers	Wintering				100S													-	-	-	-
	Waterfowl	Northern pintail	Wintering				1,000S													-	-	-	-
	Waterfowl	Ring-necked duck	Wintering				1,000S													-	-	-	-
	Waterfowl	Ruddy duck	Wintering				1,000S													-	-	-	-
	Waterfowl	Scaup	Wintering				100S													-	-	-	-
	Waterfowl	Tundra swan	Wintering				100S													-	-	-	-
707	Raptor	Bald eagle	Roosting				-													-	-	-	-
798	Raptor	Bald eagle	Nesting				1 Nest													Dec-Jun	-	-	-
852	Waterfowl	Blue-winged teal	Migration				10S													-	Feb-Apr	Aug-Oct	-
	Waterfowl	Canada goose	Wintering				100S													-	-	-	-
	Waterfowl	Green-winged teal	Wintering				10S													-	-	-	-
	Waterfowl	Mallard	Wintering				10S													-	-	-	-
	Waterfowl	American black duck	Wintering				10S													-	-	-	-
868	Waterfowl	Blue-winged teal	Migration				10S													-	Feb-Apr	Aug-Oct	-
	Waterfowl	Brant	Wintering				Present													-	-	-	-
	Waterfowl	Bufflehead	Wintering				100S													-	-	-	-
	Waterfowl	Canada goose	Wintering				1,000S													-	-	-	-
	Waterfowl	Canvasback	Wintering				10S													-	-	-	-
	Waterfowl	Gadwall	Wintering				100S													-	-	-	-
	Waterfowl		Wintering																	-	-	-	-

BIRDS (continued)

Map ID	Subelement	Species	Mapping Qualifier	MD/VA		Monthly Presence												Nest	Eggs	Larvae	Juveniles	Adults
				S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N					
	Waterfowl	Green-winged teal	Wintering			10S												-	-	-	-	-
	Waterfowl	Mallard	Wintering			100S												-	-	-	-	-
	Waterfowl	Mergansers	Wintering			10S												-	-	-	-	-
	Waterfowl	Redhead	Wintering			10S												-	-	-	-	-
	Waterfowl	Ring-necked duck	Wintering			1,000S												-	-	-	-	-
	Waterfowl	Ruddy duck	Wintering			10S												-	-	-	-	-
	Waterfowl	Scaup	Wintering			100S												-	-	-	-	-
951	Waterfowl	American coot	Wintering			Present												-	-	-	-	-
	Waterfowl	Blue-winged teal	Migration			1,000S												-	Feb-Apr	Aug-Oct	-	-
	Waterfowl	Canada goose	Wintering			1,000S												-	-	-	-	-
	Waterfowl	Gadwall	Wintering			100S												-	-	-	-	-
	Waterfowl	Green-winged teal	Wintering			1,000S												-	-	-	-	-
	Waterfowl	Northern pintail	Wintering			100S												-	-	-	-	-

FISH

Map ID	Subelement	Species	Mapping Qualifier	MD/VA		Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
				S	F		J	F	M	A	M	J	J	A	S	O	N																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
1383	Diadromous	Alewife	Nursery Area			-																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											</

FISH (continued)

Map ID	Subelement	Species	Mapping Qualifier	MD/VA		Monthly Presence												Eggs	Larvae	Juveniles	Adults
				S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N	D			
1609	Freshwater	Yellow perch	Spawning Area			-												Feb-Mar	Mar-Apr	-	Feb-Mar
	Diadromous	Atlantic sturgeon	General Distribution	-/E	E	-												-	Jan-Dec	Jan-Dec	Jan-Dec
	Diadromous	Striped bass	Nursery Area			-												-	Mar-May	Jan-Dec	-

INVERTEBRATES


Map ID	Subelement	Species	Mapping Qualifier	MD/VA		Monthly Presence												Eggs	Larvae	Juveniles	Adults
				S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N	D			
1806	Bivalve	Eastern elliptio	Vulnerable Occurrence			-												-	-	Jan-Dec	Jan-Dec
	Bivalve	Eastern floater	Vulnerable Occurrence			-												-	-	Jan-Dec	Jan-Dec
	Bivalve	Northern lance	Vulnerable Occurrence			-												-	-	Jan-Dec	Jan-Dec
	Bivalve	Paper pondshell	Vulnerable Occurrence			-												-	-	Jan-Dec	Jan-Dec

MARINE MAMMALS

Map ID	Subelement	Species	Mapping Qualifier	MD/VA		Concentration	Monthly Presence												Calving	Pupping	Molt																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
				S	F		J	F	M	A	M	J	J	A	S	O	N	D																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
1844	Manatee	West Indian manatee	General Distribution	-/E	E	Rare																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												

WIDESPREAD IN MAPPED AREA (> 10 SQUARE KILOMETERS)

BIRDS



Subelement	Species	Mapping Qualifier	MD/VA		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			1,000S												-	-	-	-
		American wigeon			100S												-	-	-	-
		Mallard			1,000S												-	-	-	-

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-Jul	-	-	Jul-Aug

FISH

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	Diadromous													Feb-Apr	Feb-Apr	Feb-Apr	Apr-Oct	Feb-Apr
														-	-	-	Jan-May	Jan-Dec
														Mar-Jun	Mar-Jun	Apr-Jun	May-Oct	Mar-Jun
														Mar-Jun	-	-	Jan-Dec	Jan-Dec
	Estuarine Nursery													-	-	-	Jan-Dec	Jan-Dec
														-	-	Dec-Apr	Jan-Dec	May-Nov
														-	-	Apr-Dec	Jan-Dec	May-Oct
														-	-	-	Jan-Dec	Jan-Dec

FISH (continued)

Map ID	Subelement	Species	Mapping Qualifier	MD/VA		Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
				S	F		J	F	M	A	M	J	J	A	S	O	N	D					
		Red drum																	-	-	-	-	May-Nov
		Spot																	-	-	-	Nov-Apr	Apr-Dec
		Spotted seatrout																May-Jul	-	-	-	Apr-Nov	Apr-Nov
		Summer flounder																-	-	-	-	Apr-Oct	Jan-Dec
		Weakfish																-	-	May-Aug	-	Jun-Dec	Apr-Dec
		White perch																-	-	-	-	Jan-Dec	Jan-Dec
	Estuarine Resident	Pipefish																-	-	-	-	Jan-Dec	Jan-Dec
		Silversides																Mar-Jul	Mar-Jul	Apr-Sep	-	Jan-Dec	Jan-Dec
	Fish	Anchovies																Apr-Sep	-	-	-	-	Jan-Dec
	Freshwater	Black crappie																Mar-Jul	-	-	-	Jan-Dec	-
		Blue catfish																May-Jun	May-Jun	May-Jun	-	Jan-Dec	Jan-Dec
		Bullhead catfish																Apr-Jun	-	-	-	-	Jan-Dec
		Chain pickerel																Feb-Apr	-	-	-	-	Jan-Dec
		Channel catfish																May-Jun	-	-	-	Jan-Dec	Jan-Dec
		Common carp																May-Jun	-	-	-	-	Jan-Dec
		Golden shiner																Apr-Aug	-	-	-	Jan-Dec	Jan-Dec
		Largemouth bass																Mar-May	-	-	-	-	Jan-Dec
		Longnose gar																May-Jun	-	-	-	Jan-Dec	Jan-Dec
		Redfin pickerel																Feb-Mar	-	-	-	Jan-Dec	Jan-Dec
		Spotfin shiner																Jun-Aug	-	-	-	-	Jan-Dec
		Spottail shiner																May-Aug	-	-	-	-	Jan-Dec
		Sunfish																Mar-Jul	-	-	-	-	Jan-Dec
		Tessellated darter																Apr-Jun	-	-	-	-	Jan-Dec
		Yellow perch																-	-	-	-	Jan-Dec	Jan-Dec
	Marine Benthic	Spotted hake																-	-	-	-	Dec-Jun	Dec-Jun

INVERTEBRATES

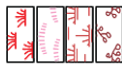
Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
Crab	Blue crab													-	-	-	Jan-Dec	Jan-Dec
Shrimp	Brown shrimp													-	-	-	May-Oct	May-Oct
	White shrimp													-	-	-	May-Oct	May-Oct

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	1,678.23	2.62
10B	Freshwater Marshes	136.07	0.21
10C	Swamps	798.17	1.25
10D	Scrub and Shrub Wetlands	214.70	0.34



ESI SHORELINE HABITAT TYPES

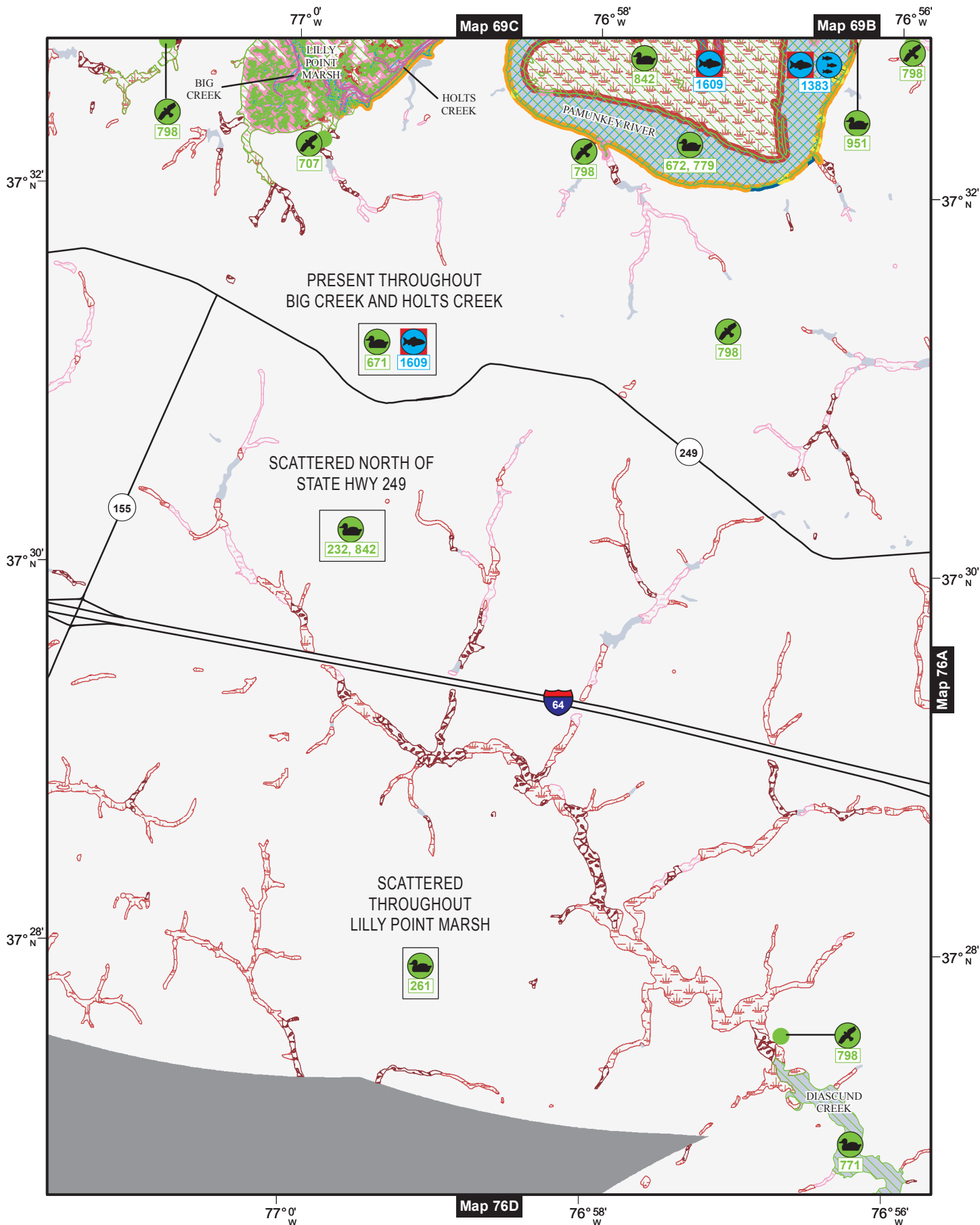
<i>ESI Rank</i>	<i>Shoreline Habitat Classification</i>	<i>Length (Meters)</i>	<i>Length (Miles)</i>	<i>% of ESI Shoreline</i>
10A	Salt and Brackish Water Marshes	80,977.17	50.32	84%
10B	Freshwater Marshes	1,870.85	1.16	2%
10C	Swamps	6,004.37	3.73	6%
10D	Scrub and Shrub Wetlands	60.74	0.04	< 1%
9B	Vegetated Low Banks	6,474.64	4.02	7%
8B	Sheltered, Solid Man-Made Structures	464.00	0.29	< 1%
8C	Sheltered Riprap	150.27	0.09	< 1%

Total ESI Shoreline: 96,002.03 Total ESI Shoreline: 59.65
 Total Shoreline: 95,146.46 Total Shoreline: 59.12

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 76B
Chesapeake South

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	MD/VA S F	Concentration	Monthly Presence											
					J	F	M	A	M	J	J	A	S	O	N	D
SAV	Submerged aquatic veg	High Ecological Value		Ephemeral												
SAV	Submerged aquatic veg	High Ecological Value		High												

BIRDS

Map ID	Subelement	Species	Mapping Qualifier	MD/VA S F	Concentration	Monthly Presence											
						J	F	M	A	M	J	J	A	S	O	N	D
232	Waterfowl	Canada goose	Nesting		Present												
261	Waterfowl	Mallard	Nesting		Present												
	Waterfowl	American black duck	Wintering		10S												
	Waterfowl	Blue-winged teal	Migration		10S												
	Waterfowl	Canada goose	Nesting		Present												
	Waterfowl	Canada goose	Wintering		100S												
	Waterfowl	Green-winged teal	Wintering		10S												
	Waterfowl	Mallard	Nesting		Present												
	Waterfowl	Mallard	Wintering		100S												
671	Waterfowl	American black duck	Wintering		1,000S												
	Waterfowl	American coot	Wintering		100S												
	Waterfowl	American wigeon	Wintering		100S												
	Waterfowl	Blue-winged teal	Migration		100S												
	Waterfowl	Bufflehead	Wintering		100S												
	Waterfowl	Canada goose	Wintering		10,000S												
	Waterfowl	Canvasback	Wintering		100S												
	Waterfowl	Gadwall	Wintering		1,000S												
	Waterfowl	Green-winged teal	Wintering		100S												
	Waterfowl	Mallard	Wintering		1,000S												
	Waterfowl	Mergansers	Wintering		100S												
	Waterfowl	Northern pintail	Wintering		1,000S												
	Waterfowl	Ring-necked duck	Wintering		1,000S												
	Waterfowl	Ruddy duck	Wintering		1,000S												
	Waterfowl	Scaup	Wintering		100S												
	Waterfowl	Tundra swan	Wintering		100S												
672	Waterfowl	American coot	Wintering		100S												
	Waterfowl	Blue-winged teal	Migration		100S												
	Waterfowl	Bufflehead	Wintering		100S												
	Waterfowl	Canada goose	Wintering		10,000S												
	Waterfowl	Canvasback	Wintering		100S												
	Waterfowl	Gadwall	Wintering		1,000S												

BIRDS (continued)

Map ID	Subelement	Species	Mapping Qualifier	MD/VA		Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt
				S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N	D			
	Waterfowl	Green-winged teal	Wintering			100S													-	-	-
	Waterfowl	Mergansers	Wintering			100S													-	-	-
	Waterfowl	Northern pintail	Wintering			1,000S													-	-	-
	Waterfowl	Ring-necked duck	Wintering			1,000S													-	-	-
	Waterfowl	Ruddy duck	Wintering			1,000S													-	-	-
	Waterfowl	Scaup	Wintering			100S													-	-	-
	Waterfowl	Tundra swan	Wintering			100S													-	-	-
707	Raptor	Bald eagle	Roosting			-													-	-	-
771	Waterfowl	American black duck	Wintering			10S													-	-	-
	Waterfowl	American wigeon	Wintering			100S													-	-	-
	Waterfowl	Blue-winged teal	Migration			10S													-	Feb-Apr	Aug-Oct
	Waterfowl	Brant	Wintering			Present													-	-	-
	Waterfowl	Bufflehead	Wintering			100S													-	-	-
	Waterfowl	Canada goose	Wintering			1,000S													-	-	-
	Waterfowl	Canvasback	Wintering			10S													-	-	-
	Waterfowl	Gadwall	Wintering			100S													-	-	-
	Waterfowl	Green-winged teal	Wintering			10S													-	-	-
	Waterfowl	Mallard	Wintering			100S													-	-	-
	Waterfowl	Mergansers	Wintering			10S													-	-	-
	Waterfowl	Redhead	Wintering			10S													-	-	-
	Waterfowl	Ring-necked duck	Wintering			1,000S													-	-	-
	Waterfowl	Ruddy duck	Wintering			10S													-	-	-
	Waterfowl	Scaup	Wintering			100S													-	-	-
779	Waterfowl	American black duck	Wintering			1,000S													-	-	-
	Waterfowl	American wigeon	Wintering			100S													-	-	-
	Waterfowl	Mallard	Wintering			1,000S													-	-	-
798	Raptor	Bald eagle	Nesting			1 Nest													Dec-Jun	-	-
842	Waterfowl	American black duck	Wintering			10S													-	-	-
	Waterfowl	Blue-winged teal	Migration			10S													-	Feb-Apr	Aug-Oct
	Waterfowl	Canada goose	Wintering			100S													-	-	-
	Waterfowl	Green-winged teal	Wintering			10S													-	-	-
	Waterfowl	Mallard	Wintering			100S													-	-	-
951	Waterfowl	American coot	Wintering			Present													-	-	-
	Waterfowl	Blue-winged teal	Migration			1,000S													-	Feb-Apr	Aug-Oct
	Waterfowl	Canada goose	Wintering			1,000S													-	-	-
	Waterfowl	Gadwall	Wintering			100S													-	-	-
	Waterfowl	Green-winged teal	Wintering			1,000S													-	-	-
	Waterfowl	Northern pintail	Wintering			100S													-	-	-

FISH

Map ID	Subelement	Species	Mapping Qualifier	MD/VA		Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
				S	F	J	F	M	A	M	J	J	A	S	O	N	D					
1383	Diadromous	Alewife	Nursery Area	-	-													-	-	Feb-Apr	Apr-Oct	-
	Diadromous	Alewife	Spawning Area	-	-													Feb-Apr	Feb-Apr	-	Mar-Oct	Feb-Apr
	Diadromous	American shad	Nursery Area	-	-													-	-	Mar-Jul	-	-
	Diadromous	American shad	Spawning Area	-	-													Feb-Jun	Feb-Jun	-	-	Feb-Jun
	Diadromous	Atlantic sturgeon	General Distribution	-/E	E													-	-	Jan-Dec	Jan-Dec	Jan-Dec
	Diadromous	Atlantic sturgeon	Migration	-/E	E													-	-	-	-	Jun-Nov
	Diadromous	Blueback herring	Nursery Area	-	-													-	-	Apr-Jun	May-Oct	-
	Diadromous	Blueback herring	Spawning Area	-	-													Mar-Jun	Mar-Jun	-	-	Mar-Jun
	Diadromous	Hickory shad	Nursery Area	-	-													-	-	Apr-Jun	Apr-Oct	-
	Diadromous	Hickory shad	Spawning Area	-	-													Feb-May	Feb-May	-	-	Feb-May
1609	Diadromous	Striped bass	Nursery Area	-	-													-	-	Mar-May	Jan-Dec	-
	Diadromous	Striped bass	Spawning Area	-	-													Mar-May	Mar-May	-	-	Feb-Jun
	Estuarine Nursery	White perch	Nursery Area	-	-													-	-	Apr-Jun	Jan-Dec	-
	Estuarine Nursery	White perch	Spawning Area	-	-													Mar-May	Mar-May	Apr-Jun	-	Mar-May
	Freshwater	Yellow perch	Spawning Area	-	-													Feb-Mar	Feb-Mar	Mar-Apr	-	Feb-Mar
	Diadromous	Atlantic sturgeon	General Distribution	-/E	E													-	-	Jan-Dec	Jan-Dec	Jan-Dec
	Diadromous	Striped bass	Nursery Area	-	-													-	-	Mar-May	Jan-Dec	-

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													Apr-Jul	-	-	Jul-Aug

FISH

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
Diadromous	Alewife													Feb-Apr	Feb-Apr	Feb-Apr	Apr-Oct	Feb-Apr
	American eel													-	-	-	Jan-May	Jan-Dec
	Blueback herring													Mar-Jun	Mar-Jun	Apr-Jun	May-Oct	Mar-Jun
	Gizzard shad													Mar-Jun	-	-	Jan-Dec	Jan-Dec
	Striped bass													-	-	-	Jan-Dec	Jan-Dec
	Atlantic croaker													-	-	Apr-Dec	Jan-Dec	May-Oct
	Atlantic menhaden													-	-	-	Jan-Dec	Jan-Dec
	Spot													-	-	-	Nov-Apr	Apr-Dec
	White perch													-	-	-	Jan-Dec	Jan-Dec
	Anchovies													Apr-Sep	-	-	-	Jan-Dec
Fish	Black crappie													Mar-Jul	-	-	Jan-Dec	Jan-Dec
	Blue catfish													May-Jun	May-Jun	May-Jun	Jan-Dec	Jan-Dec
	Bullhead catfish													Apr-Jun	-	-	-	Jan-Dec
	Chain pickerel													Feb-Apr	-	-	-	Jan-Dec
	Channel catfish													May-Jun	-	-	Jan-Dec	Jan-Dec
	Common carp													May-Jun	-	-	-	Jan-Dec

Chesapeake South: Map 76B

FISH (continued)

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	Golden shiner													Apr-Aug	-	-	Jan-Dec	Jan-Dec
	Largemouth bass													Mar-May	-	-	Jan-Dec	Jan-Dec
	Longnose gar													May-Jun	-	-	Jan-Dec	Jan-Dec
	Redfin pickerel													Feb-Mar	-	-	Jan-Dec	Jan-Dec
	Spotfin shiner													Jun-Aug	-	-	Jan-Dec	Jan-Dec
	Spottail shiner													May-Aug	-	-	Jan-Dec	Jan-Dec
	Sunfish													Mar-Jul	-	-	Jan-Dec	Jan-Dec
	Tessellated darter													Apr-Jun	-	-	Jan-Dec	Jan-Dec
	Yellow perch													-	-	-	Jan-Dec	Jan-Dec

INVERTEBRATES

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

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	353.05	0.55
10C	Swamps	1,052.84	1.65
10D	Scrub and Shrub Wetlands	213.05	0.33



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	35,436.02	22.02	70%
10C	Swamps	7,894.62	4.91	16%
10D	Scrub and Shrub Wetlands	116.52	0.07	< 1%
9B	Vegetated Low Banks	6,088.59	3.78	12%
8B	Sheltered, Solid Man-Made Structures	501.67	0.31	1%
3B	Scarps and Steep Slopes (Sand)	451.86	0.28	1%

Total ESI Shoreline: 50,489.30 Total ESI Shoreline: 31.37
 Total Shoreline: 48,716.96 Total Shoreline: 30.27

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 76C
Chesapeake South

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	MD/VA S F	Concentration	Monthly Presence											
					J	F	M	A	M	J	J	A	S	O	N	D
SAV	Submerged aquatic veg	High Ecological Value		Ephemeral												
SAV	Submerged aquatic veg	High Ecological Value		High												
SAV	Submerged aquatic veg	High Ecological Value		Low												

BIRDS

Map ID	Subelement	Species	Mapping Qualifier	MD/VA S F	Concentration	Monthly Presence										Nest	Mig.(S) Mar-May	Mig.(F) Aug-Nov	Molt
						J	F	M	A	M	J	J	A	S	O	N			
82	Diving	D. crested cormorant	Wintering		100S												-		-
	Waterfowl	Canvasback	Wintering		100S												-		-
	Waterfowl	Mergansers	Wintering		100S												-		-
	Waterfowl	Ring-necked duck	Wintering		10,000S												-		-
	Waterfowl	Ruddy duck	Wintering		1,000S												-		-
	Waterfowl	Scaup	Wintering		1,000S												-		-
147	Wading	Great blue heron	Nesting		17 Nests												Feb-Jun		-
150	Wading	Great blue heron	Nesting		10 Nests												Feb-Jun		-
185	Wading	Great blue heron	Nesting		56 Nests												Feb-Jun		-
232	Waterfowl	Canada goose	Nesting		Present												Mar-Aug		Jun-Jul
	Waterfowl	Mallard	Nesting		Present												Mar-Aug		Jul-Aug
770	Waterfowl	American wigeon	Wintering		100S												-		-
	Waterfowl	Bufflehead	Wintering		10S												-		-
	Waterfowl	Canada goose	Wintering		100S												-		-
	Waterfowl	Gadwall	Wintering		100S												-		-
	Waterfowl	Mallard	Wintering		100S												-		-
	Waterfowl	Mergansers	Wintering		10S												-		-
	Waterfowl	Ring-necked duck	Wintering		1,000S												-		-
	Waterfowl	Scaup	Wintering		10S												-		-
772	Waterfowl	American black duck	Wintering		10S												-		-
	Waterfowl	American wigeon	Wintering		100S												-		-
	Waterfowl	Blue-winged teal	Migration		10S												Feb-Apr	Aug-Oct	-
	Waterfowl	Brant	Wintering		Present												-		-
	Waterfowl	Canada goose	Wintering		1,000S												-		-
	Waterfowl	Canvasback	Wintering		10S												-		-
	Waterfowl	Gadwall	Wintering		100S												-		-
	Waterfowl	Green-winged teal	Wintering		10S												-		-
	Waterfowl	Mallard	Wintering		100S												-		-
	Waterfowl	Mergansers	Wintering		10S												-		-
	Waterfowl	Ring-necked duck	Wintering		1,000S												-		-

BIRDS (continued)

Map ID	Subelement	Species	Mapping Qualifier	MD/VA		Monthly Presence												Nest	Mig.(S)	Mig.(F)	Juveniles	Adults
				S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N					
	Waterfowl	Ruddy duck	Wintering			10S												-	-	-	-	-
	Waterfowl	Scaup	Wintering			100S												-	-	-	-	-
798	Raptor	Bald eagle	Nesting			1 Nest												Dec-Jun	-	-	-	-

FISH


Map ID	Subelement	Species	Mapping Qualifier	MD/VA		Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
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1403	Diadromous	Alewife	Nursery Area			-																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																

INVERTEBRATES

Map ID	Subelement	Species	Mapping Qualifier	MD/VA		Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
				S	F		J	F	M	A	M	J	J	A	S	O	N	D					
1805	Bivalve	Eastern floater	Vulnerable Occurrence			-													-	-	-	Jan-Dec	Jan-Dec
	Bivalve	Northern lance	Vulnerable Occurrence			-													-	-	-	Jan-Dec	Jan-Dec
	Bivalve	Paper pondshell	Vulnerable Occurrence			-													-	-	-	Jan-Dec	Jan-Dec

WIDESPREAD IN MAPPED AREA (> 10 SQUARE KILOMETERS)

BIRDS



Subelement	Species	Mapping Qualifier	MDVA		Concentration	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt
			S	F		J	F	M	A	M	J	J	A	S	O	N	D				
	American black duck	Wintering			100S													-	-	-	-
	American coot	Wintering			100S													-	-	-	-
	American wigeon	Wintering			1,000S													-	-	-	-
	Blue-winged teal	Migration			100S													-	Feb-Apr	Aug-Oct	-
	Bufflehead	Wintering			100S													-	-	-	-
	Canada goose	Wintering			10,000S													-	-	-	-
	Gadwall	Wintering			1,000S													-	-	-	-
	Green-winged teal	Wintering			100S													-	-	-	-
	Mallard	Wintering			1,000S													-	-	-	-
	Northern pintail	Wintering			100S													-	-	-	-
	Redhead	Wintering			10S													-	-	-	-
	Tundra swan	Wintering			100S													-	-	-	-

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				
	D. crested cormorant													-	-	-	-
	Wood duck													Apr-Jul	-	-	Jul-Aug

FISH

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	Alewife													Feb-Apr	-	Feb-Apr	Apr-Oct	Feb-Apr
	American eel													-	-	-	Jan-May	Jan-Dec
	Blueback herring													Mar-Jun	Mar-Jun	Apr-Jun	Mar-Oct	Mar-Dec
	Gizzard shad													Mar-Jun	-	-	Jan-Dec	Jan-Dec
	Striped bass													-	-	-	Jan-Dec	Jan-Dec
	White perch													-	-	-	Jan-Dec	Jan-Dec
	Black crappie													Mar-Jul	-	-	Jan-Dec	Jan-Dec
	Blue catfish													May-Jun	May-Jun	May-Jun	Jan-Dec	Jan-Dec
	Bullhead catfish													Apr-Jun	-	-	-	Jan-Dec
	Chain pickerel													Feb-Apr	-	-	-	Jan-Dec
	Channel catfish													May-Jun	-	-	Jan-Dec	Jan-Dec
	Common carp													May-Jun	-	-	-	Jan-Dec
	Golden shiner													Apr-Aug	-	-	Jan-Dec	Jan-Dec
	Largemouth bass													Mar-May	-	-	-	Jan-Dec
	Longnose gar													May-Jun	-	-	Jan-Dec	Jan-Dec
	Redfin pickerel													Feb-Mar	-	-	Jan-Dec	Jan-Dec
	Spotfin shiner													Jun-Aug	-	-	-	Jan-Dec
	Spottail shiner													May-Aug	-	-	-	Jan-Dec

FISH (continued)

Subelement	Species	Monthly Presence												Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D				
Sunfish	Tessellated darter																Jan-Dec
																	Jan-Dec
Yellow perch																	Jan-Dec
																	Jan-Dec

INVERTEBRATES

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

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	1,688.11	2.64
10C	Swamps	1,193.56	1.86
10D	Scrub and Shrub Wetlands	150.11	0.23

ESI SHORELINE HABITAT TYPES

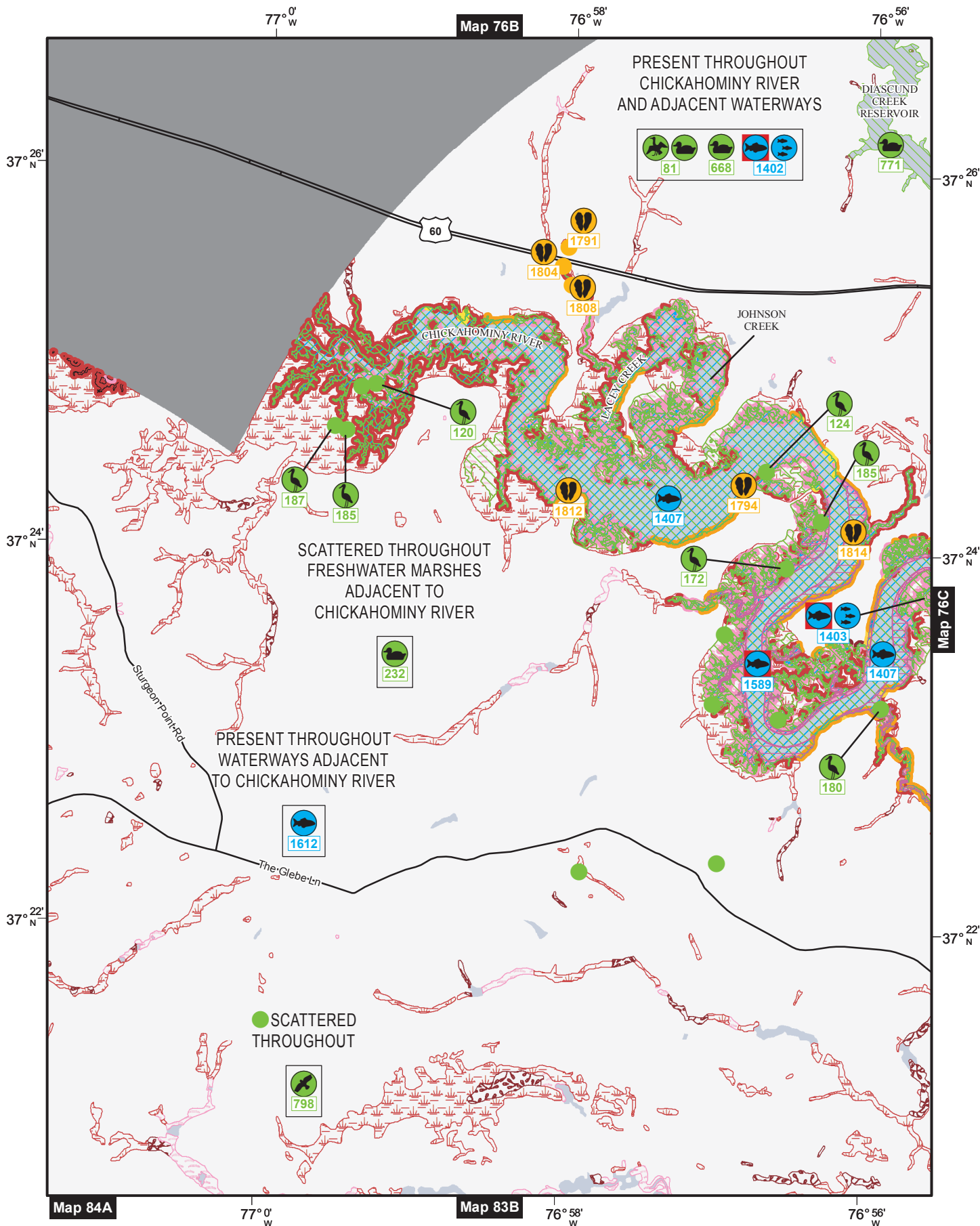
ESI Rank	Shoreline Habitat Classification	Length (Meters)	Length (Miles)	% of ESI Shoreline
10B	Freshwater Marshes	197,968.87	123.01	74%
10C	Swamps	40,687.90	25.28	15%
10D	Scrub and Shrub Wetlands	1,676.06	1.04	1%
9B	Vegetated Low Banks	19,982.48	12.42	7%
8B	Sheltered, Solid Man-Made Structures	6,099.91	3.79	2%
8C	Sheltered Riprap	1,703.91	1.06	1%
4	Coarse Grained Sand Beaches	443.72	0.28	< 1%

Total ESI Shoreline: 268,562.84 Total ESI Shoreline: 166.88
Total Shoreline: 227,910.54 Total Shoreline: 141.62

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 76D Chesapeake South



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

0 Not for Navigation 1 Miles
0 1 Kilometers

1:50,000



Map 76D
Chesapeake South

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	MD/VA S F	Concentration	Monthly Presence											
					J	F	M	A	M	J	J	A	S	O	N	D
SAV	Submerged aquatic veg	High Ecological Value		Ephemeral												
SAV	Submerged aquatic veg	High Ecological Value		High												
SAV	Submerged aquatic veg	High Ecological Value		Low												

BIRDS

Map ID	Subelement	Species	Mapping Qualifier	MD/VA S F	Concentration	Monthly Presence												Nest	Mig.(S) Mar-May	Mig.(F) Aug-Nov	Molt
						J	F	M	A	M	J	J	A	S	O	N	D				
81	Diving	D. crested cormorant	Wintering		100S													-	-	-	-
	Waterfowl	Bufflehead	Wintering		100S													-	-	-	-
	Waterfowl	Canvasback	Wintering		100S													-	-	-	-
	Waterfowl	Mergansers	Wintering		100S													-	-	-	-
	Waterfowl	Redhead	Wintering		10S													-	-	-	-
	Waterfowl	Ring-necked duck	Wintering		10,000S													-	-	-	-
	Waterfowl	Ruddy duck	Wintering		1,000S													-	-	-	-
	Waterfowl	Scaup	Wintering		1,000S													-	-	-	-
120	Wading	Great blue heron	Nesting		5 Nests													Feb-Jun	-	-	-
124	Wading	Great blue heron	Nesting		2 Nests													Feb-Jun	-	-	-
172	Wading	Great blue heron	Nesting		38 Nests													Feb-Jun	-	-	-
180	Wading	Great blue heron	Nesting		12 Nests													Feb-Jun	-	-	-
185	Wading	Great blue heron	Nesting		56 Nests													Feb-Jun	-	-	-
187	Wading	Great blue heron	Nesting		39 Nests													Feb-Jun	-	-	-
232	Waterfowl	Canada goose	Nesting		Present													Mar-Aug	-	-	Jun-Jul
	Waterfowl	Mallard	Nesting		Present													Mar-Aug	-	-	Jul-Aug
668	Waterfowl	American black duck	Wintering		100S													-	-	-	-
	Waterfowl	American coot	Wintering		100S													-	-	-	-
	Waterfowl	American wigeon	Wintering		1,000S													-	-	-	-
	Waterfowl	Blue-winged teal	Migration		100S													-	Feb-Apr	Aug-Oct	-
	Waterfowl	Canada goose	Wintering		10,000S													-	-	-	-
	Waterfowl	Gadwall	Wintering		1,000S													-	-	-	-
	Waterfowl	Green-winged teal	Wintering		100S													-	-	-	-
	Waterfowl	Mallard	Wintering		1,000S													-	-	-	-
	Waterfowl	Northern pintail	Wintering		100S													-	-	-	-
	Waterfowl	Tundra swan	Wintering		100S													-	-	-	-
771	Waterfowl	American black duck	Wintering		10S													-	-	-	-
	Waterfowl	American wigeon	Wintering		100S													-	-	-	-
	Waterfowl	Blue-winged teal	Migration		10S													-	Feb-Apr	Aug-Oct	-
	Waterfowl	Brant	Wintering		Present													-	-	-	-

BIRDS (continued)

Map ID	Subelement	Species	Mapping Qualifier	MD/VA		Monthly Presence												Nest	Mig.(S)	Mig.(F)	Juveniles	Adults
				S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N					
	Waterfowl	Bufflehead	Wintering			100S												-	-	-	-	-
	Waterfowl	Canada goose	Wintering			1,000S												-	-	-	-	-
	Waterfowl	Canvasback	Wintering			10S												-	-	-	-	-
	Waterfowl	Gadwall	Wintering			100S												-	-	-	-	-
	Waterfowl	Green-winged teal	Wintering			10S												-	-	-	-	-
	Waterfowl	Mallard	Wintering			100S												-	-	-	-	-
	Waterfowl	Mergansers	Wintering			10S												-	-	-	-	-
	Waterfowl	Redhead	Wintering			10S												-	-	-	-	-
	Waterfowl	Ring-necked duck	Wintering			1,000S												-	-	-	-	-
	Waterfowl	Ruddy duck	Wintering			10S												-	-	-	-	-
	Waterfowl	Scaup	Wintering			100S												-	-	-	-	-
798	Raptor	Bald eagle	Nesting			1 Nest												Dec-Jun	-	-	-	-

FISH

Map ID	Subelement	Species	Mapping Qualifier	MD/VA		Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
				S	F		J	F	M	A	M	J	J	A	S	O	N	D					
1402	Diadromous	Alewife	Nursery Area			-												-	-	-	Feb-Apr	Apr-Oct	-
	Diadromous	Alewife	Spawning Area			-												Feb-Apr	Feb-Apr	-	-	Feb-Apr	-
	Diadromous	Atlantic sturgeon	General Distribution	-/E	E	-												-	-	-	Jan-Dec	Jan-Dec	Jan-Dec
	Diadromous	Blueback herring	Nursery Area			-												-	-	-	Apr-Jun	May-Oct	-
	Diadromous	Blueback herring	Spawning Area			-												Mar-Jun	Mar-Jun	-	-	Mar-Jun	-
1403	Diadromous	Striped bass	Nursery Area			-												-	-	-	Mar-May	Jan-Dec	-
	Estuarine Nursery	White perch	Spawning Area			-												Mar-May	Mar-May	-	-	Mar-May	-
	Freshwater	Yellow perch	Spawning Area			-												Feb-Mar	Feb-Mar	-	-	Mar-Apr	-
	Diadromous	Alewife	Nursery Area			-												-	-	-	Feb-Apr	Apr-Oct	-
	Diadromous	Alewife	Spawning Area			-												Feb-Apr	Feb-Apr	-	-	Feb-Apr	-
	Diadromous	American shad	Nursery Area			-												-	-	-	Mar-Jul	Mar-Oct	Feb-Jun
	Diadromous	Atlantic sturgeon	General Distribution	-/E	E	-												-	-	-	Jan-Dec	Jan-Dec	Jan-Dec
	Diadromous	Blueback herring	Nursery Area			-												-	-	-	Apr-Jun	May-Oct	-
	Diadromous	Blueback herring	Spawning Area			-												Mar-Jun	Mar-Jun	-	-	Mar-Jun	-
	Diadromous	Striped bass	Nursery Area			-												-	-	-	Mar-May	Jan-Dec	-
1407	Estuarine Nursery	White perch	Spawning Area			-												Mar-May	Mar-May	-	-	Apr-Jun	-
	Freshwater	Yellow perch	Spawning Area			-												Feb-Mar	Feb-Mar	-	-	Mar-Apr	Mar-May
	Diadromous	American shad	Nursery Area			-												-	-	-	Mar-Jul	Mar-Oct	-
	Diadromous	American shad	Spawning Area			-												Feb-Jun	Feb-Jun	-	-	-	Feb-Jun
	Diadromous	Hickory shad	Nursery Area			-												-	-	-	Apr-Jun	Apr-Oct	-
	Diadromous	Hickory shad	Spawning Area			-												Feb-May	Feb-May	-	-	-	Feb-May
	Diadromous	Striped bass	Spawning Area			-												Mar-May	Mar-May	-	-	-	Feb-Jun
	Diadromous	Atlantic sturgeon	Migration	-/E	E	Fall Run Migration												-	-	-	-	-	Jun-Nov
1612	Diadromous	American shad	Nursery Area			-												-	-	-	Mar-Jul	Mar-Oct	Feb-Jun




INVERTEBRATES

Map ID	Subelement	Species	Mapping Qualifier	MD/VA		Concentration	Monthly Presence												Eggs	Larvae	Juveniles	Adults
				S	F		J	F	M	A	M	J	J	A	S	O	N	D				
1791	Bivalve	Elliptio complex	Vulnerable Occurrence	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Jan-Dec	Jan-Dec
	Bivalve	Variable spike	Vulnerable Occurrence	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Jan-Dec	Jan-Dec
1794	Bivalve	Eastern elliptio	Vulnerable Occurrence	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Jan-Dec	Jan-Dec
	Bivalve	Eastern floater	Vulnerable Occurrence	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Jan-Dec	Jan-Dec
	Bivalve	Paper pondshell	Vulnerable Occurrence	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Jan-Dec	Jan-Dec
	Bivalve	Tidewater mucket	Vulnerable Occurrence	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Jan-Dec	Jan-Dec
1804	Bivalve	Northern lance	Vulnerable Occurrence	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Jan-Dec	Jan-Dec
1808	Bivalve	Elliptio complex	Vulnerable Occurrence	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Jan-Dec	Jan-Dec
1812	Bivalve	Eastern elliptio	Vulnerable Occurrence	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Jan-Dec	Jan-Dec
	Bivalve	Eastern floater	Vulnerable Occurrence	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Jan-Dec	Jan-Dec
1814	Bivalve	Paper pondshell	Vulnerable Occurrence	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Jan-Dec	Jan-Dec
	Bivalve	Eastern elliptio	Vulnerable Occurrence	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Jan-Dec	Jan-Dec
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				
 Diving	D. crested cormorant													-	-	-	-
 Waterfowl	Wood duck													Apr-Jul	-	-	Jul-Aug

FISH

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
 Diadromous	Alewife													Feb-Apr	Feb-Apr	Feb-Apr	Apr-Oct	Feb-Apr
	American eel													-	-	-	Jan-May	Jan-Dec
	Blueback herring													Mar-Jun	Mar-Jun	Apr-Jun	May-Oct	Mar-Jun
	Gizzard shad													Mar-Jun	-	-	Jan-Dec	Jan-Dec
	Striped bass													-	-	-	Jan-Dec	Jan-Dec
 Estuarine Nursery	White perch													-	-	-	Jan-Dec	Jan-Dec
 Freshwater	Black crappie													Mar-Jul	-	-	Jan-Dec	-
	Blue catfish													May-Jun	May-Jun	May-Jun	Jan-Dec	Jan-Dec
	Bullhead catfish													Apr-Jun	-	-	-	Jan-Dec
	Chain pickerel													Feb-Apr	-	-	-	Jan-Dec
	Channel catfish													May-Jun	-	-	Jan-Dec	Jan-Dec
	Common carp													May-Jun	-	-	-	Jan-Dec
	Golden shiner													Apr-Aug	-	-	Jan-Dec	Jan-Dec
	Largemouth bass													Mar-May	-	-	-	Jan-Dec
	Longnose gar													May-Jun	-	-	Jan-Dec	Jan-Dec
	Redfin pickerel													Feb-Mar	-	-	Jan-Dec	Jan-Dec
	Spotfin shiner													Jun-Aug	-	-	-	Jan-Dec
	Spottail shiner													May-Aug	-	-	-	Jan-Dec
	Sunfish													Mar-Jul	-	-	-	Jan-Dec
	Tessellated darter													Apr-Jun	-	-	-	Jan-Dec
	Yellow perch													-	-	-	Jan-Dec	Jan-Dec

INVERTEBRATES

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

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	606.00	0.95
10C	Swamps	1,835.75	2.87
10D	Scrub and Shrub Wetlands	132.43	0.21

ESI SHORELINE HABITAT TYPES

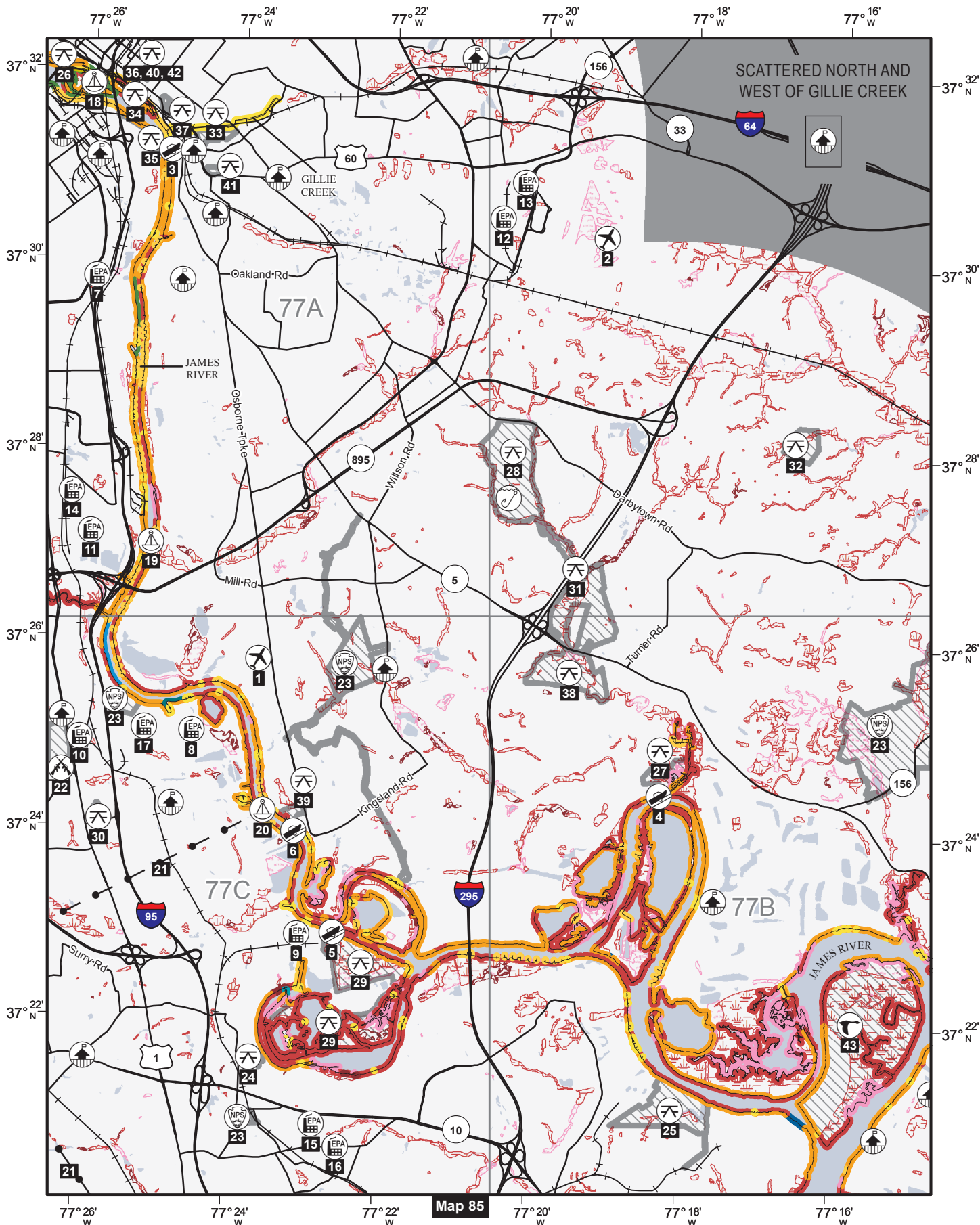
ESI Rank	Shoreline Habitat Classification	Length (Meters)	Length (Miles)	% of ESI Shoreline
10B	Freshwater Marshes	152,091.70	94.51	61%
10C	Swamps	86,180.43	53.55	35%
10D	Scrub and Shrub Wetlands	206.34	0.13	< 1%
9B	Vegetated Low Banks	9,872.91	6.13	4%
8B	Sheltered, Solid Man-Made Structures	789.57	0.49	< 1%
8C	Sheltered Riprap	312.71	0.19	< 1%
4	Coarse Grained Sand Beaches	75.13	0.05	< 1%

Total ESI Shoreline: 249,528.79 Total ESI Shoreline: 155.05
 Total Shoreline: 188,270.44 Total Shoreline: 116.99

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 77

Chesapeake South



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

0 Not for Navigation 2 Miles
0 2 Kilometers

1:100,000



Map 77
Chesapeake South

HUMAN USE RESOURCES

DISPLAYED ON MAP (POINTS)				
Map ID	Type	Name	Contact	Phone
1	AIRPORT	FLYING W		
2	AIRPORT	RICHMOND INTL		
3	BOAT RAMP	ANCARROW'S LANDING	LENE PENNINGTON, VDGIF	804-367-0058
4	BOAT RAMP	DEEP BOTTOM	LENE PENNINGTON, VDGIF	804-367-0058
5	BOAT RAMP	DUTCH GAP	LENE PENNINGTON, VDGIF	804-367-0058
6	BOAT RAMP	OSBORNE TURNPIKE BOAT LANDING	HENRICO COUNTY	
7	EPA FACILITY	BELLEMEADE POWER STATION	MGR PWR GEN O&M	804-343-3420
8	EPA FACILITY	CHEMOURS JAMES RIVER PLANT	PRODUCTION SUPERVISOR	804-383-6194
9	EPA FACILITY	CHESTERFIELD POWER STATION	STATION DIRECTOR	804-796-6000
10	EPA FACILITY	DEFENSE SUPPLY CENTER RICHMOND	ASSISTANT FIRE CHIEF	804-279-1401
11	EPA FACILITY	DUPONT - SPRUANCE	SAFETY, HEALTH, & ENVIRONMENTAL MGR.	804-383-4455
12	EPA FACILITY	RCS - AIRPORT	REFRIGERATION ENGINEER	804-994-5213
13	EPA FACILITY	REDDY ICE-RICHMOND (422)	PLANT MANAGER	804-652-0466
14	EPA FACILITY	RICHMOND TERMINAL	TERMINAL SUPERINTENDENT	804-743-5734
15	EPA FACILITY	SUPERVALU CHESTER	REGION MANAGER OF FACILITIES	804-746-6724
16	EPA FACILITY	UNIVAR USA INC	BRANCH OPERATIONS MANAGER	804-751-2730
17	EPA FACILITY	WAKO CHEMICALS USA, INC.	PLANT MANAGER	804-714-1957
18	REPEATED MEASUREMENT SITE	WQ - STATION TF5.2	CHESAPEAKE BAY PROGRAM	800-968-7229
19	REPEATED MEASUREMENT SITE	WQ - STATION TF5.2A	CHESAPEAKE BAY PROGRAM	800-968-7229
20	REPEATED MEASUREMENT SITE	WQ - STATION TF5.3	CHESAPEAKE BAY PROGRAM	800-968-7229

DISPLAYED ON MAP (LINES)			
Map ID	Type	Name	Phone
21	PIPELINE	PIPELINE	Contact
DISPLAYED ON MAP (POLYGONS)			
Map ID	Type	Name	Phone
22	MILITARY	DEFENSE SUPPLY CENTER RICHMOND	
23	NATIONAL PARK	RICHMOND	
24	PARK	BATTERY DANTZLER PARK	CHESTERFIELD COUNTY
25	PARK	BROWN-WILLIAMSON CHESTERFIELD PARK	CHESTERFIELD COUNTY
26	PARK	BROWNS ISLAND PARK	CITY OF RICHMOND
27	PARK	DEEP BOTTOM PARK	HENRICO COUNTY
28	PARK	DOREY PARK	HENRICO COUNTY
29	PARK	DUTCH GAP	CHESTERFIELD COUNTY
30	PARK	FORT STEVENS PARK	CHESTERFIELD COUNTY
31	PARK	FOUR MILE CREEK PARK	HENRICO COUNTY
32	PARK	GILL DALE PARK	HENRICO COUNTY
33	PARK	GILLIES CREEK PARK	CITY OF RICHMOND
34	PARK	GREAT SHIPLOCK PARK	CITY OF RICHMOND
35	PARK	JAMES RIVER PARK	CITY OF RICHMOND
36	PARK	JEFFERSON HILL PARK	CITY OF RICHMOND
37	PARK	LIBBIE HILL PARK	CITY OF RICHMOND
38	PARK	NEW MARKET PARK	HENRICO COUNTY
39	PARK	OSBORNE PARK	HENRICO COUNTY
40	PARK	PATRICK HENRY PARK	CITY OF RICHMOND
41	PARK	POWHATAN HILL PARK	CITY OF RICHMOND
42	PARK	TAYLORS HILL PARK	CITY OF RICHMOND
43	WILDLIFE REFUGE	PRESQUILE NATIONAL WILDLIFE REFUGE	UNITED STATES FISH AND WILDLIFE SERVICE
			804-829-9020

JURISDICTIONS

COUNTY: CHARLES CITY COUNTY, CHESTERFIELD COUNTY, HENRICO CO., RICHMOND CITY
COAST GUARD: DISTRICT 5, SECTOR HAMPTON ROADS
USACE: NORTH ATLANTIC DIVISION, NORFOLK DISTRICT

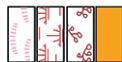
FEMA:
EPA:

REGION I
 REGION 3

SHORELINE RESOURCES

ESI POLYGON HABITAT TYPES

ESI Rank	Habitat Classification	Area (Acres)	Area (Sq. Miles)
10B	Freshwater Marshes	1,600.02	2.50
10C	Swamps	6,122.41	9.57
10D	Scrub and Shrub Wetlands	272.47	0.43
9A	Sheltered Tidal Flats	10.83	0.02



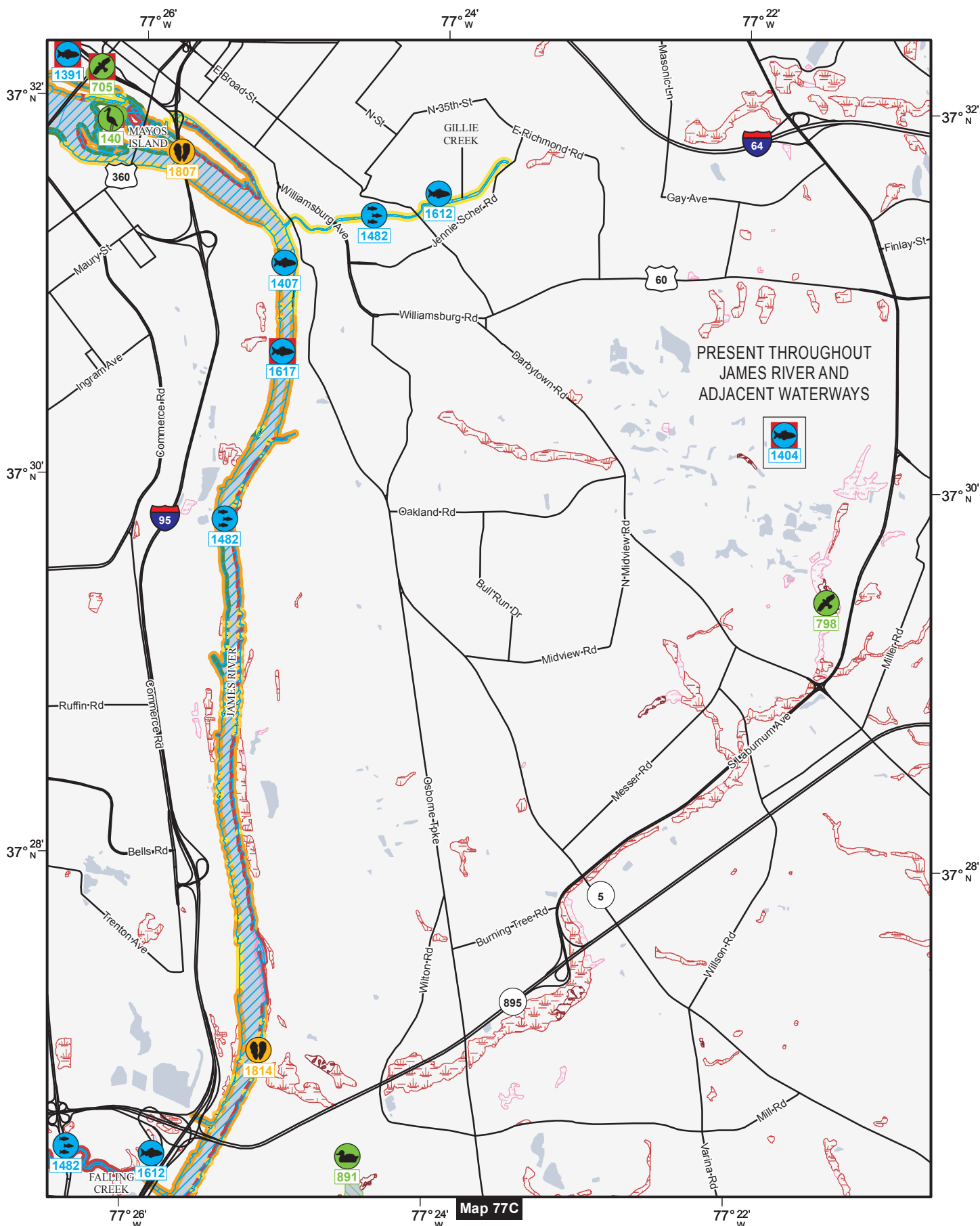
ESI SHORELINE HABITAT TYPES

ESI Rank	Shoreline Habitat Classification	Length (Meters)	Length (Miles)	% of ESI Shoreline
10A	Salt and Brackish Water Marshes	81.00	0.05	< 1%
10B	Freshwater Marshes	70,084.91	43.55	18%
10C	Swamps	146,002.28	90.72	38%
10D	Scrub and Shrub Wetlands	1,268.50	0.79	< 1%
9A	Sheltered Tidal Flats	42,961.51	26.70	11%
9B	Vegetated Low Banks	84,424.03	52.46	22%
8A	Sheltered Scarps (Bedrock/Mud/Clay)	402.90	0.25	< 1%
8B	Sheltered, Solid Man-Made Structures	14,559.46	9.05	4%
8C	Sheltered Riprap	10,800.47	6.71	3%
6A	Gravel Beaches	662.11	0.41	< 1%
6D	Boulder Rubble	6,750.68	4.19	2%
5	Mixed Sand and Gravel Beaches	200.22	0.12	< 1%
4	Coarse Grained Sand Beaches	1,414.73	0.88	< 1%
3A	Fine to Medium Grained Sand Beaches	69.20	0.04	< 1%
3B	Scarps and Steep Slopes (Sand)	640.26	0.40	< 1%
Total ESI Shoreline:		380,322.27	236.32	
Total Shoreline:		265,240.55	164.81	

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

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

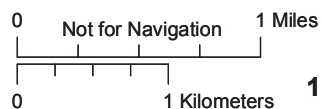




Map 77A
Chesapeake South



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



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Map 77A
Chesapeake South

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	MD/VFA	S	F	Concentration	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt
								J	F	M	A	M	J	J	A	S	O	N	D				
140	Wading	Great blue heron	Nesting				75 Nests													Feb-Jun	-	-	-
	Wading	Great egret	Nesting				6 Nests													Apr-Aug	-	-	-
705	Raptor	Peregrine falcon	Nesting			-JT	-													Feb-Jun	-	-	-
798	Raptor	Bald eagle	Nesting				1 Nest													Dec-Jun	-	-	-
891	Waterfowl	Canada goose	Wintering				1,000S													-	-	-	-
	Waterfowl	Mallard	Wintering				100S													-	-	-	-



FISH

Map ID	Subelement	Species	Mapping Qualifier	MD/VFA	S	F	Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
								J	F	M	A	M	J	J	A	S	O	N	D					
1391	Diadromous	Alewife	Nursery Area				-													Feb-Apr	Feb-Apr	Feb-Apr	Apr-Oct	-
	Diadromous	Alewife	Spawning Area				-													-	-	Mar-Jul	Mar-Oct	-
	Diadromous	American shad	Nursery Area				-													Feb-Jun	Feb-Jun	-	-	Feb-Jun
	Diadromous	American shad	Spawning Area				-													-	-	Jan-Dec	Jan-Dec	Jan-Dec
	Diadromous	Atlantic sturgeon	General Distribution			-JE	E													-	-	Apr-Jun	May-Oct	-
	Diadromous	Blueback herring	Nursery Area				-													Mar-Jun	Mar-Jun	-	-	Mar-Jun
	Diadromous	Blueback herring	Spawning Area				-													-	-	Apr-Jun	Apr-Oct	-
	Diadromous	Hickory shad	Nursery Area				-													Feb-May	Feb-May	-	-	Feb-May
	Diadromous	Hickory shad	Spawning Area				-													-	-	Mar-May	Jan-Dec	-
	Diadromous	Striped bass	Nursery Area				-													Mar-May	Mar-May	-	-	Feb-Jun
	Diadromous	Striped bass	Spawning Area				-													Feb-Mar	Feb-Mar	Mar-Apr	-	Feb-Mar
1404	Freshwater	Yellow perch	Spawning Area				-													-	-	Feb-Apr	Apr-Oct	-
	Diadromous	Alewife	Nursery Area				-													Feb-Apr	Feb-Apr	-	-	Feb-Apr
	Diadromous	Alewife	Spawning Area				-													-	-	Jan-Dec	Jan-Dec	Jan-Dec
	Diadromous	Atlantic sturgeon	General Distribution			-JE	E													-	-	Apr-Jun	May-Oct	-
	Diadromous	Blueback herring	Nursery Area				-													Mar-Jun	Mar-Jun	-	-	Mar-Jun
	Diadromous	Blueback herring	Spawning Area				-													-	-	Mar-May	Jan-Dec	-
	Diadromous	Striped bass	Nursery Area				-													Feb-Mar	Feb-Mar	Mar-Apr	-	Feb-Mar
	Freshwater	Yellow perch	Spawning Area				-													-	-	Mar-Jul	Mar-Oct	-
1407	Diadromous	American shad	Nursery Area				-													Feb-Jun	Feb-Jun	-	-	Feb-Jun
	Diadromous	American shad	Spawning Area				-													-	-	Apr-Jun	Apr-Oct	-
	Diadromous	Hickory shad	Nursery Area				-													Feb-May	Feb-May	-	-	Feb-May
	Diadromous	Hickory shad	Spawning Area				-													Mar-May	Mar-May	-	-	Feb-May
	Diadromous	Striped bass	Nursery Area				-													Mar-May	Mar-May	Apr-Jun	-	Mar-May
1482	Estuarine Nursery	White perch	Spawning Area				-													-	-	Mar-Jul	Mar-Oct	Feb-Jun
1612	Diadromous	American shad	Nursery Area				-													Sep-Oct	Sep-Oct	-	-	Aug-Oct
1617	Diadromous	Atlantic sturgeon	Spawning Area				-													-	-	-	-	-

INVERTEBRATES

Map ID	Subelement	Species	Mapping Qualifier	MD/VA		Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
				S	F		J	F	M	A	M	J	J	A	S	O	N	D					
1807	Bivalve	Eastern elliptio	Vulnerable Occurrence			-													-	-	Jan-Dec	Jan-Dec	
	Bivalve	Northern lance	Vulnerable Occurrence			-													-	-	Jan-Dec	Jan-Dec	
1814	Bivalve	Eastern elliptio	Vulnerable Occurrence			-													-	-	Jan-Dec	Jan-Dec	
ALSO PRESENT IN MAPPED AREA (GENERAL DISTRIBUTION)																							

FISH

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	Alewife													Feb-Apr	Feb-Apr	Feb-Apr	Apr-Oct	Feb-Apr
	American eel													-	-	-	Jan-May	Jan-Dec
	Blueback herring													Mar-Jun	Mar-Jun	Apr-Jun	May-Oct	Mar-Jun
	Gizzard shad													Mar-Jun	-	-	Jan-Dec	Jan-Dec
	Striped bass													-	-	-	Jan-Dec	Jan-Dec
	White perch													-	-	-	Jan-Dec	Jan-Dec
	Black crappie													Mar-Jul	-	-	Jan-Dec	-
	Blue catfish													May-Jun	May-Jun	May-Jun	Jan-Dec	Jan-Dec
	Bullhead catfish													Apr-Jun	-	-	-	Jan-Dec
	Chain pickerel													Feb-Apr	-	-	-	Jan-Dec
	Channel catfish													May-Jun	-	-	Jan-Dec	Jan-Dec
	Common carp													May-Jun	-	-	-	Jan-Dec
	Golden shiner													Apr-Aug	-	-	Jan-Dec	Jan-Dec
	Largemouth bass													Mar-May	-	-	-	Jan-Dec
	Longnose gar													May-Jun	-	-	Jan-Dec	Jan-Dec
	Redfin pickerel													Feb-Mar	-	-	Jan-Dec	Jan-Dec
	Spotfin shiner													Jun-Aug	-	-	-	Jan-Dec
	Spottail shiner													May-Aug	-	-	-	Jan-Dec
	Sunfish													Mar-Jul	-	-	-	Jan-Dec
	Tessellated darter													Apr-Jun	-	-	-	Jan-Dec
	Yellow perch													-	-	-	Jan-Dec	Jan-Dec

INVERTEBRATES

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	Blue crab													-	-	-	Jan-Dec	Jan-Dec

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	95.13	0.15
10C	Swamps	678.81	1.06
10D	Scrub and Shrub Wetlands	28.19	0.04



ESI SHORELINE HABITAT TYPES

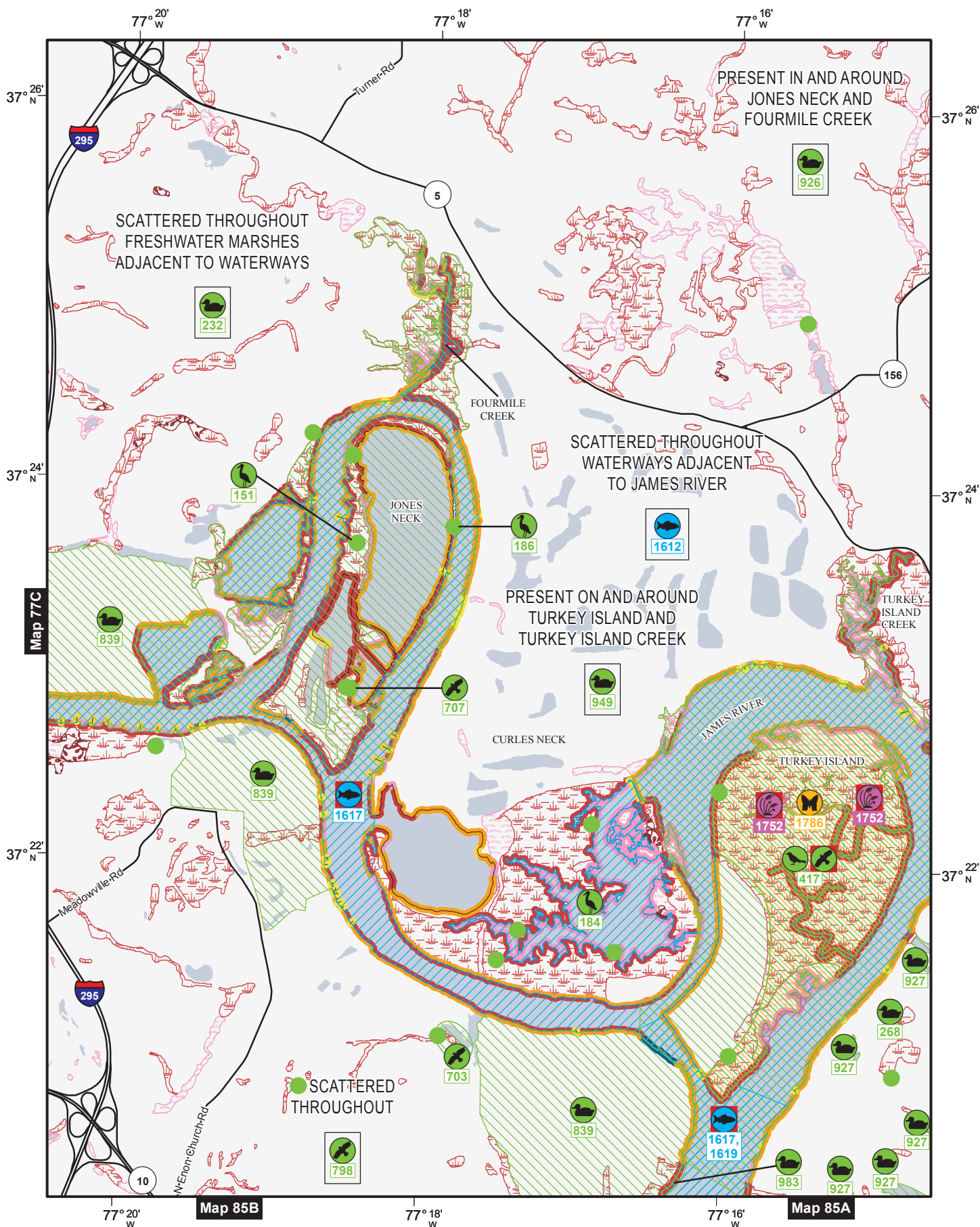
ESI Rank	Shoreline Habitat Classification	Length (Meters)	Length (Miles)	% of ESI Shoreline
10B	Freshwater Marshes	1,157.81	0.72	2%
10C	Swamps	15,238.80	9.47	24%
9A	Sheltered Tidal Flats	274.08	0.17	< 1%
9B	Vegetated Low Banks	26,799.24	16.65	42%
8A	Sheltered Scarps (Bedrock/Mud/Clay)	402.90	0.25	1%
8B	Sheltered, Solid Man-Made Structures	8,596.22	5.34	13%
8C	Sheltered Riprap	5,196.13	3.23	8%
6D	Boulder Rubble	6,750.68	4.19	10%

Total ESI Shoreline: 64,415.86 Total ESI Shoreline: 40.03
 Total Shoreline: 47,732.27 Total Shoreline: 29.66

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

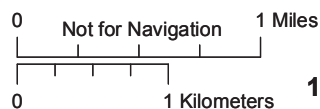




Map 77B
Chesapeake South



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



1:50,000



Map 77B
Chesapeake South

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	MD/VA S F	Concentration	Monthly Presence											
					J	F	M	A	M	J	J	A	S	O	N	D
SAV	Submerged aquatic veg	High Ecological Value		Ephemeral												
SAV	Submerged aquatic veg	High Ecological Value		High												

BIRDS

Map ID	Subelement	Species	Mapping Qualifier	MD/VA S F	Concentration	Monthly Presence											
						J	F	M	A	M	J	J	A	S	O	N	D
151	Wading	Great blue heron	Nesting		28 Nests												
184	Wading	Great blue heron	Nesting		35 Nests												
186	Wading	Great blue heron	Nesting		23 Nests												
232	Waterfowl	Canada goose	Nesting		Present												
	Waterfowl	Mallard	Nesting		Present												
268	Waterfowl	American black duck	Wintering		10S												
	Waterfowl	Canada goose	Nesting		Present												
	Waterfowl	Mallard	Nesting		Present												
	Waterfowl	Mallard	Wintering		10S												
	Waterfowl	Ring-necked duck	Wintering		100S												
417	Passerine	Prothonotary warbler	Nesting		High												
	Raptor	Bald eagle	Nesting		-												
	Raptor	Peregrine falcon	General Distribution	-JT	-												
703	Raptor	Bald eagle	Concentration Area		20 Birds												
707	Raptor	Bald eagle	Roosting		-												
798	Raptor	Bald eagle	Nesting		1 Nest												
839	Waterfowl	Canada goose	Wintering		100S												
926	Waterfowl	American black duck	Wintering		10S												
	Waterfowl	American wigeon	Wintering		10S												
	Waterfowl	Blue-winged teal	Migration		10S												
	Waterfowl	Gadwall	Wintering		10S												
	Waterfowl	Green-winged teal	Wintering		10S												
	Waterfowl	Mallard	Wintering		10S												
	Waterfowl	Ring-necked duck	Wintering		100S												
927	Waterfowl	American black duck	Wintering		10S												
	Waterfowl	Mallard	Wintering		10S												
	Waterfowl	Ring-necked duck	Wintering		100S												
949	Waterfowl	American black duck	Wintering		1,000S												
	Waterfowl	Mallard	Wintering		1,000S												
	Waterfowl	Ring-necked duck	Wintering		10S												
983	Waterfowl	American black duck	Wintering		10S												

BIRDS (continued)

Map ID	Subelement	Species	Mapping Qualifier	MD/VA		Concentration	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
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FISH

Map ID	Subelement	Species	Mapping Qualifier	MD/VA		Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
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1612	Diadromous	American shad	Nursery Area			-																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		

HABITATS & RARE PLANTS

Map ID	Subelement	Species	Mapping Qualifier	MD/VA		Monthly Presence												Concentration	Nest	Eggs	Larvae	Juveniles	Adults																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
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1752	Wetland	Sensitive joint-vetch	Vulnerable Occurrence	E/T	T	-																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															

INVERTEBRATES



Map ID	Subelement	Species	Mapping Qualifier	MD/VA		Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults	
				S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N						D
1786	Insect	Monarch butterfly	Migration			-													-	-	-	-	Sep-Oct

WIDESPREAD IN MAPPED AREA (> 10 SQUARE KILOMETERS)

BIRDS





<div><div></div><div></div></div>	Subelement	Species	Mapping Qualifier	MD/VA		Concentration	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt
				S	F		J	F	M	A	M	J	J	A	S	O	N	D				
<div><div></div><div></div></div>	Raptor	Bald eagle	Concentration Area			Moderate-High													-	-	-	-
	Waterfowl	American black duck	Wintering			100S													-	-	-	-
American wigeon		Wintering			100S													-	-	-	-	
	Blue-winged teal	Migration			100S													-	Feb-Apr	Aug-Oct	-	
	Bufflehead	Wintering			10S													-	-	-	-	
	Canada goose	Wintering			1,000S													-	-	-	-	
	Canada goose	Wintering			10,000S													-	-	-	-	
	Gadwall	Wintering			100S													-	-	-	-	
	Green-winged teal	Wintering			100S													-	-	-	-	
	Mallard	Wintering			100S													-	-	-	-	
	Mergansers	Wintering			10S													-	-	-	-	
	Ring-necked duck	Wintering			1,000S													-	-	-	-	
	Scaup	Wintering			100S													-	-	-	-	
	Snow goose	Wintering			1,000S													-	-	-	-	
	Tundra swan	Wintering			Present													-	-	-	-	

FISH




Subelement	Species	Mapping Qualifier	MD/VA		Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
			S	F		J	F	M	A	M	J	J	A	S	O	N	D					
	Diadromous	Alewife			-													-	-	Feb-Apr	Apr-Oct	-
		Alewife			-													Feb-Apr	Feb-Apr	-	Mar-Oct	Feb-Apr
		American shad			-													-	-	Mar-Jul	-	-
		American shad			-													Feb-Jun	Feb-Jun	-	-	Feb-Jun
	Atlantic sturgeon	General Distribution	-/E	E	-													-	-	Jan-Dec	Jan-Dec	Jan-Dec
	Blueback herring	Nursery Area			-													-	-	Apr-Jun	May-Oct	-
	Blueback herring	Spawning Area			-													Mar-Jun	Mar-Jun	-	-	Mar-Jun
	Hickory shad	Nursery Area			-													-	-	Apr-Jun	Apr-Oct	-
	Hickory shad	Spawning Area			-													Feb-May	Feb-May	-	-	Feb-May
	Striped bass	Nursery Area			-													-	-	Mar-May	Jan-Dec	-
	Striped bass	Spawning Area			-													Mar-May	Mar-May	-	-	Feb-Jun
	White perch	Spawning Area			-													Mar-May	Mar-May	Apr-Jun	-	Mar-May
	Freshwater	Yellow perch			-													Feb-Mar	Feb-Mar	Mar-Apr	-	Feb-Mar

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				
	Diving													-	-	-	-
	Gull/Tern													-	-	-	-
	Terns													-	-	-	-
	Marsh passerine													-	-	-	-
	Northern harrier													-	Nov-Mar	-	-
	Osprey													-	-	-	-
	Osprey													-	-	-	-
	Shorebirds													-	-	-	-
	American woodcock													-	Feb-Apr	Oct-Dec	-
	Rails													-	-	-	-
	Wading birds													-	-	-	-
	Wood duck													Apr-Jul	-	-	Jul-Aug

FISH

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	Alewife													Feb-Apr	Feb-Apr	Feb-Apr	Apr-Oct	Feb-Apr
	American eel													-	-	-	Jan-May	Jan-Dec
 	Blueback herring													Mar-Jun	Mar-Jun	Apr-Jun	May-Oct	Mar-Jun
	Gizzard shad													Mar-Jun	-	-	Jan-Dec	Jan-Dec
	Striped bass													-	-	-	Jan-Dec	Jan-Dec
	White perch													-	-	-	Jan-Dec	Jan-Dec
	Black crappie													-	-	-	Jan-Dec	Jan-Dec
	Blue catfish													Mar-Jul	-	-	Jan-Dec	-
	Bullhead catfish													May-Jun	May-Jun	Jan-Dec	Jan-Dec	Jan-Dec
	Chain pickerel													Apr-Jun	-	-	-	Jan-Dec
	Channel catfish													Feb-Apr	-	-	-	Jan-Dec
	Common carp													May-Jun	-	-	Jan-Dec	Jan-Dec
	Golden shiner													May-Jun	-	-	-	Jan-Dec
	Largemouth bass													Apr-Aug	-	-	Jan-Dec	Jan-Dec
	Longnose gar													Mar-May	-	-	-	Jan-Dec
	Redfin pickerel													May-Jun	-	-	Jan-Dec	Jan-Dec
	Spotfin shiner													Feb-Mar	-	-	Jan-Dec	Jan-Dec
	Spottail shiner													Jun-Aug	-	-	-	Jan-Dec
	Sunfish													May-Aug	-	-	-	Jan-Dec
	Tessellated darter													Mar-Jul	-	-	-	Jan-Dec
	Yellow perch													Apr-Jun	-	-	-	Jan-Dec
														-	-	-	Jan-Dec	Jan-Dec

REPTILES & AMPHIBIANS

Subelement	Species	Monthly Presence												Nest	Hatch	Internest	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	Diamondback terrapin													May-Aug	-	-	Apr-Oct	Apr-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

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	806.33	1.26
10C	Swamps	2,963.04	4.63
10D	Scrub and Shrub Wetlands	48.20	0.08



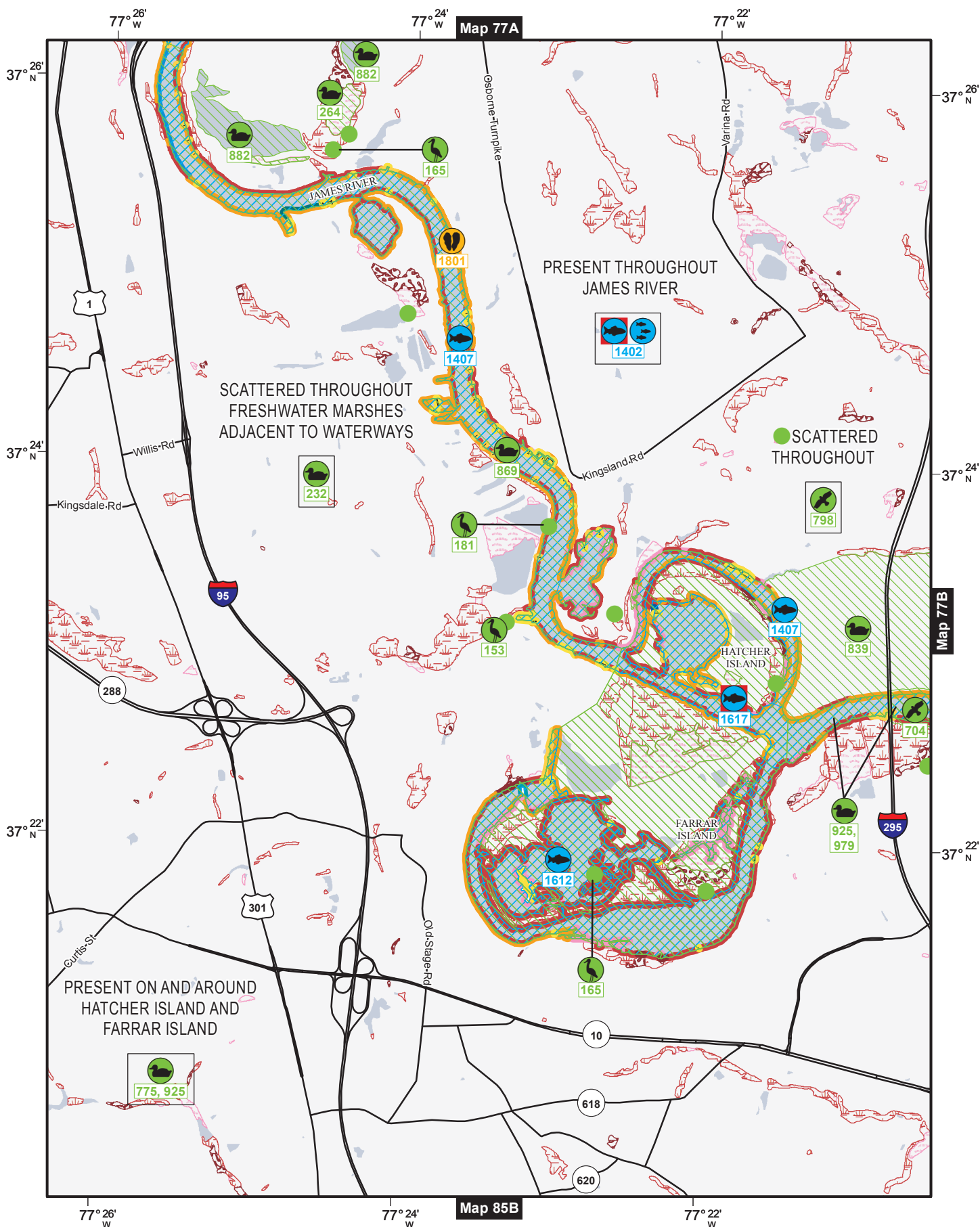
ESI SHORELINE HABITAT TYPES

<i>ESI Rank</i>	<i>Shoreline Habitat Classification</i>	<i>Length (Meters)</i>	<i>Length (Miles)</i>	<i>% of ESI Shoreline</i>
10A	Salt and Brackish Water Marshes	81.00	0.05	< 1%
10B	Freshwater Marshes	53,482.36	33.23	26%
10C	Swamps	83,053.47	51.61	40%
10D	Scrub and Shrub Wetlands	185.21	0.12	< 1%
9A	Sheltered Tidal Flats	34,628.17	21.52	17%
9B	Vegetated Low Banks	30,692.64	19.07	15%
8B	Sheltered, Solid Man-Made Structures	1,644.53	1.02	1%
8C	Sheltered Riprap	2,209.83	1.37	1%
3B	Scarps and Steep Slopes (Sand)	640.26	0.40	< 1%
Total ESI Shoreline:		206,617.47	Total ESI Shoreline:	128.39
		136,191.34	Total Shoreline:	84.63

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

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





Map 77C
Chesapeake South

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	MD/VFA	S	F	Concentration	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt
								J	F	M	A	M	J	J	A	S	O	N	D				
153	Wading	Great blue heron	Nesting				4 Nests													Feb-Jun	-	-	-
165	Wading	Great blue heron	Nesting				42 Nests													Feb-Jun	-	-	-
181	Wading	Great blue heron	Nesting				25 Nests													Feb-Jun	-	-	-
232	Waterfowl	Canada goose	Nesting				Present													Mar-Aug	-	-	Jun-Jul
	Waterfowl	Mallard	Nesting				Present													Mar-Aug	-	-	Jul-Aug
264	Waterfowl	Canada goose	Nesting				Present													Mar-Aug	-	-	Jun-Jul
	Waterfowl	Mallard	Nesting				Present													Mar-Aug	-	-	Jul-Aug
	Waterfowl	Mallard	Wintering				100S													-	-	-	-
704	Raptor	Bald eagle	Concentration Area				Moderate-High													-	-	-	-
775	Waterfowl	American wigeon	Wintering				100S													-	-	-	-
	Waterfowl	Gadwall	Wintering				100S													-	-	-	-
	Waterfowl	Mallard	Wintering				100S													-	-	-	-
798	Raptor	Bald eagle	Nesting				1 Nest													Dec-Jun	-	-	-
839	Waterfowl	Canada goose	Wintering				100S													-	-	-	-
869	Waterfowl	American wigeon	Wintering				10S													-	-	-	-
	Waterfowl	Canvasback	Wintering				10S													-	-	-	-
	Waterfowl	Gadwall	Wintering				10S													-	-	-	-
	Waterfowl	Mallard	Wintering				10S													-	-	-	-
	Waterfowl	Mergansers	Wintering				10S													-	-	-	-
	Waterfowl	Northern shoveler	Wintering				10S													-	-	-	-
	Waterfowl	Ring-necked duck	Wintering				10S													-	-	-	-
882	Waterfowl	Mallard	Wintering				100S													-	-	-	-
925	Waterfowl	Ring-necked duck	Wintering				100S													-	-	-	-
979	Waterfowl	American wigeon	Wintering				10S													-	-	-	-
	Waterfowl	Gadwall	Wintering				10S													-	-	-	-
	Waterfowl	Mallard	Wintering				10S													-	-	-	-

FISH

Map ID	Subelement	Species	Mapping Qualifier	MD/VFA	S	F	Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
								J	F	M	A	M	J	J	A	S	O	N	D					
1402	Diadromous	Alewife	Nursery Area				-													-	-	Feb-Apr	Apr-Oct	-
	Diadromous	Alewife	Spawning Area				-													Feb-Apr	-	-	-	Feb-Apr
	Diadromous	Atlantic sturgeon	General Distribution				-													-	-	Jan-Dec	Jan-Dec	-
	Diadromous	Blueback herring	Nursery Area				-													-	-	Apr-Jun	May-Oct	-
	Diadromous	Blueback herring	Spawning Area				-													Mar-Jun	Mar-Jun	-	-	Mar-Jun
	Diadromous	Striped bass	Nursery Area				-													-	-	Mar-May	Jan-Dec	-
	Estuarine Nursery	White perch	Spawning Area				-													Mar-May	Mar-May	Apr-Jun	-	Mar-May

FISH (continued)


Map ID	Subelement	Species	Mapping Qualifier	MD/V/A		Monthly Presence												Eggs	Larvae	Juveniles	Adults
				S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N	D			
1407	Freshwater	Yellow perch	Spawning Area			-												Feb-Mar	Mar-Apr	-	Feb-Mar
	Diadromous	American shad	Nursery Area			-												-	Mar-Jul	Mar-Oct	-
	Diadromous	American shad	Spawning Area			-												Feb-Jun	-	-	Feb-Jun
	Diadromous	Hickory shad	Nursery Area			-												-	Apr-Jun	Apr-Oct	-
	Diadromous	Hickory shad	Spawning Area			-												Feb-May	-	-	Feb-May
1612	Diadromous	Striped bass	Spawning Area			-												Mar-May	-	-	Feb-Jun
	Diadromous	American shad	Nursery Area			-												-	Mar-Jul	Mar-Oct	Feb-Jun
1617	Diadromous	Atlantic sturgeon	Spawning Area	-/E	E	-												Sep-Oct	-	-	Aug-Oct

INVERTEBRATES

Map ID	Subelement	Species	Mapping Qualifier	MD/V/A		Monthly Presence												Eggs	Larvae	Juveniles	Adults
				S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N	D			
1801	Bivalve	Eastern elliptio	Vulnerable Occurrence			-												-	-	Jan-Dec	Jan-Dec
	Bivalve	Tidewater mucket	Vulnerable Occurrence			-												-	-	Jan-Dec	Jan-Dec

WIDESPREAD IN MAPPED AREA (> 10 SQUARE KILOMETERS)

BIRDS



Map ID	Subelement	Species	Mapping Qualifier	MD/V/A		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			10S												-	-	-	-
		Blue-winged teal	Migration			10S												-	Feb-Apr	Aug-Oct	-
		Bufflehead	Wintering			10S												-	-	-	-
		Canada goose	Wintering			1,000S												-	-	-	-
		Green-winged teal	Wintering			10S												-	-	-	-

ALSO PRESENT IN MAPPED AREA (GENERAL DISTRIBUTION)

BIRDS

Map ID	Subelement	Species	Mapping Qualifier	MD/V/A		Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt
				S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N	D			
	Raptor	Osprey																-	-	-	-
	Waterfowl	Wood duck																Apr-Jul	-	-	Jul-Aug

FISH

Map ID	Subelement	Species	Mapping Qualifier	MD/V/A		Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
				S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N	D				
	Diadromous	Alewife																Feb-Apr	Feb-Apr	Feb-Apr	Apr-Oct	Feb-Apr
		American eel																-	-	-	Jan-May	Jan-Dec
		Blueback herring																Mar-Jun	Mar-Jun	Apr-Jun	May-Oct	Mar-Jun
		Gizzard shad																Mar-Jun	-	-	Jan-Dec	Jan-Dec
		Striped bass																-	-	-	Jan-Dec	Jan-Dec
	Estuarine Nursery	White perch																-	-	-	Jan-Dec	Jan-Dec
	Freshwater	Black crappie																Mar-Jul	-	-	Jan-Dec	-

Chesapeake South: Map 77C

FISH (continued)

Map ID	Subelement	Species	Mapping Qualifier	MD/VA S F	Concentration	Monthly Presence												Spawn	Eggs		Larvae		Juveniles		Adults
						J	F	M	A	M	J	J	A	S	O	N	D		May-Jun	May-Jun	May-Jun	May-Jun	Jan-Dec	Jan-Dec	Jan-Dec
		Blue catfish																May-Jun							Jan-Dec
		Bullhead catfish																Apr-Jun							Jan-Dec
		Chain pickerel																Feb-Apr							Jan-Dec
		Channel catfish																May-Jun					Jan-Dec		Jan-Dec
		Common carp																May-Jun							Jan-Dec
		Golden shiner																Apr-Aug					Jan-Dec		Jan-Dec
		Largemouth bass																Mar-May							Jan-Dec
		Longnose gar																May-Jun					Jan-Dec		Jan-Dec
		Redfin pickerel																Feb-Mar					Jan-Dec		Jan-Dec
		Spotfin shiner																Jun-Aug							Jan-Dec
		Spottail shiner																May-Aug							Jan-Dec
		Sunfish																Mar-Jul							Jan-Dec
		Tessellated darter																Apr-Jun							Jan-Dec
		Yellow perch																-					Jan-Dec		Jan-Dec

INVERTEBRATES

Map ID	Subelement	Species	Mapping Qualifier	MD/VA S F	Concentration	Monthly Presence												Spawn	Eggs		Larvae		Juveniles		Adults
						J	F	M	A	M	J	J	A	S	O	N	D		May-Jun	May-Jun	May-Jun	May-Jun	Jan-Dec	Jan-Dec	Jan-Dec
		Blue crab																-							Jan-Dec

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	372.22	0.58
10C	Swamps	1,142.67	1.79
10D	Scrub and Shrub Wetlands	134.54	0.21
9A	Sheltered Tidal Flats	10.83	0.02



ESI SHORELINE HABITAT TYPES

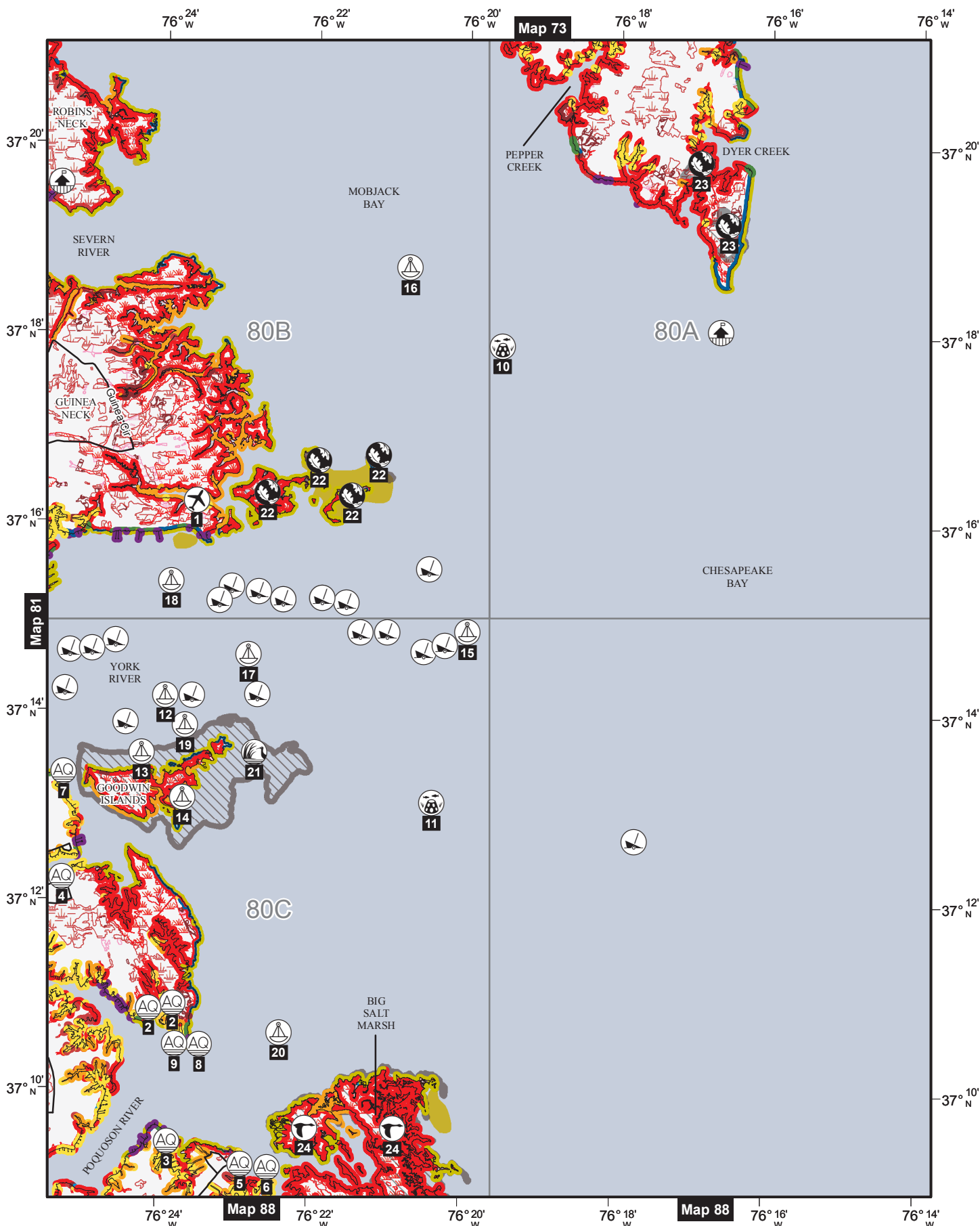
ESI Rank	Shoreline Habitat Classification	Length (Meters)	Length (Miles)	% of ESI Shoreline
10B	Freshwater Marshes	15,444.74	9.60	14%
10C	Swamps	47,710.01	29.65	44%
10D	Scrub and Shrub Wetlands	1,083.29	0.67	1%
9A	Sheltered Tidal Flats	8,059.25	5.01	7%
9B	Vegetated Low Banks	26,932.15	16.73	25%
8B	Sheltered, Solid Man-Made Structures	4,318.72	2.68	4%
8C	Sheltered Riprap	3,394.51	2.11	3%
6A	Gravel Beaches	662.11	0.41	1%
5	Mixed Sand and Gravel Beaches	200.22	0.12	< 1%
4	Coarse Grained Sand Beaches	1,414.73	0.88	1%
3A	Fine to Medium Grained Sand Beaches	69.20	0.04	< 1%

Total ESI Shoreline: 109,288.94 Total ESI Shoreline: 67.91
 Total Shoreline: 81,316.94 Total Shoreline: 50.53

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 80 Chesapeake South



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

0 Not for Navigation 2 Miles
0 2 Kilometers

1:100,000



Map 80
Chesapeake South

HUMAN USE RESOURCES

DISPLAYED ON MAP (POINTS)				
Map ID	Type	Name	Contact	Phone
1	AIRPORT	HOFFMAN'S FARM		
2	AQUACULTURE	OYSTER COMMERCIAL REGISTER, JOHN W. RF#99-1653	CHIP NEIKIRK, VIRGINIA MARINE RESOURCES COMM.	757-247-2254
3	AQUACULTURE	OYSTER NON-COMM C. WAYNE WILLIAMS RF#2001-1630	CHIP NEIKIRK, VIRGINIA MARINE RESOURCES COMM.	757-247-2254
4	AQUACULTURE	OYSTER NON-COMM CAROL D. TAYLOR RF#2001-1824	CHIP NEIKIRK, VIRGINIA MARINE RESOURCES COMM.	757-247-2254
5	AQUACULTURE	OYSTER NON-COMM COX, JULIAN F. RF#99-0672	CHIP NEIKIRK, VIRGINIA MARINE RESOURCES COMM.	757-247-2254
6	AQUACULTURE	OYSTER NON-COMM LAWSON RF#99-1691	CHIP NEIKIRK, VIRGINIA MARINE RESOURCES COMM.	757-247-2254
7	AQUACULTURE	OYSTER NON-COMM RUSSELL RF#99-1574	CHIP NEIKIRK, VIRGINIA MARINE RESOURCES COMM.	757-247-2254
8	AQUACULTURE	OYSTER NON-COMM SUIGARD, CATHERINE RF#99-1037	CHIP NEIKIRK, VIRGINIA MARINE RESOURCES COMM.	757-247-2254
9	AQUACULTURE	OYSTER NON-COMM SWANSON, SYLVIA K. RF#99-0926	CHIP NEIKIRK, VIRGINIA MARINE RESOURCES COMM.	757-247-2254
10	ARTIFICIAL REEF	MOBJACK BAY		
11	ARTIFICIAL REEF	POQUOSON		
12	REPEATED MEASUREMENT SITE	DB - MARINE OBSERVATION BUOY, GOODWIN ISLANDS	NATIONAL COASTAL DATA DEVELOPMENT CENTER	866-732-2382
13	REPEATED MEASUREMENT SITE	DB - MARINE OBSERVATION STN, GOODWIN ISL MET STN	NATIONAL COASTAL DATA DEVELOPMENT CENTER	866-732-2382
14	REPEATED MEASUREMENT SITE	DB - NERRS WQ STN, GOODWIN ISLAND, CHES BAY RES	NATIONAL COASTAL DATA DEVELOPMENT CENTER	866-732-2382
15	REPEATED MEASUREMENT SITE	DB - NOS, 8637611 - YORK RIVER E REAR RANGE LIGHT	NATIONAL COASTAL DATA DEVELOPMENT CENTER	866-732-2382
16	REPEATED MEASUREMENT SITE	WQ - STATION WE4.1	CHESAPEAKE BAY PROGRAM	800-968-7229
17	REPEATED MEASUREMENT SITE	WQ - STATION WE4.2	CHESAPEAKE BAY PROGRAM	800-968-7229
18	REPEATED MEASUREMENT SITE	WQ - STATION WE4.2N	CHESAPEAKE BAY PROGRAM	800-968-7229
19	REPEATED MEASUREMENT SITE	WQ - STATION WE4.2S	CHESAPEAKE BAY PROGRAM	800-968-7229
20	REPEATED MEASUREMENT SITE	WQ - STATION WE4.3	CHESAPEAKE BAY PROGRAM	800-968-7229

DISPLAYED ON MAP (POLYGONS)				
Map ID	Type	Name	Contact	Phone
21	NATIONAL ESTUARINE RESEARCH RESERVE	CHESAPEAKE BAY VIRGINIA RESERVE	CHESAPEAKE BAY VIRGINIA RESERVE	804-684-7135
22	NATURE CONSERVANCY	GUINEA MARSHES	THE NATURE CONSERVANCY	703-841-5300
23	NATURE CONSERVANCY	NEW POINT COMFORT	THE NATURE CONSERVANCY	703-841-5300
24	WILDLIFE REFUGE	PLUM TREE ISLAND NWR	UNITED STATES FISH AND WILDLIFE SERVICE	None

ALSO PRESENT IN MAPPED AREA (POLYGONS)			
Type	Name	Contact	Phone
STATE PROTECTED AREA	BLUE CRAB SANCTUARY	VIRGINIA MARINE RESOURCES COMMISSION	757-247-2200
STATE PROTECTED AREA	NEW POINT COMFORT	VA DEPT OF CONSERVATION AND RECREATION	

JURISDICTIONS

COUNTY: GLOUCESTER COUNTY, MATHEWS COUNTY, POQUOSON CITY, YORK COUNTY
COAST GUARD: DISTRICT 5, SECTOR HAMPTON ROADS
USACE: NORTH ATLANTIC DIVISION, NORFOLK DISTRICT

FEMA:
EPA:

REGION I
 REGION 3

SHORELINE RESOURCES

ESI POLYGON HABITAT TYPES

ESI Rank	Habitat Classification	Area (Acres)	Area (Sq. Miles)
10A	Salt and Brackish Water Marshes	4,243.81	6.63
10B	Freshwater Marshes	148.50	0.23
10C	Swamps	1,872.20	2.93
10D	Scrub and Shrub Wetlands	311.59	0.49
9A	Sheltered Tidal Flats	39.16	0.06
7	Exposed Tidal Flats	433.42	0.68

ESI SHORELINE HABITAT TYPES

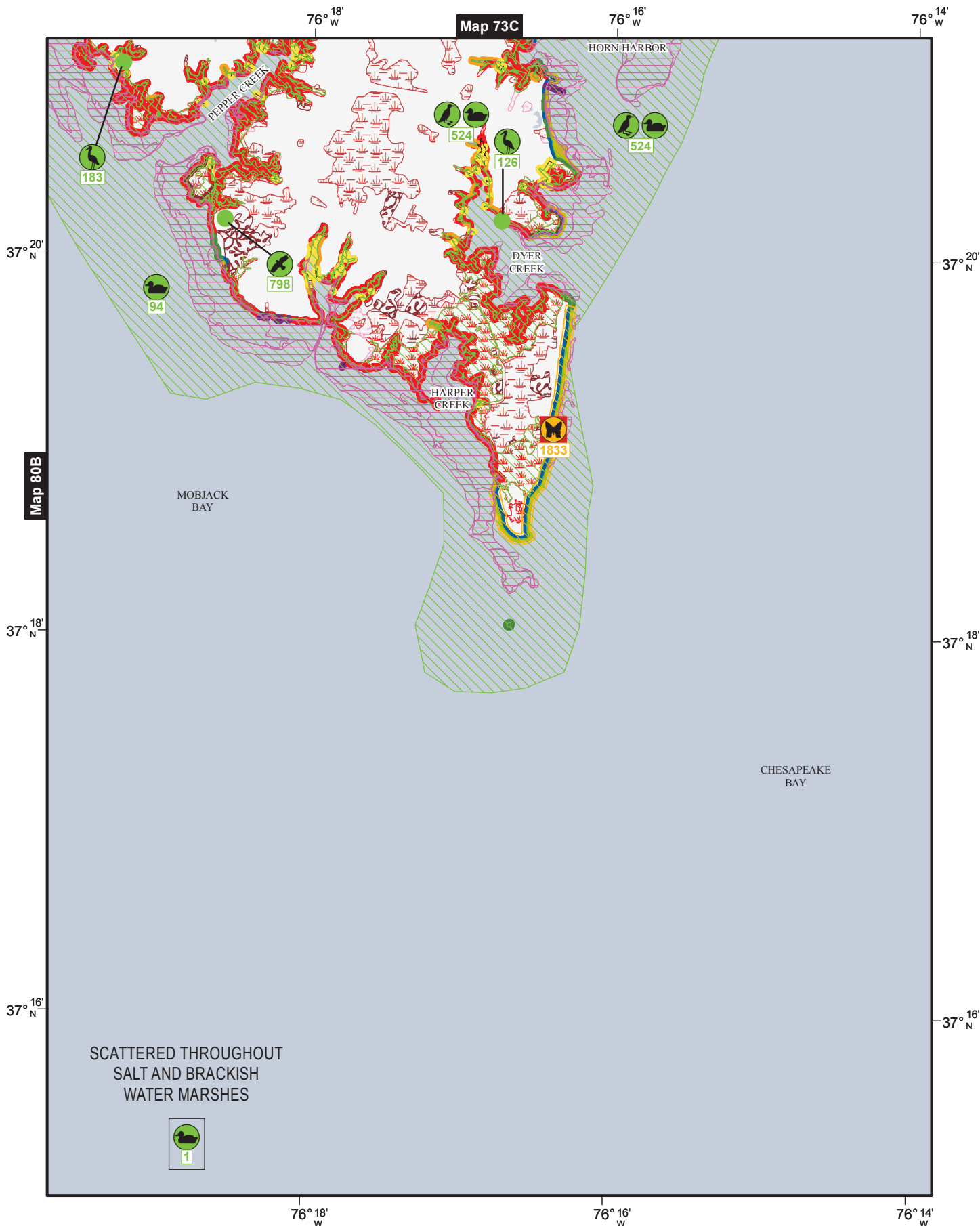
ESI Rank	Shoreline Habitat Classification	Length (Meters)	Length (Miles)	% of ESI Shoreline
10A	Salt and Brackish Water Marshes	362,034.80	224.96	54%
10B	Freshwater Marshes	314.61	0.20	< 1%
10C	Swamps	6,765.92	4.20	1%
10D	Scrub and Shrub Wetlands	5,391.77	3.35	1%
9A	Sheltered Tidal Flats	98,161.84	61.00	15%
9B	Vegetated Low Banks	20,386.27	12.67	3%
8B	Sheltered, Solid Man-Made Structures	22,608.96	14.05	3%
8C	Sheltered Riprap	12,500.39	7.77	2%
7	Exposed Tidal Flats	108,254.83	67.27	16%
6B	Riprap	6,305.56	3.92	1%
5	Mixed Sand and Gravel Beaches	14.22	0.01	< 1%
4	Coarse Grained Sand Beaches	555.26	0.35	< 1%
3A	Fine to Medium Grained Sand Beaches	24,541.22	15.25	4%
1B	Exposed, Solid Man-Made Structures	4,132.41	2.57	1%

Total ESI Shoreline: 671,968.06
 Total ESI Shoreline: 417.54
 Total Shoreline: 424,173.81
 Total Shoreline: 263.57

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

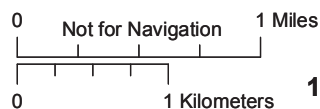




Map 80A Chesapeake South



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



1:50,000



Map 80A
Chesapeake South

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	MD/VA S F	Concentration	Monthly Presence											
					J	F	M	A	M	J	J	A	S	O	N	D
SAV	Submerged aquatic veg	High Ecological Value		Ephemeral												
SAV	Submerged aquatic veg	High Ecological Value		High												
SAV	Submerged aquatic veg	High Ecological Value		Low												




BIRDS

Map ID	Subelement	Species	Mapping Qualifier	MD/VA S F	Concentration	Monthly Presence											
						J	F	M	A	M	J	J	A	S	O	N	D
1	Waterfowl	American black duck	Nesting		Present												
	Waterfowl	Canada goose	Nesting		Present												
	Waterfowl	Mallard	Nesting		Present												
	Waterfowl	American black duck	Wintering		100S												
94	Waterfowl	American wigeon	Wintering		Present												
	Waterfowl	Brant	Wintering		100S												
	Waterfowl	Canada goose	Wintering		1,000S												
	Waterfowl	Canvasback	Wintering		Present												
	Waterfowl	Gadwall	Wintering		Present												
	Waterfowl	Long-tailed duck	Wintering		Present												
	Waterfowl	Mallard	Wintering		100S												
	Waterfowl	Ruddy duck	Wintering		10,000S												
	Waterfowl	Scaup	Wintering		1,000S												
	Wading	Great blue heron	Nesting		3 Nests												
	Wading	Great blue heron	Nesting		9 Nests												
	Pelagic	Northern gannet	Wintering		10S												
	Waterfowl	American black duck	Wintering		10S												
	Waterfowl	Canada goose	Wintering		100S												
	Waterfowl	Gadwall	Wintering		10S												
	Waterfowl	Mallard	Wintering		10S												
	Waterfowl	Ruddy duck	Wintering		Present												
	Waterfowl	Scaup	Wintering		10S												
	Raptor	Bald eagle	Nesting		1 Nest												




INVERTEBRATES

Map ID	Subelement	Species	Mapping Qualifier	MD/VA S F E/T T	Concentration	Monthly Presence											
						J	F	M	A	M	J	J	A	S	O	N	D
1833	Insect	NE beach tiger beetle	Vulnerable Occurrence		-												


BIRDS

Subelement	Species	Mapping Qualifier	MDVA		Concentration	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt
			S	F		J	F	M	A	M	J	J	A	S	O	N	D				
	Common loon	Wintering			100S													-	-	-	-
	Common loon	Wintering			Present													-	-	-	-
	Common loon	Wintering			10S													-	-	-	-
	D. crested cormorant	Wintering			100S													-	Mar-May	Aug-Nov	-
	Grebes	Wintering			10S													-	-	-	-
	Grebes	Wintering			100S													-	-	-	-
	Red-throated loon	Wintering			100S													-	-	-	-
	Red-throated loon	Wintering			Present													-	-	-	-
	Northern gannet	Wintering			100S													-	-	-	-
	Blue-winged teal	Migration			10S													-	Feb-Apr	Aug-Oct	-
	Bufflehead	Wintering			1,000S													-	-	-	-
	Green-winged teal	Wintering			10S													-	-	-	-
	Long-tailed duck	Wintering			10S													-	-	-	-
	Mergansers	Wintering			100S													-	-	-	-
	Scoters	Wintering			10,000S													-	-	-	-
	Scoters	Wintering			100S													-	-	-	-
	Tundra swan	Wintering			100S													-	-	-	-
	Tundra swan	Wintering			100S													-	-	-	-

FISH

Subelement	Species	Mapping Qualifier	MDVA		Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
			S	F		J	F	M	A	M	J	J	A	S	O	N	D					
	Alewife	Migration			-													-	-	-	Aug-Nov	Feb-Apr
	American shad	Migration			-													-	-	-	Aug-Nov	Feb-Jun
	Atlantic sturgeon	General Distribution	-/E	E	-													-	-	-	-	Jan-Dec
	Blueback herring	Migration			-													-	-	-	Aug-Nov	Mar-Jun
	Hickory shad	Migration			-													-	-	-	Jun-Sep	Feb-May
	Striped bass	Migration			-													-	-	-	-	Feb-Jun
	Atl. sharpnose shark	Nursery Area			Common													-	-	-	Jun-Sep	Jun-Sep
	Atl. sharpnose shark	Nursery Area			-													-	-	-	Jun-Sep	Jun-Sep
	Sandbar shark	Nursery Area			Abundant													-	-	-	May-Sep	May-Sep
	Sandbar shark	Nursery Area			-													-	-	-	May-Sep	May-Sep

REPTILES & AMPHIBIANS

Subelement	Species	Mapping Qualifier	MDVA		Concentration	Monthly Presence												Nest	Hatch	Internest	Juveniles	Adults
			S	F		J	F	M	A	M	J	J	A	S	O	N	D					
	Green sea turtle	General Distribution	T/T	T	Rare													-	-	-	May-Dec*	-
	Green sea turtle	General Distribution	T/T	T	Common													-	-	-	Jul-Oct	-
	K. ridley sea turtle	General Distribution	E/E	E	Common													-	-	-	Apr-Oct	-
	K. ridley sea turtle	General Distribution	E/E	E	Uncommon													-	-	-	Nov-Dec	-
	Leatherback sea turtle	General Distribution	E/E	E	Common													-	-	-	May-Jun	May-Jun
	Leatherback sea turtle	General Distribution	E/E	E	Rare													-	-	-	Mar-Dec*	Mar-Dec*
	Loggerhead sea turtle	General Distribution	T/T	T	Common													-	-	-	Nov-Dec	Nov-Dec
	Loggerhead sea turtle	General Distribution	T/T	T	Abundant													-	-	-	Apr-Oct	Apr-Oct
	Loggerhead sea turtle	General Distribution	T/T	T	Abundant													-	-	-	-	-
	Loggerhead sea turtle	General Distribution	T/T	T	Abundant													-	-	-	-	-

Chesapeake South: Map 80A

INVERTEBRATES

Subelement	Species	Mapping Qualifier	MD/VA		Monthly Presence												Eggs	Larvae	Juveniles	Adults	
			S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N					D
Crab	Blue crab	Concentration Area			Highly Abundant-Summ													-	-	Jun-Oct	Jun-Oct

MARINE MAMMALS



Subelement	Species	Mapping Qualifier	MDVA		Monthly Presence												Mating	Calving	Pupping	Molt
			S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N	D			
Manatee	West Indian manatee	General Distribution	-/E	E	Rare												-	-	-	-
Whale	Humpback whale	General Distribution	E/E	E	Very Rare												-	-	-	-

ALSO PRESENT IN MAPPED AREA (GENERAL DISTRIBUTION)

BIRDS

Subelement	Species	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt
		J	F	M	A	M	J	J	A	S	O	N	D				
Diving	Brown pelican													-	-	-	-
	Brown pelican													-	-	-	-
	D. crested cormorant													-	Mar-May	Aug-Nov	-
	D. crested cormorant													-	-	-	-
Gull/Tern	Grebes													-	-	-	-
	Gulls													-	-	-	-
	Terns													-	-	-	-
Pelagic	Storm-petrels													-	-	-	-

FISH

Subelement		Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
			J	F	M	A	M	J	J	A	S	O	N	D					
	Diadromous	Alewife													Feb-Apr	Feb-Apr	Feb-Apr	Feb-Apr	
		American eel													-	-	-	Jan-May	
		Blueback herring													Mar-Jun	Mar-Jun	Apr-Jun	May-Oct	
		Gizzard shad													Mar-Jun	-	-	Jan-Dec	
	Estuarine Nursery	Striped bass													-	-	-	Jan-Dec	
		Atlantic croaker													-	-	Dec-Apr	Jan-Dec	
		Atlantic croaker													-	-	Apr-Dec	May-Oct	
		Atlantic herring													-	-	-	Feb-Jun	
		Atlantic menhaden													-	-	-	Jan-Dec	
		Black drum													Apr-Jun	-	-	Apr-Dec	
		Black sea bass													-	-	-	Apr-Nov	
		Bluefish													-	-	-	May-Oct	
		Kingfishes													-	-	-	Apr-Nov	
		Northern puffer													-	-	-	Mar-Oct	
		Northern puffer													-	-	-	Mar-Oct	
		Pigfish													-	-	-	Apr-Nov	
Red drum													-	-	-	May-Nov			
Sheepshead													-	-	-	Apr-Nov			
Spot													-	-	-	Nov-Apr			
														-	-	-	Apr-Dec		

Chesapeake South: Map 80A



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-Jul	-	-	Apr-Nov	Apr-Nov
	Summer flounder													-	-	Feb-May	Apr-Dec	Jan-Dec
	Weakfish													-	-	May-Aug	Jun-Dec	Apr-Dec
	Winter flounder													-	-	-	-	Dec-Mar
Estuarine Resident	Pipefish													-	-	-	Jan-Dec	Jan-Dec
	Silversides													-	-	-	-	Jan-Dec
	Silversides													Mar-Jul	Mar-Jul	Apr-Sep	Jan-Dec	Jan-Dec
Fish	Anchovies													Apr-Sep	-	-	May-Oct	Jan-Dec
	Striped burrfish													-	-	-	-	May-Oct
Marine Benthic	Atlantic spadefish													-	-	-	-	Jun-Sep
	Cleamose skate													-	-	-	-	Jan-Dec
	Cownose ray													Jun-Jul	-	-	May-Oct	May-Oct
	Northern searobin													May-Jul	-	-	-	Apr-Dec
	Red hake													-	-	-	-	Sep-May*
	Silver hake													-	-	-	-	Oct-May
	Southern stingray													-	-	-	-	May-Oct
	Spotted hake													-	-	-	Jan-Dec	Jan-Dec
	Tautog													Apr-Aug	-	-	-	Jan-Dec
	Butterfish													-	-	-	Jul-Nov	Mar-Nov
	Cobia													-	-	-	-	Jun-Sep
	Harvestfish													-	-	-	-	May-Nov
	Lined seahorse													May-Oct	-	-	-	Jan-Dec
	Spanish mackerel													-	-	-	-	May-Sep
	Spiny dogfish													-	-	-	Nov-May	Nov-May

INVERTEBRATES

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
Bivalve	Eastern oyster													Jun-Sep	Jun-Sep	Jun-Oct	Jan-Dec	Jan-Dec
	Hard clam													Jun-Sep	Jun-Sep	Jun-Oct	Jan-Dec	Jan-Dec
	Softshell clam													May-Dec*	May-Dec*	May-Jan*	-	Jan-Dec
Cephalopod	Stout razor clam													Jun-Nov	-	-	Jan-Dec	Jan-Dec
	Squid													-	Apr-Dec	Apr-Dec	Apr-Dec	Apr-Dec
Crab	Blue crab													-	-	-	Jan-Dec	Jan-Dec
	Horseshoe crab													-	-	-	Jan-Dec	Jan-Dec
Shrimp	Brown shrimp													-	-	-	May-Oct	May-Oct
	Mantis shrimp													-	-	-	Jan-Dec	Jan-Dec
	White shrimp													-	-	-	May-Oct	May-Oct

MARINE MAMMALS

Subelement	Species	Monthly Presence												Mating	Calving	Pupping	Molt
		J	F	M	A	M	J	J	A	S	O	N	D				
	Bottlenose dolphin													May-Aug	May-Aug	-	-
	Bottlenose dolphin													-	-	-	-
	Bottlenose dolphin													May-Aug	May-Aug	-	-
	Harbor porpoise													-	-	-	-
	Short-beaked common dolphin													-	-	-	-
	Gray seal													-	-	-	-
	Harbor seal													-	-	-	-
														-	-	-	-

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

SHORELINE RESOURCES

ESI POLYGON HABITAT TYPES		
ESI Rank	Habitat Classification	Area (Sq. Miles)
10A	Salt and Brackish Water Marshes	501.51
10B	Freshwater Marshes	19.61
10C	Swamps	440.15
10D	Scrub and Shrub Wetlands	90.80
7	Exposed Tidal Flats	4.77

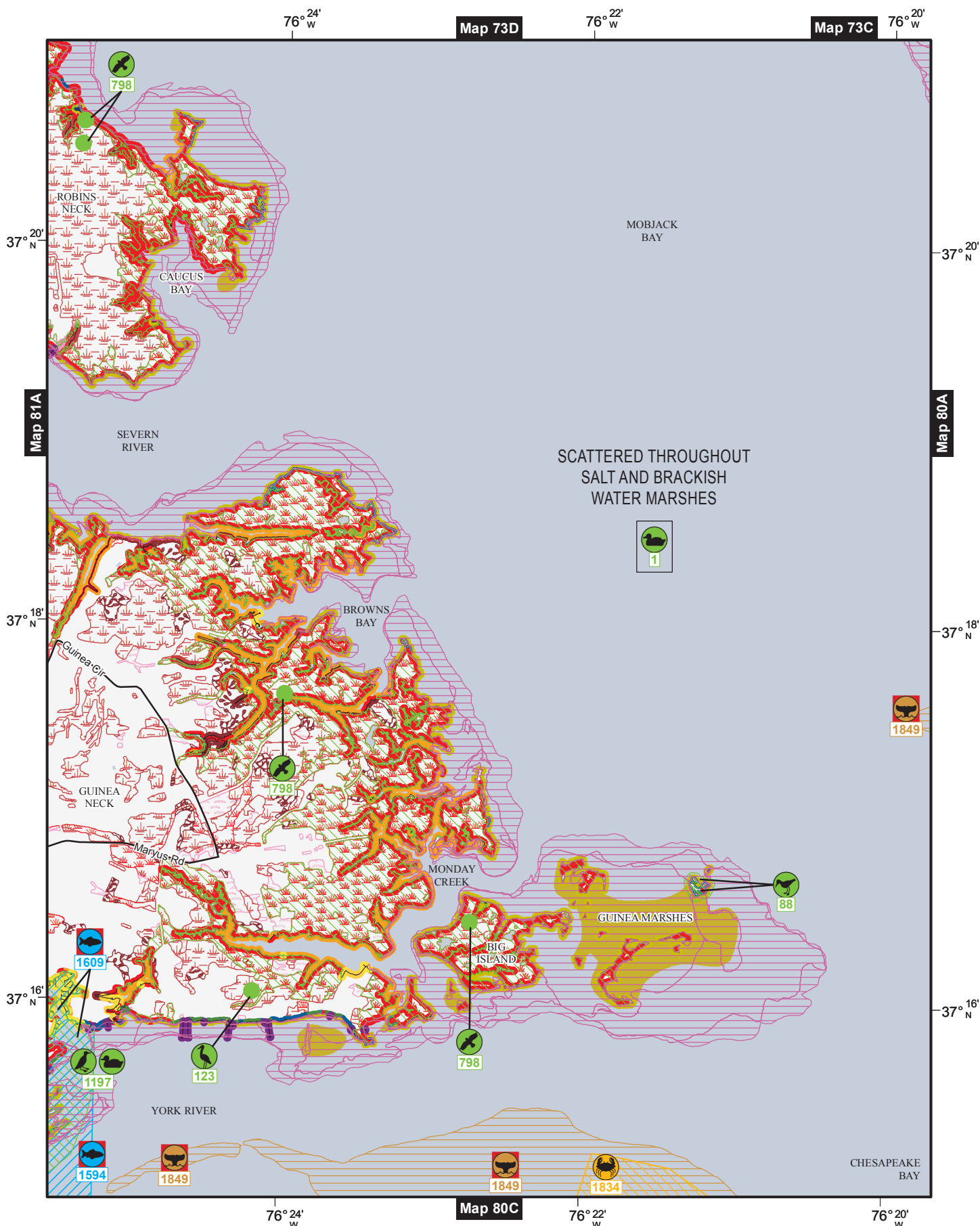
ESI SHORELINE HABITAT TYPES				
ESI Rank	Shoreline Habitat Classification	Length (Meters)	Length (Miles)	% of ESI Shoreline
10A	Salt and Brackish Water Marshes	48,870.86	30.37	69%
10C	Swamps	439.88	0.27	1%
10D	Scrub and Shrub Wetlands	2,365.24	1.47	3%
9B	Vegetated Low Banks	3,645.35	2.27	5%
8B	Sheltered, Solid Man-Made Structures	3,085.29	1.92	4%
8C	Sheltered Riprap	621.25	0.39	1%
7	Exposed Tidal Flats	5,335.28	3.32	8%
6B	Riprap	1,313.59	0.82	2%
3A	Fine to Medium Grained Sand Beaches	4,822.36	3.00	7%
1B	Exposed, Solid Man-Made Structures	393.12	0.24	1%

Total ESI Shoreline: 70,892.22 Total ESI Shoreline: 44.05
Total Shoreline: 58,818.04 Total Shoreline: 36.55

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



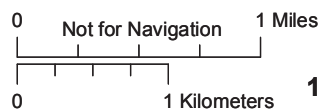


Map 80B

Chesapeake South



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



1:50,000



Map 80B
Chesapeake South

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	MD/V/A		Concentration	Monthly Presence											
			S	F		J	F	M	A	M	J	J	A	S	O	N	D
	Submerged aquatic veg	High Ecological Value			Ephemeral												
	Submerged aquatic veg	High Ecological Value			High												
	Submerged aquatic veg	High Ecological Value			Low												

BIRDS

Map ID	Subelement	Species	Mapping Qualifier	MD/VA		Concentration	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt
				S	F		J	F	M	A	M	J	J	A	S	O	N	D				
1	Waterfowl	American black duck	Nesting			Present												Apr-Jul	-	-	-	
	Waterfowl	Canada goose	Nesting			Present												Mar-Aug	-	-	Jun-Jul	
	Waterfowl	Mallard	Nesting			Present												Mar-Aug	-	-	Jul-Aug	
88	Shorebird	American oystercatcher	Nesting			4 Pairs												Apr-Aug	-	-	-	
123	Wading	Great blue heron	Nesting			14 Nests												Feb-Jun	-	-	-	
798	Raptor	Bald eagle	Nesting			1 Nest												Dec-Jun	-	-	-	
1197	Pelagic	Northern gannet	Wintering			10S												-	-	-	-	
	Waterfowl	American black duck	Wintering			Present												-	-	-	-	
	Waterfowl	American wigeon	Wintering			10S												-	-	-	-	
	Waterfowl	Brant	Wintering			10S												-	-	-	-	
	Waterfowl	Bufflehead	Wintering			100S												-	-	-	-	
	Waterfowl	Canada goose	Wintering			10S												-	-	-	-	
	Waterfowl	Common goldeneye	Wintering			Present												-	-	-	-	
	Waterfowl	Gadwall	Wintering			10S												-	-	-	-	
	Waterfowl	Mergansers	Wintering			10S												-	-	-	-	
	Waterfowl	Ruddy duck	Wintering			10S												-	-	-	-	
	Waterfowl	Scaup	Wintering			100S												-	-	-	-	
	Waterfowl	Scoters	Wintering			10S												-	-	-	-	

FISH

Map ID	Subelement	Species	Mapping Qualifier	MD/V/A		Concentration	Monthly Presence												Eggs	Larvae	Juveniles	Adults
				S	F		J	F	M	A	M	J	J	A	S	O	N	D				
1594	Diadromous	Atlantic sturgeon	Migration	-/E	E	-											-	-	Jun-Nov			
1609	Diadromous	Atlantic sturgeon	General Distribution	-/E	E	-											-	-	Jan-Dec			
	Diadromous	Striped bass	Nursery Area			-											Mar-May	Jan-Dec	-			

INVERTEBRATES




Map ID	Subelement	Species	Mapping Qualifier	MD/V/A		Monthly Presence												Larvae	Eggs	Juveniles	Adults																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
				S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N					D																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
1834	Crab	Blue crab	Concentration Area			Highly Abundant-Wint																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												

MARINE MAMMALS




Map ID	Subelement	Species	MD/VA		Mapping Qualifier	Monthly Presence												Mating	Calving	Pupping	Molt
			S	F		J	F	M	A	M	J	J	A	S	O	N	D				
1849	Whale	Humpback whale	E/E	E	General Distribution													-	-	-	-

WIDESPREAD IN MAPPED AREA (> 10 SQUARE KILOMETERS)


BIRDS

Subelement	Species	MD/VA		Mapping Qualifier	Concentration	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt
		S	F			J	F	M	A	M	J	J	A	S	O	N	D				
	Diving	Common loon			Wintering	10S												-	-	-	-
		Common loon			Wintering	Present												-	-	-	-
		Grebes			Wintering	10S												-	-	-	-
	Pelagic	Red-throated loon			Wintering	Present												-	-	-	-
		Northern gannet			Wintering	100S												-	-	-	-
		American black duck			Wintering	100S												-	-	-	-
	Waterfowl	American wigeon			Wintering	Present												-	-	-	-
		Blue-winged teal			Migration	10S												-	Feb-Apr	Aug-Oct	-
		Brant			Wintering	100S												-	-	-	-
		Bufflehead			Wintering	1,000S												-	-	-	-
		Canada goose			Wintering	1,000S												-	-	-	-
		Canvasback			Wintering	Present												-	-	-	-
		Gadwall			Wintering	Present												-	-	-	-
		Green-winged teal			Wintering	10S												-	-	-	-
		Long-tailed duck			Wintering	Present												-	-	-	-
		Long-tailed duck			Wintering	10S												-	-	-	-
		Mallard			Wintering	100S												-	-	-	-
		Mergansers			Wintering	100S												-	-	-	-
		Ruddy duck			Wintering	10,000S												-	-	-	-
		Scaup			Wintering	1,000S												-	-	-	-
		Scoters			Wintering	100S												-	-	-	-
		Tundra swan			Wintering	100S												-	-	-	-

FISH

Subelement	Species	MD/VA		Mapping Qualifier	Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		S	F			J	F	M	A	M	J	J	A	S	O	N	D					
	Diadromous	Alewife		Migration	-													-	-	-	Aug-Nov	Feb-Apr
		American shad		Migration	-													-	-	-	Aug-Nov	Feb-Jun
		Atlantic sturgeon		General Distribution	-													-	-	-	-	Jan-Dec
		Blueback herring		Migration	-													-	-	-	Aug-Nov	Mar-Jun
		Hickory shad		Migration	-													-	-	-	Jun-Sep	Feb-May
	Estuarine	Striped bass		Migration	-													-	-	-	-	Feb-Jun
	Nursery	Atl. sharpnose shark		Nursery Area	-													-	-	-	Jun-Sep	Jun-Sep
		Atl. sharpnose shark		Nursery Area	Common													-	-	-	Jun-Sep	Jun-Sep
	Marine	Sandbar shark		Nursery Area	-													-	-	-	May-Sep	May-Sep
		Sandbar shark		Nursery Area	Abundant													-	-	-	May-Sep	May-Sep

REPTILES & AMPHIBIANS

Subelement	Species	Mapping Qualifier	MD/VA		Monthly Presence												Nest	Hatch	Internest	Juveniles	Adults
			S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N	D				
	Diamondback terrapin	Concentration Area			High												May-Aug	-	-	Apr-Oct	Apr-Oct
	Green sea turtle	General Distribution	T/T	T	Common													-	-	Jul-Oct	-
	Green sea turtle	General Distribution	T/T	T	Rare													-	-	May-Dec*	-
	K. ridley sea turtle	General Distribution	E/E	E	Uncommon													-	-	Nov-Dec	-
	K. ridley sea turtle	General Distribution	E/E	E	Common													-	-	Apr-Oct	-
	Leatherback sea turtle	General Distribution	E/E	E	Common													-	-	May-Jun	May-Jun
	Leatherback sea turtle	General Distribution	E/E	E	Rare													-	-	Mar-Dec*	Mar-Dec*
	Loggerhead sea turtle	General Distribution	T/T	T	Abundant													-	-	Apr-Oct	Apr-Oct
	Loggerhead sea turtle	General Distribution	T/T	T	Common													-	-	Nov-Dec	Nov-Dec

INVERTEBRATES



Subelement	Species	Mapping Qualifier	MD/VA		Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
			S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N	D				
	Blue crab	Concentration Area			Highly Abundant													-	-	Jun-Mar*	Jun-Mar*
	Blue crab	Concentration Area			Highly Abundant-Summ													-	-	Jun-Oct	Jun-Oct

MARINE MAMMALS



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

ALSO PRESENT IN MAPPED AREA (GENERAL DISTRIBUTION)

BIRDS

Subelement	Species	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt
		J	F	M	A	M	J	J	A	S	O	N	D				
	Brown pelican													-	-	-	-
	Brown pelican													-	-	-	-
	Brown pelican													-	-	-	-
	D. crested cormorant													-	Mar-May	Aug-Nov	-
	Grebes													-	-	-	-
	Gulls													-	-	-	-
	Terns													-	-	-	-

FISH

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	Alewife													Feb-Apr	Feb-Apr	Feb-Apr	Apr-Oct	Feb-Apr
	American eel													-	-	-	Jan-May	Jan-Dec
	Blueback herring													Mar-Jun	Mar-Jun	Apr-Jun	May-Oct	Mar-Jun
	Gizzard shad													Mar-Jun	-	-	Jan-Dec	Jan-Dec
	Striped bass													-	-	-	Jan-Dec	Jan-Dec
	Atlantic croaker													-	-	Dec-Apr	Jan-Dec	May-Nov
	Atlantic croaker													-	-	Apr-Dec	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					
	Atlantic herring													-	-	-	Feb-Jun	Feb-Jun
	Atlantic menhaden													-	-	-	Jan-Dec	Jan-Dec
	Black drum													Apr-Jun	-	-	Apr-Dec	Apr-Dec
	Black sea bass													-	-	-	Apr-Nov	Apr-Nov
	Bluefish													-	-	-	May-Oct	May-Oct
	Kingfishes													-	-	-	Apr-Nov	Apr-Nov
	Northern puffer													-	-	-	Mar-Oct	Mar-Nov
	Northern puffer													-	-	-	Mar-Oct	Mar-Oct
	Pigfish													-	-	-	-	Apr-Nov
	Red drum													-	-	-	-	May-Nov
	Sheepshead													-	-	-	-	Apr-Nov
	Spot													-	-	-	-	Apr-Nov
	Spotted seatrout													May-Jul	-	-	Nov-Apr	Apr-Dec
	Summer flounder													-	-	Feb-May	Apr-Nov	Apr-Nov
	Weakfish													-	-	May-Aug	Apr-Dec	Jan-Dec
	White perch													-	-	-	Jan-Dec	Jan-Dec
	Winter flounder													-	-	-	-	Dec-Mar
	Pipefish													-	-	-	Jan-Dec	Jan-Dec
	Silversides													-	-	-	-	Jan-Dec
	Silversides													Mar-Jul	Mar-Jul	Apr-Sep	Jan-Dec	Jan-Dec
	Anchovies													Apr-Sep	-	-	-	Jan-Dec
	Striped burrfish													-	-	-	May-Oct	May-Oct
	Atlantic spadefish													-	-	-	-	Jun-Sep
	Cleannose skate													-	-	-	-	Jan-Dec
	Cownose ray													Jun-Jul	-	-	May-Oct	May-Oct
	Northern searobin													-	-	-	-	Apr-Sep
	Northern searobin													May-Jul	-	-	-	Apr-Dec
	Red hake													-	-	-	Sep-May*	Sep-May*
	Silver hake													-	-	-	-	Oct-May
	Southern stingray													-	-	-	-	May-Oct
	Spotted hake													-	-	-	-	Jan-Dec
	Tautog													Apr-Aug	-	-	-	Jan-Dec
	Butterfish													-	-	-	-	Jan-Dec
	Cobia													-	-	-	Jul-Nov	Mar-Nov
	Harvestfish													-	-	-	-	Jun-Sep
	Lined seahorse													May-Oct	-	-	-	May-Nov
	Spanish mackerel													-	-	-	-	Jan-Dec
	Spiny dogfish													-	-	-	-	May-Sep
														-	-	-	Nov-May	Nov-May
														-	-	-	-	-



REPTILES & AMPHIBIANS

Subelement	Species	Monthly Presence												Nest	Hatch	Interest	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
Turtle	Diamondback terrapin													May-Aug	-	-	Apr-Oct	Apr-Oct

INVERTEBRATES

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	Bivalve																	
	Eastern oyster													Jun-Sep	Jun-Sep	Jun-Oct	Jan-Dec	Jan-Dec
	Hard clam													Jun-Sep	Jun-Sep	Jun-Oct	Jan-Dec	Jan-Dec
	Softshell clam													May-Dec*	May-Dec*	May-Jan*	-	Jan-Dec
	Stout razor clam													Jun-Nov	-	-	Jan-Dec	Jan-Dec
	Squid													-	Apr-Dec	Apr-Dec	Apr-Dec	Apr-Dec
	Blue crab													-	-	-	Jan-Dec	Jan-Dec
	Horseshoe crab													-	-	-	Jan-Dec	Jan-Dec
	Brown shrimp													-	-	-	May-Oct	May-Oct
	Mantis shrimp													-	-	-	Jan-Dec	Jan-Dec
	White shrimp													-	-	-	May-Oct	May-Oct

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													May-Aug	May-Aug	-	-
	Harbor porpoise													-	-	-	-
	Short-beaked common dolphin													-	-	-	-
	Gray seal													-	-	-	-
	Harbor seal													-	-	-	-

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	2,029.97	3.17
10B	Freshwater Marshes	121.42	0.19
10C	Swamps	1,056.51	1.65
10D	Scrub and Shrub Wetlands	165.15	0.26
9A	Sheltered Tidal Flats	0.69	0.00
7	Exposed Tidal Flats	351.61	0.55

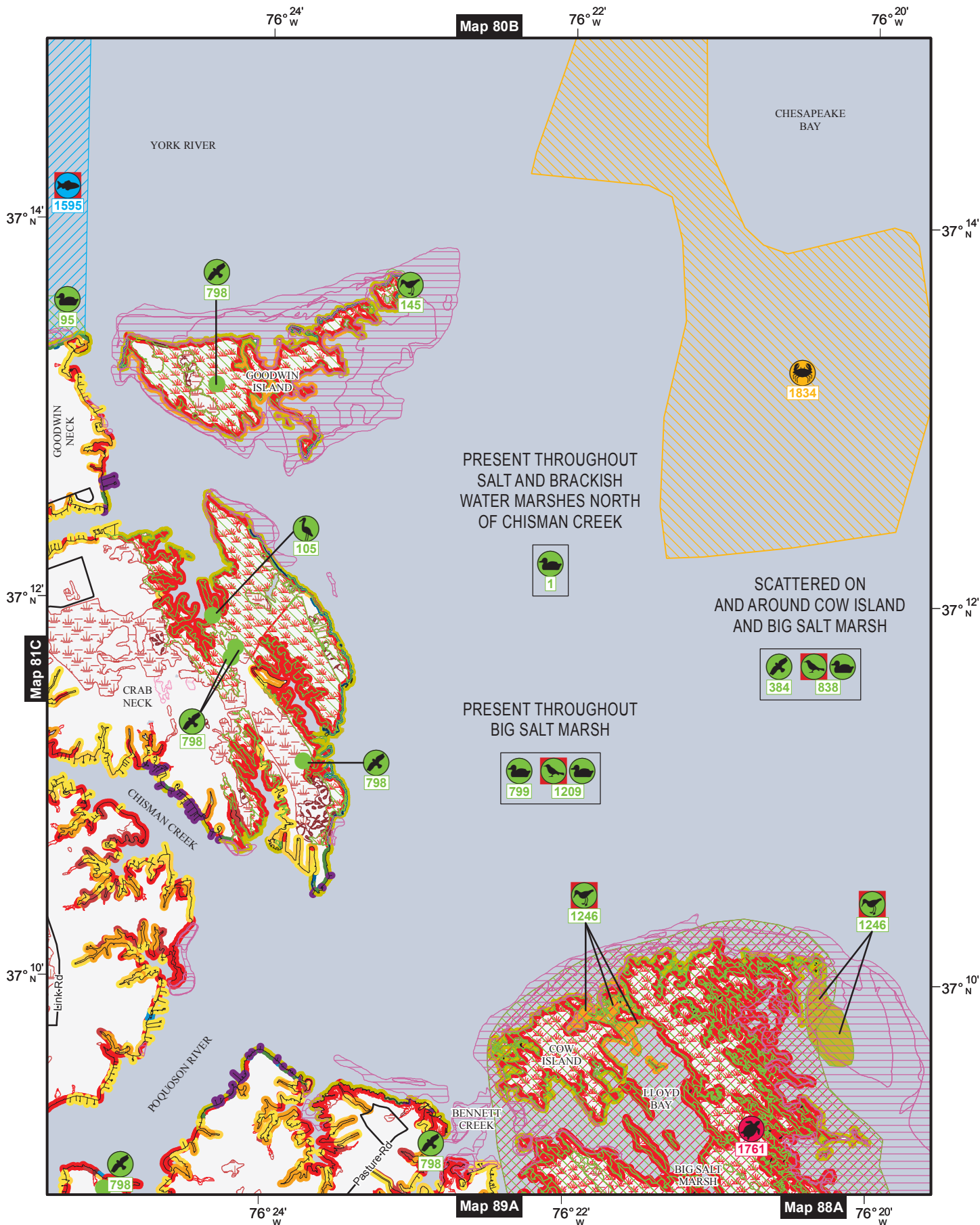
ESI SHORELINE HABITAT TYPES

<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	144,931.55	90.06	48%
10B	Freshwater Marshes	314.61	0.20	< 1%
10C	Swamps	1,648.68	1.02	1%
10D	Scrub and Shrub Wetlands	2,799.14	1.74	1%
9A	Sheltered Tidal Flats	82,559.05	51.30	28%
9B	Vegetated Low Banks	1,908.20	1.19	1%
8B	Sheltered, Solid Man-Made Structures	2,852.43	1.77	1%
8C	Sheltered Riprap	650.70	0.40	< 1%
7	Exposed Tidal Flats	49,501.86	30.76	16%
6B	Riprap	1,317.73	0.82	< 1%
5	Mixed Sand and Gravel Beaches	14.22	0.01	< 1%
3A	Fine to Medium Grained Sand Beaches	10,299.69	6.40	3%
1B	Exposed, Solid Man-Made Structures	1,332.38	0.83	< 1%
Total ESI Shoreline:		300,130.24	Total ESI Shoreline:	186.49
		154,212.44	Total Shoreline:	95.82

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 80C Chesapeake South



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

0 Not for Navigation 1 Miles
0 1 Kilometers

1:50,000



Map 80C
Chesapeake South

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	MD/VA S F	Concentration	Monthly Presence											
					J	F	M	A	M	J	J	A	S	O	N	D
SAV	Submerged aquatic veg	High Ecological Value		Ephemeral												
SAV	Submerged aquatic veg	High Ecological Value		High												
SAV	Submerged aquatic veg	High Ecological Value		Low												

BIRDS

Map ID	Subelement	Species	Mapping Qualifier	MD/VA S F	Concentration	Monthly Presence											
						J	F	M	A	M	J	J	A	S	O	N	D
1	Waterfowl	American black duck	Nesting		Present												
	Waterfowl	Canada goose	Nesting		Present												
	Waterfowl	Mallard	Nesting		Present												
95	Waterfowl	Bufflehead	Wintering		10S												
	Waterfowl	Long-tailed duck	Wintering		Present												
	Waterfowl	Mergansers	Wintering		Present												
	Waterfowl	Ruddy duck	Wintering		100S												
	Waterfowl	Scaup	Wintering		10S												
105	Wading	Great blue heron	Nesting		13 Nests												
145	Shorebird	American oystercatcher	Nesting		12 Pairs												
	Shorebird	American oystercatcher	Roosting		1 Pair												
384	Raptor	Northern harrier	Nesting		-												
	Raptor	Osprey	Nesting		-												
798	Raptor	Bald eagle	Nesting		1 Nest												
799	Waterfowl	Bufflehead	Wintering		10S												
838	Passerine	Sedge wren	General Distribution	E/-	-												
	Waterfowl	American black duck	Nesting		-												
	Waterfowl	Bufflehead	Wintering		10S												
1209	Passerine	Sedge wren	General Distribution	E/-	-												
	Waterfowl	American black duck	Nesting		-												
1246	Shorebird	Red knot	Migration	T/T	T												

FISH

Map ID	Subelement	Species	Mapping Qualifier	MD/VA S F	Concentration	Monthly Presence											
						J	F	M	A	M	J	J	A	S	O	N	D
1595	Diadromous	Atlantic sturgeon	General Distribution	-/E	-												
	Diadromous	Atlantic sturgeon	Migration	-/E	-												
	Diadromous	Striped bass	Nursery Area		-												

REPTILES & AMPHIBIANS








Map ID	Subelement	Species	Mapping Qualifier	MD/VA		Monthly Presence												Nest	Hatch	Internest	Juveniles	Adults	
				S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N						D
1761	Turtle	Diamondback terrapin	Concentration Area			Very High													May-Aug	-	-	Apr-Oct	Apr-Oct

INVERTEBRATES



Map ID	Subelement	Species	Mapping Qualifier	MD/VA		Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
1834	Crab	Blue crab	Concentration Area	S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N	D																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													

WIDESPREAD IN MAPPED AREA (> 10 SQUARE KILOMETERS)


BIRDS

Subelement	Species	Mapping Qualifier	MD/VA		Concentration	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt
			S	F		J	F	M	A	M	J	J	A	S	O	N	D				
	Common loon	Wintering			Present													-	-	-	-
	Common loon	Wintering			10S													-	-	-	-
	Grebes	Wintering			10S													-	-	-	-
	Red-throated loon	Wintering			Present													-	-	-	-
	Northern gannet	Wintering			Present													-	-	-	-
	Northern gannet	Wintering			100S													-	-	-	-
	American black duck	Wintering			10S													-	-	-	-
	American wigeon	Wintering			10S													-	-	-	-
	Brant	Wintering			100S													-	-	-	-
	Bufflehead	Wintering			100S													-	-	-	-
	Canada goose	Wintering			10S													-	-	-	-
	Canvasback	Wintering			10S													-	-	-	-
	Gadwall	Wintering			10S													-	-	-	-
	Long-tailed duck	Wintering			10S													-	-	-	-
	Mallard	Wintering			10S													-	-	-	-
	Mergansers	Wintering			10S													-	-	-	-
	Ruddy duck	Wintering			10S													-	-	-	-
	Scoters	Wintering			10S													-	-	-	-
	Scoters	Wintering			100S													-	-	-	-


FISH

Subelement	Species	Mapping Qualifier	MD/VA		Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
			S	F		J	F	M	A	M	J	J	A	S	O	N	D					
	Alewife	Migration			-													-	-	-	Aug-Nov	Feb-Apr
	American shad	Migration			-													-	-	-	Aug-Nov	Feb-Jun
	Atlantic sturgeon	General Distribution			-													-	-	-	-	Jan-Dec
	Blueback herring	Migration			-													-	-	-	Aug-Nov	Mar-Jun
	Hickory shad	Migration			-													-	-	-	Jun-Sep	Feb-May
	Striped bass	Migration			-													-	-	-	-	Feb-Jun
	Atl. sharpnose shark	Nursery Area			-													-	-	-	Jun-Sep	Jun-Sep
	Sandbar shark	Nursery Area			-													-	-	-	May-Sep	May-Sep


REPTILES & AMPHIBIANS

Subelement	Species	Mapping Qualifier	MD/VA		Concentration	Monthly Presence												Nest	Hatch	Internest	Juveniles	Adults
			S	F		J	F	M	A	M	J	J	A	S	O	N	D					
	Diamondback terrapin	Concentration Area			High													May-Aug	-	-	Apr-Oct	Apr-Oct
	Green sea turtle	General Distribution	T/T	T	Rare													-	-	-	May-Dec*	-
	Green sea turtle	General Distribution	T/T	T	Common													-	-	-	Jul-Oct	-
	K. ridley sea turtle	General Distribution	E/E	E	Common													-	-	-	Apr-Oct	-
	K. ridley sea turtle	General Distribution	E/E	E	Uncommon													-	-	-	Nov-Dec	-
	Leatherback sea turtle	General Distribution	E/E	E	Rare													-	-	-	Mar-Dec*	Mar-Dec*
	Leatherback sea turtle	General Distribution	E/E	E	Common													-	-	-	May-Jun	May-Jun
	Loggerhead sea turtle	General Distribution	T/T	T	Common													-	-	-	Nov-Dec	Nov-Dec
	Loggerhead sea turtle	General Distribution	T/T	T	Abundant													-	-	-	Apr-Oct	Apr-Oct

INVERTEBRATES





Subelement	Species	Mapping Qualifier	MD/VA		Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
			S	F		J	F	M	A	M	J	J	A	S	O	N	D					
	Blue crab	Concentration Area			Highly Abundant-Summ													-	-	-	Jun-Oct	Jun-Oct
	Blue crab	Concentration Area			Highly Abundant													-	-	-	Jun-Mar*	Jun-Mar*

MARINE MAMMALS

Subelement	Species	Mapping Qualifier	MD/VA		Concentration	Monthly Presence												Mating	Calving	Pupping	Molt
			S	F		J	F	M	A	M	J	J	A	S	O	N	D				
	West Indian manatee	General Distribution	-/E	E	Rare													-	-	-	-
	Humpback whale	General Distribution	E/E	E	Very Rare													-	-	-	-






ALSO PRESENT IN MAPPED AREA (GENERAL DISTRIBUTION)

BIRDS

Subelement	Species	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt
		J	F	M	A	M	J	J	A	S	O	N	D				
	Brown pelican													-	-	-	-
	Brown pelican													-	-	-	-
	Brown pelican													-	-	-	-
	D. crested cormorant													-	Mar-May	Aug-Nov	-
	Grebes													-	-	-	-
	Common tern													-	-	-	-
	Gulls													-	-	-	-
	Terns													-	-	-	-
	Marsh wren													-	-	-	-
	Nelson's sharp-tailed sparrow													-	Sep-Jun	-	-
	Saltmarsh sharp-tailed sparrow													-	-	-	-
	Seaside sparrow													-	-	-	-
	Bald eagle													-	-	-	-
	Short-billed dowitcher													-	-	-	-
	Clapper rail													-	Mar-Jun	Jul-Oct	-
	Virginia rail													-	-	-	-

FISH

Monthly Presence

Subelement	Species	J	F	M	A	M	J	J	A	S	O	N	D	Spawn	Eggs	Larvae	Juveniles	Adults
	Alewife													Feb-Apr	Feb-Apr	Feb-Apr	Apr-Oct	Feb-Apr
	American eel													-	-	-	Jan-May	Jan-Dec
	Blueback herring													Mar-Jun	Mar-Jun	Apr-Jun	May-Oct	Mar-Jun
	Gizzard shad													Mar-Jun	-	-	Jan-Dec	Jan-Dec
	Striped bass													-	-	-	Jan-Dec	Jan-Dec
	Atlantic croaker													-	-	Dec-Apr	Jan-Dec	May-Nov
	Atlantic croaker													-	-	Apr-Dec	Jan-Dec	May-Oct
	Atlantic herring													-	-	-	-	Jan-Jun
	Atlantic herring													-	-	-	Feb-Jun	Feb-Jun
	Atlantic menhaden													-	-	-	Jan-Dec	Jan-Dec
	Black drum													Apr-Jun	-	-	Apr-Dec	Apr-Dec
	Black sea bass													-	-	-	Apr-Nov	Apr-Nov
	Bluefish													-	-	-	May-Oct	May-Oct
	Kingfishes													-	-	-	-	Apr-Nov
	Northern puffer													-	-	-	Mar-Oct	Mar-Nov
	Northern puffer													-	-	-	Mar-Oct	Mar-Oct
	Pigfish													-	-	-	-	Apr-Nov
	Red drum													-	-	-	-	May-Nov
	Sheepshead													-	-	-	-	Apr-Nov
	Spot													-	-	-	Nov-Apr	Apr-Dec
	Spotted seatrout													May-Jul	-	-	Apr-Nov	Apr-Nov
	Summer flounder													-	-	Feb-May	Apr-Dec	Jan-Dec
	Weakfish													-	-	May-Aug	Jun-Dec	Apr-Dec
	White perch													-	-	-	Jan-Dec	Jan-Dec
	Winter flounder													-	-	-	-	Dec-Mar
	Pipefish													-	-	-	Jan-Dec	Jan-Dec
	Silversides													Mar-Jul	Mar-Jul	Apr-Sep	Jan-Dec	Jan-Dec
	Silversides													-	-	-	-	Jan-Dec
	Anchovies													Apr-Sep	-	-	-	Jan-Dec
	Striped burrfish													-	-	-	May-Oct	May-Oct
	Atlantic spadefish													-	-	-	-	Jun-Sep
	Cleamose skate													-	-	-	-	Jan-Dec
	Cownose ray													Jun-Jul	-	-	May-Oct	May-Oct
	Northern searobin													May-Jul	-	-	-	Apr-Dec
	Northern searobin													-	-	-	-	Apr-Sep
	Red hake													-	-	-	-	Sep-May*
	Silver hake													-	-	-	-	Oct-May
	Southern stingray													-	-	-	-	May-Oct
	Spotted hake													-	-	-	Jan-Dec	Jan-Dec
	Tautog													Apr-Aug	-	-	-	Jan-Dec
	Butterfish													-	-	-	-	Jan-Dec
	Cobia													-	-	-	Jul-Nov	Mar-Nov
	Harvestfish													-	-	-	-	Jun-Sep
	Lined seahorse													May-Oct	-	-	-	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					
	Spanish mackerel													-	-	-	-	May-Sep
	Spiny dogfish													-	-	-	Nov-May	Nov-May



REPTILES & AMPHIBIANS

Subelement	Species	Monthly Presence												Nest	Hatch	Interest	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	Diamondback terrapin													May-Aug	-	-	Apr-Oct	Apr-Oct

INVERTEBRATES

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	Eastern oyster													Jun-Sep	Jun-Sep	Jun-Oct	Jan-Dec	Jan-Dec
	Hard clam													Jun-Sep	Jun-Sep	Jun-Oct	Jan-Dec	Jan-Dec
	Softshell clam													May-Dec*	May-Dec*	May-Jan*	-	Jan-Dec
	Stout razor clam													Jun-Nov	-	-	Jan-Dec	Jan-Dec
	Squid													-	Apr-Dec	Apr-Dec	Jan-Dec	Apr-Dec
	Blue crab													-	-	-	Jan-Dec	Jan-Dec
	Horseshoe crab													-	-	-	Jan-Dec	Jan-Dec
	Brown shrimp													-	-	-	May-Oct	May-Oct
	Mantis shrimp													-	-	-	Jan-Dec	Jan-Dec
	White shrimp													-	-	-	May-Oct	May-Oct

MARINE MAMMALS

Subelement	Species	Monthly Presence												Mating	Calving	Pupping	Molt
		J	F	M	A	M	J	J	A	S	O	N	D				
	Bottlenose dolphin													-	-	-	-
	Bottlenose dolphin													May-Aug	May-Aug	-	-
	Harbor porpoise													-	-	-	-
	Short-beaked common dolphin													-	-	-	-
	Gray seal													-	-	-	-
	Harbor seal													-	-	-	-

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	1,712.33	2.68
10B	Freshwater Marshes	7.47	0.01
10C	Swamps	375.54	0.59
10D	Scrub and Shrub Wetlands	55.63	0.09
9A	Sheltered Tidal Flats	38.47	0.06
7	Exposed Tidal Flats	77.04	0.12

ESI SHORELINE HABITAT TYPES

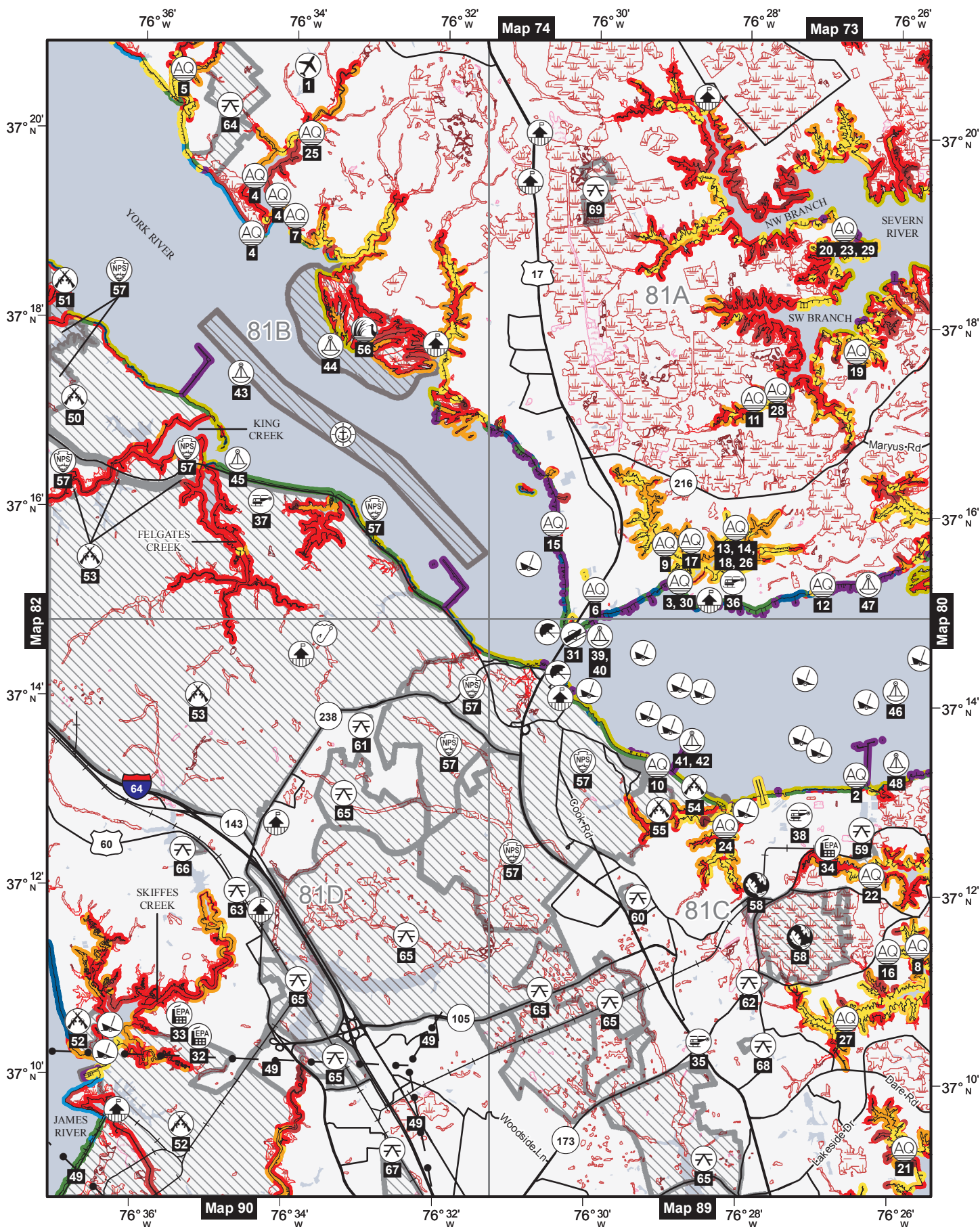
ESI Rank	Shoreline Habitat Classification	Length (Meters)	Length (Miles)	% of ESI Shoreline
10A	Salt and Brackish Water Marshes	168,232.40	104.54	56%
10C	Swamps	4,677.36	2.91	2%
10D	Scrub and Shrub Wetlands	227.39	0.14	< 1%
9A	Sheltered Tidal Flats	15,602.79	9.70	5%
9B	Vegetated Low Banks	14,832.72	9.22	5%
8B	Sheltered, Solid Man-Made Structures	16,671.25	10.36	6%
8C	Sheltered Riprap	11,228.44	6.98	4%
7	Exposed Tidal Flats	53,417.69	33.19	18%
6B	Riprap	3,674.23	2.28	1%
4	Coarse Grained Sand Beaches	555.26	0.35	< 1%
3A	Fine to Medium Grained Sand Beaches	9,419.17	5.85	3%
1B	Exposed, Solid Man-Made Structures	2,406.91	1.50	1%

Total ESI Shoreline: 300,945.60 Total ESI Shoreline: 187.00
 Total Shoreline: 211,143.33 Total Shoreline: 131.20

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 81 Chesapeake South



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

0 Not for Navigation 2 Miles
0 2 Kilometers

1:100,000



Map 81
Chesapeake South

HUMAN USE RESOURCES

DISPLAYED ON MAP (POINTS)				Contact		Phone
Map ID	Type	Name				
1	AIRPORT	NEW QUARTER FARM				
2	AQUACULTURE	HARD CLAMS OB LEGGETT RF#335		CHIP NEIKIRK, VIRGINIA MARINE RESOURCES COMM.		757-247-2254
3	AQUACULTURE	OYSTER COMM YORK RIVER YACHT HAVEN RF#2002-2264		CHIP NEIKIRK, VIRGINIA MARINE RESOURCES COMM.		757-247-2254
4	AQUACULTURE	OYSTER COMMERCIAL GUM POINT OYSTER CO. RF#99-1596		CHIP NEIKIRK, VIRGINIA MARINE RESOURCES COMM.		757-247-2254
5	AQUACULTURE	OYSTER COMMERCIAL HARWOOD ET AL RF#97-1607		CHIP NEIKIRK, VIRGINIA MARINE RESOURCES COMM.		757-247-2254
6	AQUACULTURE	OYSTER COMMERCIAL VIMS RF#2002-2074		CHIP NEIKIRK, VIRGINIA MARINE RESOURCES COMM.		757-247-2254
7	AQUACULTURE	OYSTER NON-COMM ALDRICH RF#00-1105		CHIP NEIKIRK, VIRGINIA MARINE RESOURCES COMM.		757-247-2254
8	AQUACULTURE	OYSTER NON-COMM AMY HOLTSCHEIDER RF#01-1845		CHIP NEIKIRK, VIRGINIA MARINE RESOURCES COMM.		757-247-2254
9	AQUACULTURE	OYSTER NON-COMM BOWIE RF#98-1706		CHIP NEIKIRK, VIRGINIA MARINE RESOURCES COMM.		757-247-2254
10	AQUACULTURE	OYSTER NON-COMM BURCHER RF#98-1502		CHIP NEIKIRK, VIRGINIA MARINE RESOURCES COMM.		757-247-2254
11	AQUACULTURE	OYSTER NON-COMM BURRUSS RF#99-1762		CHIP NEIKIRK, VIRGINIA MARINE RESOURCES COMM.		757-247-2254
12	AQUACULTURE	OYSTER NON-COMM CARVER, JENNIFER K. RF#2001-2105		CHIP NEIKIRK, VIRGINIA MARINE RESOURCES COMM.		757-247-2254
13	AQUACULTURE	OYSTER NON-COMM CHES BAY FOUNDATION RF#00-1851		CHIP NEIKIRK, VIRGINIA MARINE RESOURCES COMM.		757-247-2254
14	AQUACULTURE	OYSTER NON-COMM CHES BAY FOUNDATION RF#2000-1653		CHIP NEIKIRK, VIRGINIA MARINE RESOURCES COMM.		757-247-2254
15	AQUACULTURE	OYSTER NON-COMM CONDER, ROBERT, JR. ET RF#00-1882		CHIP NEIKIRK, VIRGINIA MARINE RESOURCES COMM.		757-247-2254
16	AQUACULTURE	OYSTER NON-COMM CURTIN, JAMES F. RF#99-1587		CHIP NEIKIRK, VIRGINIA MARINE RESOURCES COMM.		757-247-2254
17	AQUACULTURE	OYSTER NON-COMM DOGGETT RF#99-1716		CHIP NEIKIRK, VIRGINIA MARINE RESOURCES COMM.		757-247-2254
18	AQUACULTURE	OYSTER NON-COMM DURRETTE, JAMES R. RF#00-1798		CHIP NEIKIRK, VIRGINIA MARINE RESOURCES COMM.		757-247-2254
19	AQUACULTURE	OYSTER NON-COMM FOSKIT, BARRY R. RF#2000-1763		CHIP NEIKIRK, VIRGINIA MARINE RESOURCES COMM.		757-247-2254
20	AQUACULTURE	OYSTER NON-COMM FOX RF#98-1980		CHIP NEIKIRK, VIRGINIA MARINE RESOURCES COMM.		757-247-2254
21	AQUACULTURE	OYSTER NON-COMM FULLER, DENNIS RF#01-0915		CHIP NEIKIRK, VIRGINIA MARINE RESOURCES COMM.		757-247-2254
22	AQUACULTURE	OYSTER NON-COMM GALGAN, MAURIEEN RF#99-0814		CHIP NEIKIRK, VIRGINIA MARINE RESOURCES COMM.		757-247-2254
23	AQUACULTURE	OYSTER NON-COMM KIRBY, WILLIAM H. RF#2000-1504		CHIP NEIKIRK, VIRGINIA MARINE RESOURCES COMM.		757-247-2254
24	AQUACULTURE	OYSTER NON-COMM LEWIS RF#99-0893		CHIP NEIKIRK, VIRGINIA MARINE RESOURCES COMM.		757-247-2254
25	AQUACULTURE	OYSTER NON-COMM NEIKIRK RF#99-1206		CHIP NEIKIRK, VIRGINIA MARINE RESOURCES COMM.		757-247-2254
26	AQUACULTURE	OYSTER NON-COMM PRETZMAN RF#00-0200		CHIP NEIKIRK, VIRGINIA MARINE RESOURCES COMM.		757-247-2254
27	AQUACULTURE	OYSTER NON-COMM ROBERTSON, JAMES RF#99-1763		CHIP NEIKIRK, VIRGINIA MARINE RESOURCES COMM.		757-247-2254
28	AQUACULTURE	OYSTER NON-COMM SMITH RF#99-1761		CHIP NEIKIRK, VIRGINIA MARINE RESOURCES COMM.		757-247-2254
29	AQUACULTURE	OYSTER NON-COMM WANN, STEVEN C. RF#01-0116		CHIP NEIKIRK, VIRGINIA MARINE RESOURCES COMM.		757-247-2254
30	AQUACULTURE	VARIOUS COMMERCIAL YORK RIVER YACHT HAVEN		CHIP NEIKIRK, VIRGINIA MARINE RESOURCES COMM.		757-247-2254
31	BOAT RAMP	GLOUCESTER POINT		LENE PENNINGTON, VDGIF		804-367-0058
32	EPA FACILITY	HIGH LINER FOODS USA, INC.		REFRIGERATION SUPERVISOR		757-820-4017
33	EPA FACILITY	INTERSTATE WAREHOUSING NEWPORT NEWS		MAINTENANCE MANAGER		757-871-3852
34	EPA FACILITY	YORKTOWN TERMINAL		OPERATOR ON DUTY		757-898-9766
35	HELIPORT	CLEAR MOORE CORP. KENNETH MOORE				
36	HELIPORT	DICKERSON PORT				
37	HELIPORT	NWS HELIPAD				
38	HELIPORT	YORKTOWN POWER STATION				
39	REPEATED MEASUREMENT SITE	DB - MARINE OBSERVATION BUOY, GLOUCESTER POINT		NATIONAL COASTAL DATA DEVELOPMENT CENTER		866-732-2382
40	REPEATED MEASUREMENT SITE	DB - MARINE OBSERVATION STATION, VIMS PIER		NATIONAL COASTAL DATA DEVELOPMENT CENTER		866-732-2382

Chesapeake South: Map 81

DISPLAYED ON MAP (POINTS) (continued)				
Map ID	Type	Name	Contact	Phone
41	REPEATED MEASUREMENT SITE	DB - NOS, 8637689 - YORKTOWN, VA	NATIONAL COASTAL DATA DEVELOPMENT CENTER	866-732-2382
42	REPEATED MEASUREMENT SITE	NWLN - YORKTOWN USCG TRAINING CENTER, YORK R.	NATIONAL WATER LEVEL PROGRAM	301-713-2815
43	REPEATED MEASUREMENT SITE	WQ - STATION LE4.2	CHESAPEAKE BAY PROGRAM	800-968-7229
44	REPEATED MEASUREMENT SITE	WQ - STATION LE4.2N	CHESAPEAKE BAY PROGRAM	800-968-7229
45	REPEATED MEASUREMENT SITE	WQ - STATION LE4.2S	CHESAPEAKE BAY PROGRAM	800-968-7229
46	REPEATED MEASUREMENT SITE	WQ - STATION LE4.3	CHESAPEAKE BAY PROGRAM	800-968-7229
47	REPEATED MEASUREMENT SITE	WQ - STATION LE4.3N	CHESAPEAKE BAY PROGRAM	800-968-7229
48	REPEATED MEASUREMENT SITE	WQ - STATION LE4.3S	CHESAPEAKE BAY PROGRAM	800-968-7229

DISPLAYED ON MAP (LINES)		
Map ID	Type	Phone
49	PIPELINE	

DISPLAYED ON MAP (POLYGONS)			
Map ID	Type	Name	Phone
50	MILITARY	CHEATHAM ANNEX	
51	MILITARY	CP PEARY	
52	MILITARY	FT EUSTIS	
53	MILITARY	NAVAL WEAPONS STATION YORKTOWN	
54	MILITARY	US COAST GUARD TRAINING CENTER YORKTOWN	
55	MILITARY	YORKTOWN FUEL DEPOT	
56	NATIONAL ESTUARINE RESEARCH RESERVE	CHESAPEAKE BAY VIRGINIA RESERVE	804-684-7135
57	NATIONAL PARK	COLONIAL	
58	NATURE CONSERVANCY	UPPER CRAB NECK	703-841-5300
59	PARK	BACK CREEK COUNTY PARK	
60	PARK	BATTLE PARK	
61	PARK	CHARLES BROWN COUNTY PARK	
62	PARK	CHISMAN CREEK COUNTY PARK	
63	PARK	LEE HALL PLANTATION CITY PARK	
64	PARK	MIDDLE PENINSULA STATE PARK	
65	PARK	NEWPORT NEWS CITY PARK	
66	PARK	SKIFFES CREEK PARK	
67	PARK	STONY RUN PARK	
68	PARK	WOLFTRAP COUNTY PARK	
69	PARK	WOODVILLE PLANTATION PARK	

ALSO PRESENT IN MAPPED AREA (POINTS)		
Type	Name	Phone
COAST GUARD	HDCU WILLIAMSBURG	757-847-7912
COAST GUARD	INTL TRAINING AND TECH ASSISTANCE DIV	
COAST GUARD	PSU 305	
COAST GUARD	TRACEN YORKTOWN	757-898-3500

ALSO PRESENT IN MAPPED AREA (POLYGONS)

Type	Name	Contact	Phone
STATE PROTECTED AREA	GRAFTON PONDS	VA DEPT OF CONSERVATION AND RECREATION	

JURISDICTIONS

COUNTY:	GLOUCESTER COUNTY, JAMES CITY COUNTY, NEWPORT NEWS CITY, YORK COUNTY	FEMA:	REGION 1
COAST GUARD:	DISTRICT 5, SECTOR HAMPTON ROADS	EPA:	REGION 3
USACE:	NORTH ATLANTIC DIVISION, NORFOLK DISTRICT		

SHORELINE RESOURCES

ESI POLYGON HABITAT TYPES

ESI Rank	Habitat Classification	Area (Acres)	Area (Sq. Miles)
10A	Salt and Brackish Water Marshes	2,517.33	3.93
10B	Freshwater Marshes	393.50	0.61
10C	Swamps	9,004.96	14.07
10D	Scrub and Shrub Wetlands	568.97	0.89
9A	Sheltered Tidal Flats	27.43	0.04
7	Exposed Tidal Flats	26.46	0.04



ESI SHORELINE HABITAT TYPES

ESI Rank	Shoreline Habitat Classification	Length (Meters)	Length (Miles)	% of ESI Shoreline
10A	Salt and Brackish Water Marshes	369,889.33	229.84	49%
10B	Freshwater Marshes	175.22	0.11	< 1%
10C	Swamps	29,774.01	18.50	4%
10D	Scrub and Shrub Wetlands	6,326.37	3.93	1%
9A	Sheltered Tidal Flats	43,798.16	27.21	6%
9B	Vegetated Low Banks	116,010.24	72.09	15%
8B	Sheltered, Solid Man-Made Structures	48,243.54	29.98	6%
8C	Sheltered Riprap	15,161.57	9.42	2%
7	Exposed Tidal Flats	42,225.36	26.24	6%
6B	Riprap	26,704.56	16.59	4%
5	Mixed Sand and Gravel Beaches	100.91	0.06	< 1%
4	Coarse Grained Sand Beaches	9,118.78	5.67	1%
3A	Fine to Medium Grained Sand Beaches	17,541.45	10.90	2%
3B	Scarps and Steep Slopes (Sand)	1,973.93	1.23	< 1%
1B	Exposed, Solid Man-Made Structures	24,155.11	15.01	3%

Total ESI Shoreline:	751,198.55	Total ESI Shoreline:	466.77
Total Shoreline:	558,318.17	Total Shoreline:	346.92

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

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



Map 81A
Chesapeake South

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	MD/VA S F	Concentration	Monthly Presence											
					J	F	M	A	M	J	J	A	S	O	N	D
SAV	Submerged aquatic veg	High Ecological Value		Ephemeral												
SAV	Submerged aquatic veg	High Ecological Value		High												
SAV	Submerged aquatic veg	High Ecological Value		Low												

BIRDS

Map ID	Subelement	Species	Mapping Qualifier	MD/VA S F	Concentration	Monthly Presence											
						J	F	M	A	M	J	J	A	S	O	N	D
1	Waterfowl	American black duck	Nesting		Present												
	Waterfowl	Canada goose	Nesting		Present												
	Waterfowl	Mallard	Nesting		Present												
107	Wading	Great blue heron	Nesting		22 Nests												
108	Wading	Great blue heron	Nesting		6 Nests												
120	Wading	Great blue heron	Nesting		5 Nests												
167	Wading	Great blue heron	Nesting		8 Nests												
311	Wading	Great egret	Nesting		224 Nests												
	Wading	Green heron	Nesting		8 Pairs												
	Wading	Snowy egret	Nesting		33 Pairs												
798	Raptor	Bald eagle	Nesting		1 Nest												
1011	Diving	Common loon	Wintering		10S												
	Waterfowl	American black duck	Wintering		100S												
	Waterfowl	American wigeon	Wintering		Present												
	Waterfowl	Blue-winged teal	Migration		10S												
	Waterfowl	Brant	Wintering		100S												
	Waterfowl	Bufflehead	Wintering		1,000S												
	Waterfowl	Canada goose	Wintering		1,000S												
	Waterfowl	Canvasback	Wintering		Present												
	Waterfowl	Gadwall	Wintering		Present												
	Waterfowl	Green-winged teal	Wintering		10S												
	Waterfowl	Long-tailed duck	Wintering		Present												
	Waterfowl	Mallard	Wintering		100S												
	Waterfowl	Mergansers	Wintering		100S												
	Waterfowl	Ruddy duck	Wintering		10,000S												
	Waterfowl	Scaup	Wintering		1,000S												
	Waterfowl	Tundra swan	Wintering		100S												
1055	Diving	Common loon	Wintering		10S												
	Pelagic	Northern gannet	Wintering		100S												
	Waterfowl	American black duck	Wintering		100S												

BIRDS (continued)

Map ID	Subelement	Species	Mapping Qualifier	MD/VA		Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt
				S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N				
	Waterfowl	American wigeon	Wintering			Present												-	-	-	-
	Waterfowl	Blue-winged teal	Migration			10S												-	Feb-Apr	Aug-Oct	-
	Waterfowl	Brant	Wintering			100S												-	-	-	-
	Waterfowl	Bufflehead	Wintering			1,000S												-	-	-	-
	Waterfowl	Canada goose	Wintering			1,000S												-	-	-	-
	Waterfowl	Canvasback	Wintering			Present												-	-	-	-
	Waterfowl	Gadwall	Wintering			Present												-	-	-	-
	Waterfowl	Green-winged teal	Wintering			10S												-	-	-	-
	Waterfowl	Long-tailed duck	Wintering			Present												-	-	-	-
	Waterfowl	Mallard	Wintering			100S												-	-	-	-
	Waterfowl	Mergansers	Wintering			100S												-	-	-	-
	Waterfowl	Ruddy duck	Wintering			10,000S												-	-	-	-
	Waterfowl	Scaup	Wintering			1,000S												-	-	-	-
	Waterfowl	Scoters	Wintering			100S												-	-	-	-
	Waterfowl	Tundra swan	Wintering			100S												-	-	-	-
1176	Diving	Common loon	Wintering			Present												-	-	-	-
	Waterfowl	Long-tailed duck	Wintering			10S												-	-	-	-
1182	Pelagic	Northern gannet	Wintering			100S												-	-	-	-
	Waterfowl	Long-tailed duck	Wintering			10S												-	-	-	-
	Waterfowl	Scoters	Wintering			100S												-	-	-	-
1195	Pelagic	Northern gannet	Wintering			10S												-	-	-	-
	Waterfowl	American black duck	Wintering			Present												-	-	-	-
	Waterfowl	American wigeon	Wintering			10S												-	-	-	-
	Waterfowl	Brant	Wintering			10S												-	-	-	-
	Waterfowl	Bufflehead	Wintering			100S												-	-	-	-
	Waterfowl	Canada goose	Wintering			10S												-	-	-	-
	Waterfowl	Common goldeneye	Wintering			Present												-	-	-	-
	Waterfowl	Gadwall	Wintering			10S												-	-	-	-
	Waterfowl	Long-tailed duck	Wintering			Present												-	-	-	-
	Waterfowl	Long-tailed duck	Wintering			Present												-	-	-	-
	Waterfowl	Mallard	Wintering			100S												-	-	-	-
	Waterfowl	Mergansers	Wintering			10S												-	-	-	-
	Waterfowl	Ruddy duck	Wintering			10S												-	-	-	-
	Waterfowl	Scaup	Wintering			100S												-	-	-	-
	Waterfowl	Scoters	Wintering			10S												-	-	-	-
1200	Diving	Common loon	Wintering			Present												-	-	-	-
	Pelagic	Northern gannet	Wintering			10S												-	-	-	-
	Waterfowl	American black duck	Wintering			Present												-	-	-	-
	Waterfowl	American wigeon	Wintering			10S												-	-	-	-
	Waterfowl	Brant	Wintering			100S												-	-	-	-
	Waterfowl	Bufflehead	Wintering			100S												-	-	-	-
	Waterfowl	Canada goose	Wintering			10S												-	-	-	-
	Waterfowl	Common goldeneye	Wintering			Present												-	-	-	-
	Waterfowl	Gadwall	Wintering			10S												-	-	-	-
	Waterfowl	Long-tailed duck	Wintering			Present												-	-	-	-

BIRDS (continued)

Map ID	Subelement	Species	Mapping Qualifier	MD/VA		Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt
				S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N	D			
	Waterfowl	Mallard	Wintering			100S													-	-	-
	Waterfowl	Mergansers	Wintering			10S													-	-	-
	Waterfowl	Ruddy duck	Wintering			10S													-	-	-
	Waterfowl	Scaup	Wintering			100S													-	-	-
	Waterfowl	Scoters	Wintering			10S													-	-	-
1210	Diving	Common loon	Wintering			Present													-	-	-
	Diving	Common loon	Wintering			Present													-	-	-
1216	Waterfowl	American black duck	Wintering			10S													-	-	-
	Waterfowl	Bufflehead	Wintering			10S													-	-	-
	Waterfowl	Canada goose	Wintering			100S													-	-	-
	Waterfowl	Canvasback	Wintering			1,000S													-	-	-
	Waterfowl	Common goldeneye	Wintering			Present													-	-	-
	Waterfowl	Mallard	Wintering			10S													-	-	-
	Waterfowl	Mergansers	Wintering			10S													-	-	-
	Waterfowl	Redhead	Wintering			10S													-	-	-
	Waterfowl	Ruddy duck	Wintering			1,000S													-	-	-
	Waterfowl	Scaup	Wintering			100S													-	-	-
1334	Pelagic	Northern gannet	Wintering			100S													-	-	-
	Waterfowl	Scoters	Wintering			100S													-	-	-

FISH

Map ID	Subelement	Species	Mapping Qualifier	MD/VA		Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
				S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N	D				
1597	Diadromous	American shad	Migration			-													-	-	Aug-Nov	Feb-Jun
	Diadromous	Atlantic sturgeon	General Distribution	-/E	E	-													-	Jan-Dec	Jan-Dec	Jan-Dec
	Diadromous	Atlantic sturgeon	Migration	-/E	E	-													-	-	-	Jun-Nov
	Diadromous	Hickory shad	Migration			-													-	-	Jun-Sep	Feb-May
	Diadromous	Striped bass	Nursery Area			-													-	Mar-May	Jan-Dec	-
1600	Diadromous	American shad	Migration			-													-	-	Aug-Nov	Feb-Jun
	Diadromous	Atlantic sturgeon	Migration	-/E	E	-													-	-	-	Jun-Nov
1609	Diadromous	Hickory shad	Migration			-													-	-	Jun-Sep	Feb-May
	Diadromous	Atlantic sturgeon	General Distribution	-/E	E	-													-	Jan-Dec	Jan-Dec	Jan-Dec
	Diadromous	Striped bass	Nursery Area			-													-	Mar-May	Jan-Dec	-


REPTILES & AMPHIBIANS

Map ID	Subelement	Species	Mapping Qualifier	MD/VA		Monthly Presence												Nest	Hatch	Internest	Juveniles	Adults
				S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N	D				
1762	Turtle	Diamondback terrapin	Concentration Area			High													May-Aug	-	Apr-Oct	Apr-Oct




INVERTEBRATES

Map ID	Subelement	Species	Mapping Qualifier	MD/VA		Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
				S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N	D				
1789	Crab	Blue crab	Concentration Area			Highly Abundant													-	-	-	Jun-Mar*
1834	Crab	Blue crab	Concentration Area			Highly Abundant-Wint													-	-	-	Dec-Mar


BIRDS

Subelement	Species	Mapping Qualifier	MDVA		Concentration	Monthly Presence												Nest	Eggs	Larvae	Juveniles	Adults
			S	F		J	F	M	A	M	J	J	A	S	O	N	D					
	Diving Grebes	Wintering			10S													-	-	-	-	-
	Red-throated loon	Wintering			Present													-	-	-	-	-

FISH

Subelement	Species	Mapping Qualifier	MDVA		Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
			S	F		J	F	M	A	M	J	J	A	S	O	N	D					
	Diadromous Alewife	Migration			-													-	-	-	Aug-Nov	Feb-Apr
	Atlantic sturgeon	General Distribution	-JE	E	-													-	-	-	-	Jan-Dec
	Blueback herring	Migration			-													-	-	-	Aug-Nov	Mar-Jun
	Atl. sharpnose shark	Nursery Area			Common													-	-	-	Jun-Sep	Jun-Sep
	Marine Pelagic Sandbar shark	Nursery Area			Abundant													-	-	-	May-Sep	May-Sep

REPTILES & AMPHIBIANS

Subelement	Species	Mapping Qualifier	MDVA		Concentration	Monthly Presence												Nest	Hatch	Internest	Juveniles	Adults
			S	F		J	F	M	A	M	J	J	A	S	O	N	D					
	Green sea turtle	General Distribution	T/T	T	Rare													-	-	-	May-Dec*	-
	Green sea turtle	General Distribution	T/T	T	Common													-	-	-	Jul-Oct	-
	K. ridley sea turtle	General Distribution	E/E	E	Uncommon													-	-	-	Nov-Dec	-
	K. ridley sea turtle	General Distribution	E/E	E	Common													-	-	-	Apr-Oct	-
	Leatherback sea turtle	General Distribution	E/E	E	Common													-	-	-	May-Jun	May-Jun
	Leatherback sea turtle	General Distribution	E/E	E	Rare													-	-	-	Mar-Dec*	Mar-Dec*
	Loggerhead sea turtle	General Distribution	T/T	T	Common													-	-	-	Nov-Dec	Nov-Dec
	Loggerhead sea turtle	General Distribution	T/T	T	Abundant													-	-	-	Apr-Oct	Apr-Oct



INVERTEBRATES

Subelement	Species	Mapping Qualifier	MDVA		Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
			S	F		J	F	M	A	M	J	J	A	S	O	N	D					
	Blue crab	Concentration Area			Highly Abundant-Summ													-	-	-	Jun-Oct	Jun-Oct








MARINE MAMMALS

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


BIRDS

Subelement	Species	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	Brown pelican													-	-	-	-	-
	Brown pelican													-	-	-	-	-
	Brown pelican													-	-	-	-	-
	D. crested cormorant													-	Mar-May	Aug-Nov	-	-
	Grebes													-	-	-	-	-
	Gulls													-	-	-	-	-
	Terns													-	-	-	-	-

FISH

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	Alewife													Feb-Apr	Feb-Apr	Feb-Apr	Apr-Oct	Feb-Apr
	American eel													-	-	-	Jan-May	Jan-Dec
	Blueback herring													Mar-Jun	Mar-Jun	Apr-Jun	Mar-Jun	Mar-Jun
	Striped bass													-	-	-	Jan-Dec	Jan-Dec
	Atlantic croaker													-	-	Apr-Dec	Jan-Dec	May-Oct
	Atlantic herring													-	-	-	-	Jan-Jun
	Atlantic herring													-	-	-	Feb-Jun	Feb-Jun
	Atlantic menhaden													-	-	-	Jan-Dec	Jan-Dec
	Black drum													Apr-Jun	-	-	Apr-Dec	Apr-Dec
	Black sea bass													-	-	-	Apr-Nov	Apr-Nov
	Bluefish													-	-	-	May-Oct	May-Oct
	Kingfishes													-	-	-	-	Apr-Nov
	Northern puffer													-	-	-	Mar-Oct	Mar-Oct
	Pigfish													-	-	-	-	Apr-Nov
	Red drum													-	-	-	-	May-Nov
	Sheepshead													-	-	-	-	Apr-Nov
	Spot													-	-	-	Nov-Apr	Apr-Dec
	Spotted seatrout													May-Jul	-	-	Apr-Nov	Apr-Nov
	Summer flounder													-	-	Feb-May	Apr-Dec	Jan-Dec
	Weakfish													-	-	May-Aug	Jun-Dec	Apr-Dec
	White perch													-	-	-	Jan-Dec	Jan-Dec
	Winter flounder													-	-	-	-	Dec-Mar
	Pipefish													-	-	-	Jan-Dec	Jan-Dec
	Silversides													Mar-Jul	Mar-Jul	Apr-Sep	Jan-Dec	Jan-Dec
	Anchovies													Apr-Sep	-	-	-	Jan-Dec
	Striped burrfish													-	-	-	May-Oct	May-Oct
	Northern searobin													May-Jul	-	-	-	Apr-Dec
	Northern searobin													-	-	-	-	Apr-Sep
	Red hake													-	-	-	-	Sep-May*
	Spotted hake													-	-	-	Jan-Dec	Jan-Dec
	Tautog													Apr-Aug	-	-	-	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					
	Marine Pelagic													-	-	-	Jul-Nov	Mar-Nov
	Butterfish																	
	Harvestfish													-	-	-	-	May-Nov
	Lined seahorse													May-Oct	-	-	-	Jan-Dec
	Spanish mackerel													-	-	-	-	May-Sep

REPTILES & AMPHIBIANS

Subelement	Species	Monthly Presence												Nest	Hatch	Interest	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	Diamondback terrapin													May-Aug	-	-	Apr-Oct	Apr-Oct

INVERTEBRATES

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	Bivalve													Jun-Sep	Jun-Sep	Jun-Oct	Jan-Dec	Jan-Dec
	Eastern oyster													Jun-Sep	Jun-Sep	Jun-Oct	Jan-Dec	Jan-Dec
	Hard clam													May-Dec*	May-Dec*	May-Jan*	-	Jan-Dec
	Softshell clam													Jun-Nov	-	-	Jan-Dec	Jan-Dec
	Cephalopod													-	Apr-Dec	Apr-Dec	Apr-Dec	Apr-Dec
	Squid													-	-	-	Jan-Dec	Jan-Dec
	Crab													-	-	-	Jan-Dec	Jan-Dec
	Blue crab													-	-	-	Jan-Dec	Jan-Dec
	Shrimp													-	-	-	May-Oct	May-Oct
	Horseshoe crab													-	-	-	Jan-Dec	Jan-Dec
	Brown shrimp													-	-	-	Jan-Dec	Jan-Dec
	Mantis shrimp													-	-	-	May-Oct	May-Oct
	White shrimp													-	-	-	Jan-Dec	Jan-Dec
														-	-	-	May-Oct	May-Oct

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													-	-	-	-

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	822.08	1.28
10B	Freshwater Marshes	215.57	0.34
10C	Swamps	5,630.99	8.80
10D	Scrub and Shrub Wetlands	319.15	0.50
7	Exposed Tidal Flats	3.94	0.01

ESI SHORELINE HABITAT TYPES

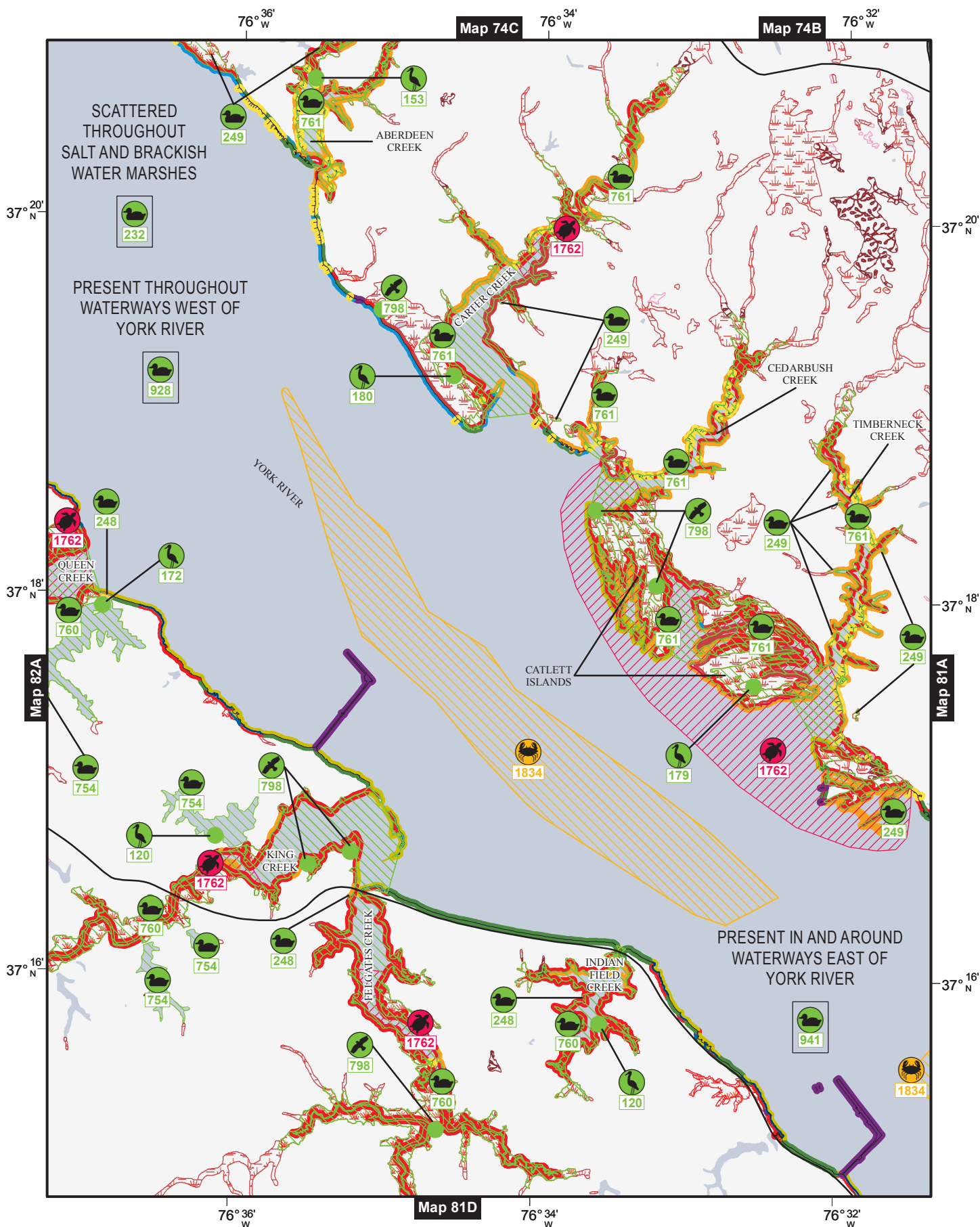
ESI Rank	Shoreline Habitat Classification	Length (Meters)	Length (Miles)	% of ESI Shoreline
10A	Salt and Brackish Water Marshes	149,514.24	92.90	50%
10B	Freshwater Marshes	148.13	0.09	< 1%
10C	Swamps	10,056.55	6.25	3%
10D	Scrub and Shrub Wetlands	3,989.81	2.48	1%
9A	Sheltered Tidal Flats	16,038.93	9.97	5%
9B	Vegetated Low Banks	54,472.82	33.85	18%
8B	Sheltered, Solid Man-Made Structures	22,339.21	13.88	7%
8C	Sheltered Riprap	6,158.74	3.83	2%
7	Exposed Tidal Flats	14,733.09	9.15	5%
6B	Riprap	5,831.73	3.62	2%
5	Mixed Sand and Gravel Beaches	80.39	0.05	< 1%
4	Coarse Grained Sand Beaches	477.97	0.30	< 1%
3A	Fine to Medium Grained Sand Beaches	7,516.44	4.67	2%
3B	Scarps and Steep Slopes (Sand)	67.74	0.04	< 1%
1B	Exposed, Solid Man-Made Structures	9,638.71	5.99	3%

Total ESI Shoreline: 301,064.51 Total ESI Shoreline: 187.07
Total Shoreline: 224,711.48 Total Shoreline: 139.63

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

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





Map 81B
Chesapeake South



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

0 Not for Navigation 1 Miles
0 1 Kilometers

1:50,000



Map 81B
Chesapeake South

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	MD/VFA	S	F	Concentration	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt
								J	F	M	A	M	J	J	A	S	O	N	D				
120	Wading	Great blue heron	Nesting				5 Nests													Feb-Jun	-	-	-
153	Wading	Great blue heron	Nesting				4 Nests													Feb-Jun	-	-	-
172	Wading	Great blue heron	Nesting				38 Nests													Feb-Jun	-	-	-
179	Wading	Great blue heron	Nesting				26 Nests													Feb-Jun	-	-	-
180	Wading	Great blue heron	Nesting				12 Nests													Feb-Jun	-	-	-
232	Waterfowl	Canada goose	Nesting				Present													Mar-Aug	-	-	Jun-Jul
	Waterfowl	Mallard	Nesting				Present													Mar-Aug	-	-	Jul-Aug
248	Waterfowl	American black duck	Wintering				100S													-	-	-	-
	Waterfowl	American wigeon	Wintering				Present													-	-	-	-
	Waterfowl	Blue-winged teal	Migration				10S													-	Feb-Apr	Aug-Oct	-
	Waterfowl	Canada goose	Nesting				Present													Mar-Aug	-	-	Jun-Jul
	Waterfowl	Gadwall	Wintering				10S													-	-	-	-
	Waterfowl	Green-winged teal	Wintering				10S													-	-	-	-
	Waterfowl	Mallard	Nesting				Present													Mar-Aug	-	-	Jul-Aug
	Waterfowl	Mallard	Wintering				100S													-	-	-	-
	Waterfowl	Tundra swan	Wintering				100S													-	-	-	-
249	Waterfowl	American black duck	Wintering				100S													-	-	-	-
	Waterfowl	Canada goose	Nesting				Present													Mar-Aug	-	-	Jun-Jul
	Waterfowl	Mallard	Nesting				Present													Mar-Aug	-	-	Jul-Aug
	Waterfowl	Mallard	Wintering				100S													-	-	-	-
	Waterfowl	Tundra swan	Wintering				10S													-	-	-	-
754	Waterfowl	American black duck	Wintering				100S													-	-	-	-
	Waterfowl	American wigeon	Wintering				Present													-	-	-	-
	Waterfowl	Blue-winged teal	Migration				10S													-	Feb-Apr	Aug-Oct	-
	Waterfowl	Bufflehead	Wintering				100S													-	-	-	-
	Waterfowl	Common goldeneye	Wintering				10S													-	-	-	-
	Waterfowl	Gadwall	Wintering				10S													-	-	-	-
	Waterfowl	Green-winged teal	Wintering				10S													-	-	-	-
	Waterfowl	Mallard	Wintering				100S													-	-	-	-
	Waterfowl	Ring-necked duck	Wintering				100S													-	-	-	-
	Waterfowl	Scaup	Wintering				10S													-	-	-	-
	Waterfowl	Tundra swan	Wintering				100S													-	-	-	-
760	Waterfowl	American black duck	Wintering				100S													-	-	-	-
	Waterfowl	American wigeon	Wintering				Present													-	-	-	-
	Waterfowl	Blue-winged teal	Migration				10S													-	Feb-Apr	Aug-Oct	-
	Waterfowl	Gadwall	Wintering				10S													-	-	-	-
	Waterfowl	Green-winged teal	Wintering				10S													-	-	-	-

BIRDS (continued)

Map ID	Subelement	Species	Mapping Qualifier	MD/VA		Monthly Presence												Nest	Hatch	Internest	Juveniles	Adults
				S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N					
	Waterfowl	Mallard	Wintering			100S												-				-
	Waterfowl	Tundra swan	Wintering			100S												-				-
761	Waterfowl	American black duck	Wintering			100S												-				-
	Waterfowl	Mallard	Wintering			100S												-				-
	Waterfowl	Tundra swan	Wintering			10S												-				-
798	Raptor	Bald eagle	Nesting			1 Nest												Dec-Jun				-
	Waterfowl	Bufflehead	Wintering			100S												-				-
941	Waterfowl	Common goldeneye	Wintering			10S												-				-
	Waterfowl	Ring-necked duck	Wintering			100S												-				-
	Waterfowl	Scaup	Wintering			10S												-				-
	Waterfowl	Bufflehead	Wintering			100S												-				-
	Waterfowl	Ruddy duck	Wintering			100S												-				-

REPTILES & AMPHIBIANS



Map ID	Subelement	Species	Mapping Qualifier	MD/VA		Monthly Presence												Nest	Hatch	Internest	Juveniles	Adults
				S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N					
1762	Turtle	Diamondback terrapin	Concentration Area			High												May-Aug			Apr-Oct	Apr-Oct

INVERTEBRATES


Map ID	Subelement	Species	Mapping Qualifier	MD/VA		Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
				S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N					
1834	Crab	Blue crab	Concentration Area			Highly Abundant-Wint												-			Dec-Mar	Dec-Mar

WIDESPREAD IN MAPPED AREA (> 10 SQUARE KILOMETERS)

BIRDS

Map ID	Subelement	Species	Mapping Qualifier	MD/VA		Monthly Presence												Nest	Hatch	Internest	Juveniles	Adults
				S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N					
	Diving	Common loon	Wintering			Present												-				-
		Grebes	Wintering			10S												-				-
	Waterfowl	Red-throated loon	Wintering			Present												-				-
		American black duck	Wintering			10S												-				-
		Bufflehead	Wintering			10S												-				-
		Canada goose	Wintering			100S												-				-
		Canvasback	Wintering			1,000S												-				-
		Common goldeneye	Wintering			Present												-				-
		Mallard	Wintering			10S												-				-
		Mergansers	Wintering			10S												-				-
		Redhead	Wintering			10S												-				-
		Ruddy duck	Wintering			1,000S												-				-
		Scaup	Wintering			100S												-				-

FISH

Subelement	Species	Mapping Qualifier	MD/VA		Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
			S	F		J	F	M	A	M	J	J	A	S	O	N	D					
	Diadromous	Alewife			Migration													-	-	-	Aug-Nov	Feb-Apr
	American shad	Migration			Migration													-	-	-	Aug-Nov	Feb-Jun
	Atlantic sturgeon	General Distribution	-/E	E														-	-	Jan-Dec	Jan-Dec	Jan-Dec
	Atlantic sturgeon	Migration	-/E	E														-	-	-	-	Jun-Nov
	Blueback herring	Migration																-	-	-	Aug-Nov	Mar-Jun
	Hickory shad	Migration																-	-	-	Jun-Sep	Feb-May
	Striped bass	Nursery Area																-	-	Mar-May	Jan-Dec	-

REPTILES & AMPHIBIANS

Subelement	Species	Mapping Qualifier	MD/VA		Concentration	Monthly Presence												Nest	Hatch	Interest	Juveniles	Adults
			S	F		J	F	M	A	M	J	J	A	S	O	N	D					
	Turtle	Green sea turtle			General Distribution													-	-	-	Jul-Oct	-
	Green sea turtle	General Distribution	T/T	T														-	-	-	May-Dec*	-

INVERTEBRATES




Subelement	Species	Mapping Qualifier	MD/VA		Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
			S	F		J	F	M	A	M	J	J	A	S	O	N	D					
	Crab	Blue crab			Concentration Area													-	-	-	Jun-Mar*	Jun-Mar*
	Blue crab	Concentration Area																-	-	-	Jun-Oct	Jun-Oct

MARINE MAMMALS



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

ALSO PRESENT IN MAPPED AREA (GENERAL DISTRIBUTION)

BIRDS

Subelement	Species	Mapping Qualifier	MD/VA		Concentration	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt
			S	F		J	F	M	A	M	J	J	A	S	O	N	D				
	Diving	Brown pelican																-	-	-	-
	D. crested cormorant																	-	Mar-May	Aug-Nov	-
	Gull/Tern	Gulls																-	-	-	-
	Terns																	-	-	-	-
	Waterfowl	Wood duck																Apr-Jul	-	-	Jul-Aug
																		-	-	-	-

FISH

Subelement	Species	Mapping Qualifier	MD/VA		Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
			S	F		J	F	M	A	M	J	J	A	S	O	N	D					
	Diadromous	Alewife																Feb-Apr	Feb-Apr	Feb-Apr	Apr-Oct	Feb-Apr
	American eel																	-	-	-	Jan-May	Jan-Dec
	Blueback herring																	Mar-Jun	Mar-Jun	Apr-Jun	May-Oct	Mar-Jun
	Striped bass																	-	-	-	Jan-Dec	Jan-Dec
	Estuarine Nursery	Atlantic croaker																-	-	Apr-Dec	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					
	Atlantic herring													-	-	-	-	Jan-Jun
	Atlantic menhaden													-	-	-	Jan-Dec	Jan-Dec
	Black drum													Apr-Jun	-	-	Apr-Dec	Apr-Dec
	Black sea bass													-	-	-	Apr-Nov	Apr-Nov
	Bluefish													-	-	-	May-Oct	May-Oct
	Kingfishes													-	-	-	-	Apr-Nov
	Northern puffer													-	-	-	Mar-Oct	Mar-Oct
	Pigfish													-	-	-	-	Apr-Nov
	Red drum													-	-	-	-	May-Nov
	Sheepshead													-	-	-	-	Apr-Nov
	Spot													-	-	-	Nov-Apr	Apr-Dec
	Spotted seatrout													May-Jul	-	-	Apr-Nov	Apr-Nov
	Summer flounder													-	-	Feb-May	Apr-Dec	Jan-Dec
	Weakfish													-	-	May-Aug	Jun-Dec	Apr-Dec
	White perch													-	-	-	Jan-Dec	Jan-Dec
	Winter flounder													-	-	-	-	Dec-Mar
	Pipefish													-	-	-	Jan-Dec	Jan-Dec
	Silversides													Mar-Jul	Mar-Jul	Apr-Sep	Jan-Dec	Jan-Dec
	Anchovies													Apr-Sep	-	-	-	Jan-Dec
	Sunfish													Mar-Jul	-	-	-	Jan-Dec
	Northern searobin													-	-	-	-	Apr-Sep
	Red hake													-	-	-	-	Sep-May*
	Spotted hake													-	-	-	Jan-Dec	Jan-Dec
	Tautog													Apr-Aug	-	-	-	Jan-Dec
	Butterfish													-	-	-	Jul-Nov	Mar-Nov
	Harvestfish													-	-	-	-	May-Nov
	Lined seahorse													May-Oct	-	-	-	Jan-Dec
	Spanish mackerel													-	-	-	-	May-Sep


REPTILES & AMPHIBIANS

Subelement	Species	Monthly Presence												Nest	Hatch	Interest	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
Turtle	Diamondback terrapin													May-Aug	-	-	Apr-Oct	Apr-Oct

INVERTEBRATES

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
Bivalve	Eastern oyster													Jun-Sep	Jun-Sep	Jun-Oct	Jan-Dec	Jan-Dec
	Hard clam													Jun-Sep	Jun-Sep	Jun-Oct	Jan-Dec	Jan-Dec
	Softshell clam													May-Dec*	May-Dec*	May-Jan*	-	Jan-Dec
Cephalopod	Stout razor clam													Jun-Nov	-	-	Jan-Dec	Jan-Dec
	Squid													-	Apr-Dec	Apr-Dec	Apr-Dec	Apr-Dec
	Blue crab													-	-	-	Jan-Dec	Jan-Dec
	Horseshoe crab													-	-	-	Jan-Dec	Jan-Dec

INVERTEBRATES (continued)

Subelement	Species	Monthly Presence												Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D				
	Brown shrimp													-	-	May-Oct	May-Oct
	Mantis shrimp													-	-	Jan-Dec	Jan-Dec
	White shrimp													-	-	May-Oct	May-Oct

MARINE MAMMALS

Subelement	Species	Monthly Presence												Mating	Calving	Pupping	Molt
		J	F	M	A	M	J	J	A	S	O	N	D				
	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)
10A	Salt and Brackish Water Marshes	977.71	1.53
10B	Freshwater Marshes	10.75	0.02
10C	Swamps	708.85	1.11
10D	Scrub and Shrub Wetlands	112.07	0.18
9A	Sheltered Tidal Flats	20.64	0.03
7	Exposed Tidal Flats	6.23	0.01

ESI SHORELINE HABITAT TYPES

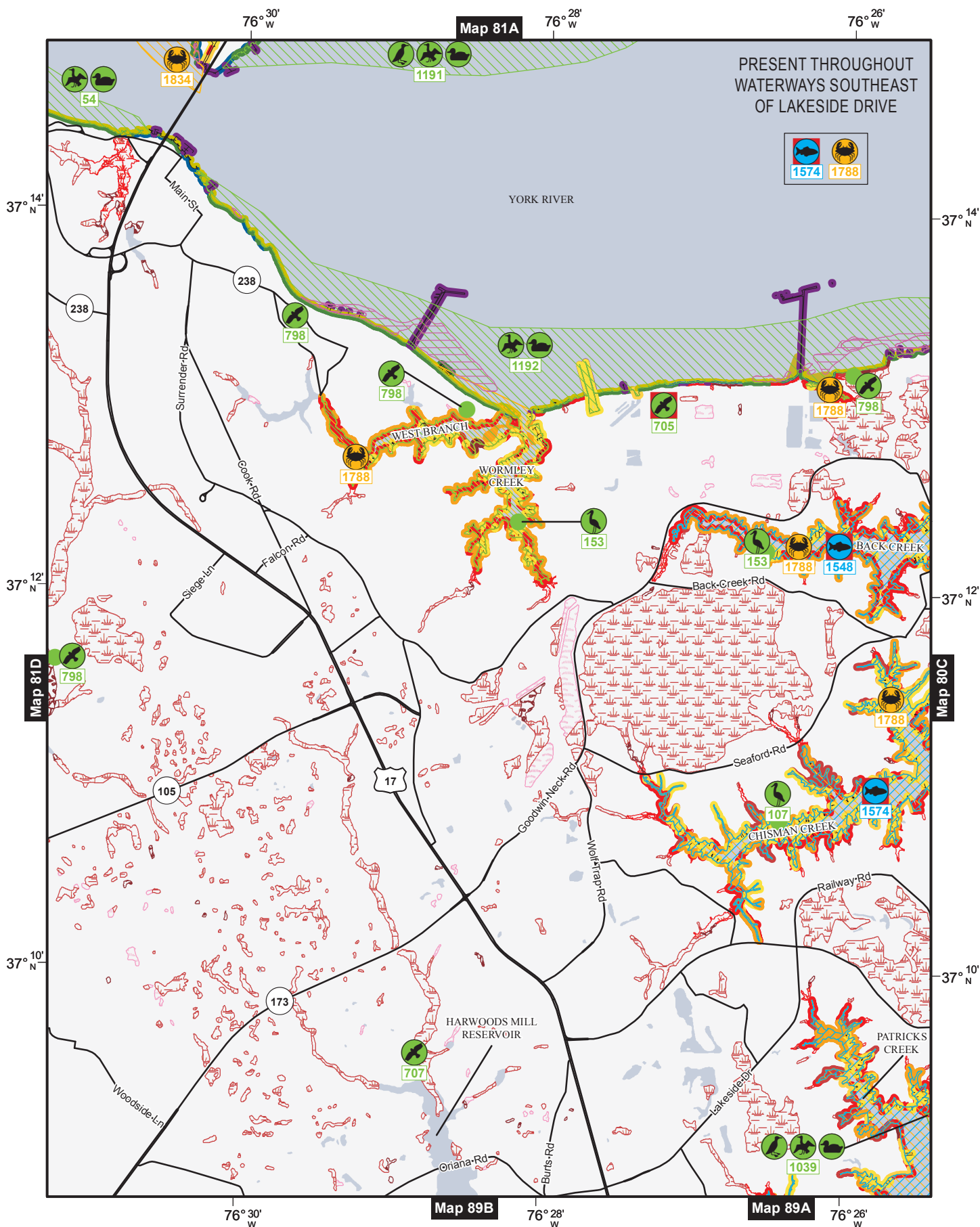
ESI Rank	Shoreline Habitat Classification	Length (Meters)	Length (Miles)	% of ESI Shoreline
10A	Salt and Brackish Water Marshes	118,518.33	73.64	54%
10B	Freshwater Marshes	27.09	0.02	< 1%
10C	Swamps	7,789.23	4.84	4%
10D	Scrub and Shrub Wetlands	877.50	0.55	< 1%
9A	Sheltered Tidal Flats	23,680.62	14.71	11%
9B	Vegetated Low Banks	21,518.27	13.37	10%
8B	Sheltered, Solid Man-Made Structures	4,150.16	2.58	2%
8C	Sheltered Riprap	1,210.09	0.75	1%
7	Exposed Tidal Flats	14,426.92	8.96	7%
6B	Riprap	9,115.01	5.66	4%
4	Coarse Grained Sand Beaches	6,613.64	4.11	3%
3A	Fine to Medium Grained Sand Beaches	5,523.94	3.43	3%
1B	Exposed, Solid Man-Made Structures	5,461.44	3.39	2%

Total ESI Shoreline: 218,912.25
Total Shoreline: 151,985.03
Total ESI Shoreline: 136.03
Total Shoreline: 94.44

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



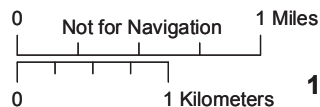


Map 81C

Chesapeake South



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



1:50,000



Map 81C
Chesapeake South

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	MD/VA S F	Concentration	Monthly Presence											
					J	F	M	A	M	J	J	A	S	O	N	D
SAV	Submerged aquatic veg	High Ecological Value		Ephemeral												
SAV	Submerged aquatic veg	High Ecological Value		High												
SAV	Submerged aquatic veg	High Ecological Value		Low												

BIRDS

Map ID	Subelement	Species	Mapping Qualifier	MD/VA S F	Concentration	Monthly Presence										Nest	Mig.(S)	Mig.(F)	Molt
						J	F	M	A	M	J	J	A	S	O	N			
54	Diving	Grebes	Wintering		10S												-	-	-
	Waterfowl	American black duck	Wintering		10S												-	-	-
	Waterfowl	Bufflehead	Wintering		10S												-	-	-
	Waterfowl	Canada goose	Wintering		100S												-	-	-
	Waterfowl	Canvasback	Wintering		1,000S												-	-	-
	Waterfowl	Common goldeneye	Wintering		Present												-	-	-
	Waterfowl	Mallard	Wintering		10S												-	-	-
	Waterfowl	Mergansers	Wintering		10S												-	-	-
	Waterfowl	Redhead	Wintering		10S												-	-	-
	Waterfowl	Ruddy duck	Wintering		1,000S												-	-	-
	Waterfowl	Scaup	Wintering		100S												-	-	-
107	Wading	Great blue heron	Nesting		22 Nests												-	-	-
153	Wading	Great blue heron	Nesting		4 Nests												-	-	-
705	Raptor	Peregrine falcon	Nesting	-JT	-												-	-	-
707	Raptor	Bald eagle	Roosting		-												-	-	-
798	Raptor	Bald eagle	Nesting		1 Nest												-	-	-
1039	Diving	Common loon	Wintering		10S												-	-	-
	Diving	Grebes	Wintering		10S												-	-	-
	Pelagic	Northern gannet	Wintering		Present												-	-	-
	Waterfowl	American black duck	Wintering		10S												-	-	-
	Waterfowl	American wigeon	Wintering		10S												-	-	-
	Waterfowl	Brant	Wintering		100S												-	-	-
	Waterfowl	Bufflehead	Wintering		100S												-	-	-
	Waterfowl	Canada goose	Wintering		10S												-	-	-
	Waterfowl	Canvasback	Wintering		10S												-	-	-
	Waterfowl	Gadwall	Wintering		10S												-	-	-
	Waterfowl	Mallard	Wintering		10S												-	-	-
	Waterfowl	Mergansers	Wintering		10S												-	-	-
	Waterfowl	Ruddy duck	Wintering		10S												-	-	-
	Waterfowl	Scooters	Wintering		10S												-	-	-

BIRDS (continued)

Map ID	Subelement	Species	Mapping Qualifier	MD/VA		Monthly Presence												Molt
				S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N	
1191	Diving	Grebes	Wintering			10S												-
	Pelagic	Northern gannet	Wintering			10S												-
	Waterfowl	American black duck	Wintering			Present												-
	Waterfowl	American wigeon	Wintering			10S												-
	Waterfowl	Brant	Wintering			10S												-
	Waterfowl	Bufflehead	Wintering			100S												-
	Waterfowl	Canada goose	Wintering			10S												-
	Waterfowl	Common goldeneye	Wintering			Present												-
	Waterfowl	Gadwall	Wintering			10S												-
	Waterfowl	Long-tailed duck	Wintering			Present												-
	Waterfowl	Mallard	Wintering			100S												-
	Waterfowl	Mergansers	Wintering			10S												-
	Waterfowl	Ruddy duck	Wintering			10S												-
	Waterfowl	Scaup	Wintering			100S												-
	Waterfowl	Sooters	Wintering			10S												-
1192	Diving	Grebes	Wintering			10S												-
	Waterfowl	Brant	Wintering			100S												-
	Waterfowl	Bufflehead	Wintering			10S												-
	Waterfowl	Canada goose	Wintering			10S												-
	Waterfowl	Long-tailed duck	Wintering			Present												-
	Waterfowl	Mergansers	Wintering			Present												-
	Waterfowl	Ruddy duck	Wintering			100S												-
	Waterfowl	Scaup	Wintering			10S												-
	Waterfowl	Sooters	Wintering			10S												-




FISH

Map ID	Subelement	Species	Mapping Qualifier	MD/VA		Monthly Presence												Adults
				S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N	
1548	Diadromous	Atlantic sturgeon	General Distribution	-/E	E	-												Jan-Dec
1574	Diadromous	Atlantic sturgeon	General Distribution	-/E	E	-												Jan-Dec
	Diadromous	Striped bass	Migration			-												Feb-Jun

INVERTEBRATES

Map ID	Subelement	Species	Mapping Qualifier	MD/VA		Monthly Presence												Adults
				S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N	
1788	Crab	Blue crab	Concentration Area			Highly Abundant-Summ												Jun-Oct
1834	Crab	Blue crab	Concentration Area			Highly Abundant-Wint												Dec-Mar


BIRDS

Subelement	Species	Mapping Qualifier	MDVA		Concentration	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt
			S	F		J	F	M	A	M	J	J	A	S	O	N	D				
	Diving	Common loon			Present													-	-	-	-
		Red-throated loon			Present													-	-	-	-
	Pelagic	Northern gannet			100S													-	-	-	-
		Long-tailed duck			10S													-	-	-	-
	Waterfowl	Scoters			100S													-	-	-	-

FISH

Subelement	Species	Mapping Qualifier	MDVA		Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
			S	F		J	F	M	A	M	J	J	A	S	O	N	D					
	Diadromous	Alewife			-													-	-	-	Aug-Nov	Feb-Apr
		American shad			-													-	-	-	Aug-Nov	Feb-Jun
		Atlantic sturgeon	-/E	E	-													-	-	Jan-Dec	Jan-Dec	Jan-Dec
		Atlantic sturgeon	-/E	E	-													-	-	-	-	Jun-Nov
		Blueback herring			-													-	-	-	Aug-Nov	Mar-Jun
		Hickory shad			-													-	-	-	Jun-Sep	Feb-May
		Striped bass			-													-	-	Mar-May	Jan-Dec	-

REPTILES & AMPHIBIANS

Subelement	Species	Mapping Qualifier	MDVA		Concentration	Monthly Presence												Nest	Hatch	Internest	Juveniles	Adults
			S	F		J	F	M	A	M	J	J	A	S	O	N	D					
	Turtle	Green sea turtle	T/T	T	Common													-	-	-	Jul-Oct	-
		Green sea turtle	T/T	T	Rare													-	-	-	May-Dec*	-
		K. ridley sea turtle	E/E	E	Uncommon													-	-	-	Nov-Dec	-
		K. ridley sea turtle	E/E	E	Common													-	-	-	Apr-Oct	-
		Leatherback sea turtle	E/E	E	Rare													-	-	-	Mar-Dec*	-
		Leatherback sea turtle	E/E	E	Common													-	-	-	May-Jun	Mar-Jun
		Loggerhead sea turtle	T/T	T	Common													-	-	-	Nov-Dec	Nov-Dec
		Loggerhead sea turtle	T/T	T	Abundant													-	-	-	Apr-Oct	Apr-Oct

INVERTEBRATES

Subelement	Species	Mapping Qualifier	MDVA		Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
			S	F		J	F	M	A	M	J	J	A	S	O	N	D					
	Crab	Blue crab			Highly Abundant													-	-	-	Jun-Mar*	Jun-Mar*








MARINE MAMMALS

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


BIRDS

Subelement	Species	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	Brown pelican													-	-	-	-	-
	Brown pelican													-	-	-	-	-
	Brown pelican													-	-	-	-	-
	D. crested cormorant													-	Mar-May	Aug-Nov	-	-
	Grebes													-	-	-	-	-
	Gulls													-	-	-	-	-
	Terns													-	-	-	-	-
														-	-	-	-	-

FISH

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	Alewife													Feb-Apr	Feb-Apr	Feb-Apr	Apr-Oct	Feb-Apr
	American eel													-	-	-	Jan-May	Jan-Dec
	Blueback herring													Mar-Jun	Mar-Jun	Apr-Jun	Mar-Jun	Mar-Jun
	Gizzard shad													Mar-Jun	-	-	Jan-Dec	Jan-Dec
	Striped bass													-	-	-	Jan-Dec	Jan-Dec
	Atlantic croaker													-	-	Apr-Dec	Jan-Dec	May-Oct
	Atlantic croaker													-	-	Dec-Apr	Jan-Dec	May-Nov
	Atlantic herring													-	-	-	Feb-Jun	Feb-Jun
	Atlantic herring													-	-	-	-	Jan-Jun
	Atlantic menhaden													-	-	-	Jan-Dec	Jan-Dec
	Black drum													Apr-Jun	-	-	Apr-Dec	Apr-Dec
	Black sea bass													-	-	-	Apr-Nov	Apr-Nov
	Bluefish													-	-	-	May-Oct	May-Oct
	Kingfishes													-	-	-	-	Apr-Nov
	Northern puffer													-	-	-	Mar-Oct	Mar-Nov
	Northern puffer													-	-	-	Mar-Oct	Mar-Oct
	Pigfish													-	-	-	-	Apr-Nov
	Red drum													-	-	-	-	May-Nov
	Sheepshead													-	-	-	-	Apr-Nov
	Spot													-	-	-	-	Apr-Nov
	Spotted seatrout													May-Jul	-	-	Nov-Apr	Apr-Nov
	Summer flounder													-	-	Feb-May	Apr-Dec	Jan-Dec
	Weakfish													-	-	May-Aug	Jun-Dec	Apr-Dec
	White perch													-	-	-	Jan-Dec	Jan-Dec
	Winter flounder													-	-	-	-	Dec-Mar
	Pipefish													-	-	-	Jan-Dec	Jan-Dec
	Silversides													Mar-Jul	Mar-Jul	Apr-Sep	Jan-Dec	Jan-Dec
	Silversides													-	-	-	-	Jan-Dec
	Anchovies													Apr-Sep	-	-	-	Jan-Dec
	Striped burrfish													-	-	-	May-Oct	May-Oct
	Atlantic spadefish													-	-	-	-	Jun-Sep





FISH (continued)

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	Cleannose skate													-	-	-	-	Jan-Dec
	Cownose ray													Jun-Jul	-	-	May-Oct	May-Oct
	Northern searobin													-	-	-	-	Apr-Sep
	Northern searobin													May-Jul	-	-	-	Apr-Dec
	Red hake													-	-	-	-	Sep-May*
	Silver hake													-	-	-	-	Oct-May
	Southern stingray													-	-	-	-	May-Oct
	Spotted hake													-	-	-	-	Jan-Dec
	Tautog													Apr-Aug	-	-	-	Jan-Dec
	Butterfish													-	-	-	-	Jan-Dec
	Cobia													-	-	-	Jul-Nov	Mar-Nov
	Harvestfish													-	-	-	-	Jun-Sep
	Lined seahorse													-	-	-	-	May-Nov
	Spanish mackerel													May-Oct	-	-	-	Jan-Dec
	Spiny dogfish													-	-	-	Nov-May	May-Sep

REPTILES & AMPHIBIANS

Subelement	Species	Monthly Presence												Nest	Hatch	Interest	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	Diamondback terrapin													May-Aug	-	-	Apr-Oct	Apr-Oct

INVERTEBRATES

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	Eastern oyster													Jun-Sep	Jun-Sep	Jun-Oct	Jan-Dec	Jan-Dec
	Hard clam													Jun-Sep	Jun-Sep	Jun-Oct	Jan-Dec	Jan-Dec
	Softshell clam													May-Dec*	May-Dec*	May-Jan*	-	Jan-Dec
	Stout razor clam													Jun-Nov	-	-	Jan-Dec	Jan-Dec
	Squid													-	Apr-Dec	Apr-Dec	Apr-Dec	Apr-Dec
	Blue crab													-	-	-	Jan-Dec	Jan-Dec
	Horseshoe crab													-	-	-	Jan-Dec	Jan-Dec
	Brown shrimp													-	-	-	May-Oct	May-Oct
	Mantis shrimp													-	-	-	Jan-Dec	Jan-Dec
	White shrimp													-	-	-	May-Oct	May-Oct

MARINE MAMMALS

Subelement	Species	Monthly Presence												Mating	Calving	Pupping	Molt
		J	F	M	A	M	J	J	A	S	O	N	D				
	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)
10A	Salt and Brackish Water Marshes	155.12	0.24
10B	Freshwater Marshes	100.78	0.16
10C	Swamps	1,811.94	2.83
10D	Scrub and Shrub Wetlands	47.65	0.07
9A	Sheltered Tidal Flats	6.79	0.01
7	Exposed Tidal Flats	15.05	0.02

ESI SHORELINE HABITAT TYPES

ESI Rank	Shoreline Habitat Classification	Length (Meters)	Length (Miles)	% of ESI Shoreline
10A	Salt and Brackish Water Marshes	50,839.60	31.59	34%
10C	Swamps	6,965.81	4.33	5%
10D	Scrub and Shrub Wetlands	984.46	0.61	1%
9A	Sheltered Tidal Flats	289.28	0.18	< 1%
9B	Vegetated Low Banks	30,736.86	19.10	20%
8B	Sheltered, Solid Man-Made Structures	19,793.73	12.30	13%
8C	Sheltered Riprap	7,384.75	4.59	5%
7	Exposed Tidal Flats	12,009.12	7.46	8%
6B	Riprap	9,039.81	5.62	6%
5	Mixed Sand and Gravel Beaches	20.52	0.01	< 1%
3A	Fine to Medium Grained Sand Beaches	3,574.78	2.22	2%
1B	Exposed, Solid Man-Made Structures	8,461.91	5.26	6%

Total ESI Shoreline: 150,100.63 Total ESI Shoreline: 93.27
 Total Shoreline: 110,175.01 Total Shoreline: 68.46

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 81D
Chesapeake South

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	MD/VA	S	F	Concentration	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt
								J	F	M	A	M	J	J	A	S	O	N	D				
126	Wading	Great blue heron	Nesting				3 Nests													Feb-Jun	-	-	-
143	Wading	Great blue heron	Nesting				7 Nests													Feb-Jun	-	-	-
169	Wading	Great blue heron	Nesting				15 Nests													Feb-Jun	-	-	-
232	Waterfowl	Canada goose	Nesting				Present													Mar-Aug	-	-	Jun-Jul
	Waterfowl	Mallard	Nesting				Present													Mar-Aug	-	-	Jul-Aug
320	Wading	Green heron	Nesting				5 Pairs													Apr-Aug	-	-	-
704	Raptor	Bald eagle	Concentration Area				Moderate-High													-	-	-	-
742	Waterfowl	American black duck	Wintering				100S													-	-	-	-
	Waterfowl	American wigeon	Wintering				Present													-	-	-	-
	Waterfowl	Blue-winged teal	Migration				10S													-	Feb-Apr	Aug-Oct	-
	Waterfowl	Canada goose	Wintering				100S													-	-	-	-
	Waterfowl	Gadwall	Wintering				10S													-	-	-	-
	Waterfowl	Green-winged teal	Wintering				10S													-	-	-	-
	Waterfowl	Mallard	Wintering				100S													-	-	-	-
	Waterfowl	Tundra swan	Wintering				100S													-	-	-	-
756	Waterfowl	American black duck	Wintering				100S													-	-	-	-
	Waterfowl	Mallard	Wintering				100S													-	-	-	-
	Waterfowl	Scaup	Wintering				100S													-	-	-	-
798	Raptor	Bald eagle	Nesting				1 Nest													Dec-Jun	-	-	-
902	Waterfowl	Bufflehead	Wintering				100S													-	-	-	-
	Waterfowl	Canvasback	Wintering				1,000S													-	-	-	-
	Waterfowl	Common goldeneye	Wintering				10S													-	-	-	-
	Waterfowl	Mergansers	Wintering				10S													-	-	-	-
	Waterfowl	Ring-necked duck	Wintering				100S													-	-	-	-
	Waterfowl	Ruddy duck	Wintering				1,000S													-	-	-	-
	Waterfowl	Scaup	Wintering				10S													-	-	-	-
1026	Diving	Common loon	Wintering				10S													-	-	-	-
	Diving	D. crested cormorant	Wintering				1,000S													-	Mar-May	Aug-Nov	-
	Diving	Red-throated loon	Wintering				10S													-	-	-	-
	Waterfowl	Long-tailed duck	Wintering				Present													-	-	-	-
	Waterfowl	Scooters	Wintering				10S													-	-	-	-
1211	Diving	Common loon	Wintering				Present													-	-	-	-
	Diving	Grebes	Wintering				10S													-	-	-	-
	Waterfowl	American black duck	Wintering				10S													-	-	-	-
	Waterfowl	Bufflehead	Wintering				10S													-	-	-	-
	Waterfowl	Canada goose	Wintering				100S													-	-	-	-
	Waterfowl	Canvasback	Wintering				1,000S													-	-	-	-

BIRDS (continued)

Map ID	Subelement	Species	Mapping Qualifier	MD/VA		Concentration	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt
				S	F		J	F	M	A	M	J	J	A	S	O	N	D				
	Waterfowl	Common goldeneye	Wintering			Present													-	-	-	
	Waterfowl	Mallard	Wintering			10S													-	-	-	
	Waterfowl	Mergansers	Wintering			10S													-	-	-	
	Waterfowl	Redhead	Wintering			10S													-	-	-	
	Waterfowl	Ruddy duck	Wintering			1,000S													-	-	-	
	Waterfowl	Scaup	Wintering			100S													-	-	-	
1257	Diving	Red-throated loon	Wintering			Present													-	-	-	
	Diving	Grebes	Wintering			100S													-	-	-	
1374	Waterfowl	Bufflehead	Wintering			100S													-	-	-	
	Waterfowl	Canada goose	Wintering			10S													-	-	-	
	Waterfowl	Canvasback	Wintering			100S													-	-	-	
	Waterfowl	Mergansers	Wintering			Present													-	-	-	
	Waterfowl	Ruddy duck	Wintering			100S													-	-	-	

FISH

Map ID	Subelement	Species	Mapping Qualifier	MD/VA		Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
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1493	Diadromous	Alewife	Migration			-													-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

REPTILES & AMPHIBIANS

Map ID	Subelement	Species	Mapping Qualifier	MD/VA		Monthly Presence												Nest	Hatch	Internest	Juveniles	Adults
				S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N	D				
1762	Turtle	Diamondback terrapin	Concentration Area			High												May-Aug	-	-	Apr-Oct	Apr-Oct
1763	Turtle	Diamondback terrapin	Concentration Area			High												May-Aug	-	-	Apr-Oct	Apr-Oct
	Turtle	Green sea turtle	General Distribution	T/T	T	Rare												-	-	-	May-Dec*	-
	Turtle	Green sea turtle	General Distribution	T/T	T	Common												-	-	-	Jul-Oct	-
1767	Turtle	Green sea turtle	General Distribution	T/T	T	Common												-	-	-	Jul-Oct	-
	Turtle	Green sea turtle	General Distribution	T/T	T	Rare												-	-	-	May-Dec*	-

INVERTEBRATES





Map ID	Subelement	Species	Mapping Qualifier	MD/VA		Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
				S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N	D				
1788	Crab	Blue crab	Concentration Area			Highly Abundant-Summ												-	-	-	Jun-Oct	Jun-Oct
1789	Crab	Blue crab	Concentration Area			Highly Abundant												-	-	-	Jun-Mar*	Jun-Mar*

MARINE MAMMALS



Map ID	Subelement	Species	Mapping Qualifier	MD/VA		Concentration	Monthly Presence												Mating	Calving	Pupping	Molt
				S	F		J	F	M	A	M	J	J	A	S	O	N	D				
1843	Manatee	West Indian manatee	General Distribution	-/E	E	-													-	-	-	
1844	Manatee	West Indian manatee	General Distribution	-/E	E	Rare													-	-	-	

ALSO PRESENT IN MAPPED AREA (GENERAL DISTRIBUTION)

BIRDS

Subelement	Species	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt
		J	F	M	A	M	J	J	A	S	O	N	D				
	Diving													-	-	-	-
	Brown pelican													-	-	-	-
	D. crested cormorant													-	Mar-May	Aug-Nov	-
	Gull/Tern													-	-	-	-
	D. crested cormorant													-	-	-	-
	Gulls													-	-	-	-
	Terns													-	-	-	-
	Osprey													-	-	-	-
	Wood duck													-	-	-	-
	Waterfowl													Apr-Jul	-	-	Jul-Aug

FISH

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	Diadromous													Feb-Apr	Feb-Apr	Feb-Apr	Feb-Apr	Feb-Apr
	Alewife													-	-	-	Jan-May	Jan-Dec
	American eel													Mar-Jun	Mar-Jun	Apr-Jun	May-Oct	Mar-Jun
	Blueback herring													-	-	-	Jan-Dec	Jan-Dec
	Estuarine Nursery													-	-	Apr-Dec	Jan-Dec	May-Oct
	Striped bass													-	-	-	-	Jan-Jun
	Atlantic croaker													-	-	-	-	Jan-Jun
	Atlantic herring													-	-	-	-	Jan-Jun
	Atlantic menhaden													Apr-Jun	-	-	Apr-Dec	Apr-Dec
	Black drum													-	-	-	Apr-Nov	Apr-Nov
	Black sea bass													-	-	-	-	Apr-Nov

Chesapeake South: Map 81D





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	May-Oct
	Kingfishes													-	-	-	Mar-Oct	Apr-Nov
	Northern puffer													-	-	-	Mar-Oct	Mar-Oct
	Pigfish													-	-	-	-	Apr-Nov
	Red drum													-	-	-	-	May-Nov
	Sheepshead													-	-	-	-	Apr-Nov
	Spot													-	-	-	Nov-Apr	Apr-Dec
	Spotted seatrout													May-Jul	-	-	Apr-Nov	Apr-Nov
	Summer flounder													-	-	Feb-May	Apr-Dec	Jan-Dec
	Summer flounder													-	-	-	Apr-Oct	Jan-Dec
	Weakfish													-	-	May-Aug	Jun-Dec	Apr-Dec
	White perch													-	-	-	Jan-Dec	Jan-Dec
	Winter flounder													-	-	-	-	Dec-Mar
Estuarine Resident	Pipefish													-	-	-	Jan-Dec	Jan-Dec
	Silversides													Mar-Jul	Mar-Jul	Apr-Sep	Jan-Dec	Jan-Dec
Fish	Anchovies													Apr-Sep	-	-	-	Jan-Dec
Freshwater	Blue catfish													May-Jun	May-Jun	May-Jun	Jan-Dec	Jan-Dec
	Bullhead catfish													Apr-Jun	-	-	-	Jan-Dec
	Channel catfish													May-Jun	-	-	Jan-Dec	Jan-Dec
	Common carp													May-Jun	-	-	-	Jan-Dec
	Spottail shiner													May-Aug	-	-	-	Jan-Dec
	Sunfish													Mar-Jul	-	-	-	Jan-Dec
	Tessellated darter													Apr-Jun	-	-	-	Jan-Dec
	Yellow perch													-	-	-	Jan-Dec	Jan-Dec
Marine Benthic	Northern searobin													-	-	-	-	Apr-Sep
	Red hake													-	-	-	-	Sep-May*
	Spotted hake													-	-	-	Jan-Dec	Jan-Dec
	Tautog													Apr-Aug	-	-	-	Jan-Dec
Marine Pelagic	Butterfish													-	-	-	Jul-Nov	Mar-Nov
	Harvestfish													-	-	-	-	May-Nov
	Lined seahorse													May-Oct	-	-	-	Jan-Dec
	Spanish mackerel													-	-	-	-	May-Sep

REPTILES & AMPHIBIANS

Subelement	Species	Monthly Presence												Nest	Hatch	Internest	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
Turtle	Diamondback terrapin													May-Aug	-	-	Apr-Oct	Apr-Oct

INVERTEBRATES

	Subelement	Species	Monthly Presence												Spawn	Eggs		Larvae		Juveniles		Adults
			J	F	M	A	M	J	J	A	S	O	N	D		Jun-Sep	Jun-Sep	Jun-Oct	Jun-Oct	Jan-Dec	Jan-Dec	
	Bivalve	Eastern oyster														Jun-Sep	Jun-Sep	Jun-Oct	Jun-Dec	Jan-Dec	Jan-Dec	
		Hard clam														Jun-Sep	Jun-Sep	Jun-Oct	Jan-Dec	Jan-Dec	Jan-Dec	
	Cephalopod	Softshell clam														May-Dec*	May-Dec*	May-Jan*	-	-	Jan-Dec	Jan-Dec
		Stout razor clam														Jun-Nov	-	-	-	Jan-Dec	Jan-Dec	Jan-Dec
		Squid														-	Apr-Dec	Apr-Dec	Apr-Dec	Apr-Dec	Apr-Dec	Apr-Dec
	Crab	Blue crab														-	-	-	Jan-Dec	Jan-Dec	Jan-Dec	Jan-Dec
		Horseshoe crab														-	-	-	Jan-Dec	Jan-Dec	Jan-Dec	Jan-Dec
	Shrimp	Brown shrimp														-	-	-	May-Oct	May-Oct	May-Oct	May-Oct
		Mantis shrimp														-	-	-	Jan-Dec	Jan-Dec	Jan-Dec	Jan-Dec
		White shrimp														-	-	-	May-Oct	May-Oct	May-Oct	May-Oct

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													-	-	-	-	-	-	-

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	562.42	0.88
10B	Freshwater Marshes	66.39	0.10
10C	Swamps	853.19	1.33
10D	Scrub and Shrub Wetlands	90.10	0.14
7	Exposed Tidal Flats	1.24	0.00

ESI SHORELINE HABITAT TYPES

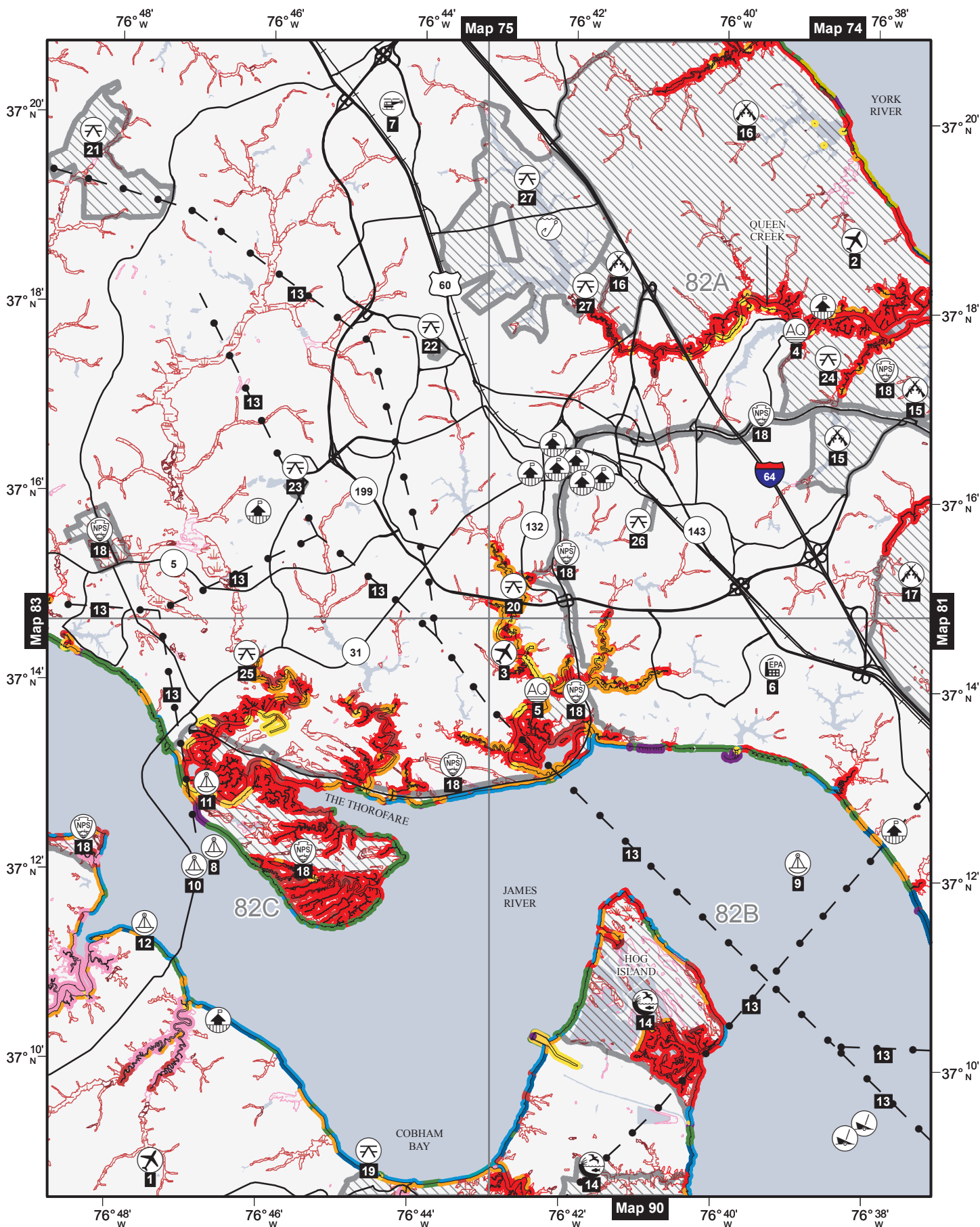
<i>ESI Rank</i>	<i>Shoreline Habitat Classification</i>	<i>Length (Meters)</i>	<i>Length (Miles)</i>	<i>% of ESI Shoreline</i>
10A	Salt and Brackish Water Marshes	51,017.16	31.70	63%
10C	Swamps	4,962.42	3.08	6%
10D	Scrub and Shrub Wetlands	474.61	0.29	1%
9A	Sheltered Tidal Flats	3,789.33	2.35	5%
9B	Vegetated Low Banks	9,282.29	5.77	11%
8B	Sheltered, Solid Man-Made Structures	1,960.44	1.22	2%
8C	Sheltered Riprap	407.99	0.25	1%
7	Exposed Tidal Flats	1,056.23	0.66	1%
6B	Riprap	2,718.01	1.69	3%
4	Coarse Grained Sand Beaches	2,027.18	1.26	2%
3A	Fine to Medium Grained Sand Beaches	926.29	0.58	1%
3B	Scarps and Steep Slopes (Sand)	1,906.19	1.18	2%
1B	Exposed, Solid Man-Made Structures	593.05	0.37	1%

Total ESI Shoreline: 81,121.17 Total ESI Shoreline: 50.41
 Total Shoreline: 71,446.64 Total Shoreline: 44.39

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 82
Chesapeake South



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

0 2 Miles
Not for Navigation
0 2 Kilometers

1:100,000



Map 82
Chesapeake South

HUMAN USE RESOURCES

DISPLAYED ON MAP (POINTS)			
Map ID	Type	Name	Phone
1	AIRPORT	MELVILLE AIRSTRIP	
2	AIRPORT	UPDA	
3	AIRPORT	WILLIAMSBURG-JAMESTOWN	
4	AQUACULTURE	OYSTER NON-COMM ALBERT RF#99-1356	CHIP NEIKIRK, VIRGINIA MARINE RESOURCES COMM. 757-247-2254
5	AQUACULTURE	OYSTER NON-COMM SCHULTZ, ROGER RF#98-2059	CHIP NEIKIRK, VIRGINIA MARINE RESOURCES COMM. 757-247-2254
6	EPA FACILITY	ANHEUSER-BUSCH, LLC WILLIAMSBURG BREWERY	RESIDENT EHS&S MANAGER 757-253-2135
7	HELIPORT	SENTARA WILLIAMSBURG RGNL MEDICAL CENTER	
8	REPEATED MEASUREMENT SITE	DB - MOORED BUOY, JAMESTOWN, VA	NATIONAL COASTAL DATA DEVELOPMENT CENTER 866-732-2382
9	REPEATED MEASUREMENT SITE	WQ - STATION LE5.1	CHESAPEAKE BAY PROGRAM 800-968-7229
10	REPEATED MEASUREMENT SITE	WQ - STATION RET5.2	CHESAPEAKE BAY PROGRAM 800-968-7229
11	REPEATED MEASUREMENT SITE	WQ - STATION RET5.2N	CHESAPEAKE BAY PROGRAM 800-968-7229
12	REPEATED MEASUREMENT SITE	WQ - STATION RET5.2S	CHESAPEAKE BAY PROGRAM 800-968-7229

DISPLAYED ON MAP (LINES)			
Map ID	Type	Name	Phone
13	PIPELINE	PIPELINE	

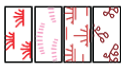
DISPLAYED ON MAP (POLYGONS)			
Map ID	Type	Name	Phone
14	MANAGEMENT AREA	HOG ISLAND WILDLIFE MANAGEMENT AREA	VA DEPT OF GAME AND INLAND FISHERIES
15	MILITARY	CHEATHAM ANNEX	
16	MILITARY	CP PEARY	
17	MILITARY	NAVAL WEAPONS STATION YORKTOWN	
18	NATIONAL PARK	COLONIAL	
19	PARK	CHIPPOKES PLANTATION STATE PARK	VA DEPT OF CONSERVATION AND RECREATION
20	PARK	COLLEGE LANDING PARK	JAMES CITY COUNTY
21	PARK	FREEDOM PARK	JAMES CITY COUNTY
22	PARK	KIWANIS PARK	JAMES CITY COUNTY
23	PARK	MID-COUNTY PARK	JAMES CITY COUNTY
24	PARK	NEW QUARTER COUNTY PARK	YORK COUNTY
25	PARK	POWHATAN CREEK PARK	JAMES CITY COUNTY
26	PARK	QUARTER PATH PARK	JAMES CITY COUNTY
27	PARK	WALLER MILL PARK	CITY OF WILLIAMSBURG

JURISDICTIONS			
COUNTY:	GLOUC. CO., I. OF WGT CO., JA. CTY CO., N. N. CTY, SRY CO., WILLSB. CTY, YORK CO. FEMA: REGION I		
COAST GUARD:	DISTRICT 5, SECTOR HAMPTON ROADS EPA: REGION 3		
USACE:	NORTH ATLANTIC DIVISION, NORFOLK DISTRICT		

SHORELINE RESOURCES

ESI POLYGON HABITAT TYPES

ESI Rank	Habitat Classification	Area (Acres)	Area (Sq. Miles)
10A	Salt and Brackish Water Marshes	2,985.30	4.66
10B	Freshwater Marshes	667.89	1.04
10C	Swamps	2,908.61	4.54
10D	Scrub and Shrub Wetlands	203.61	0.32



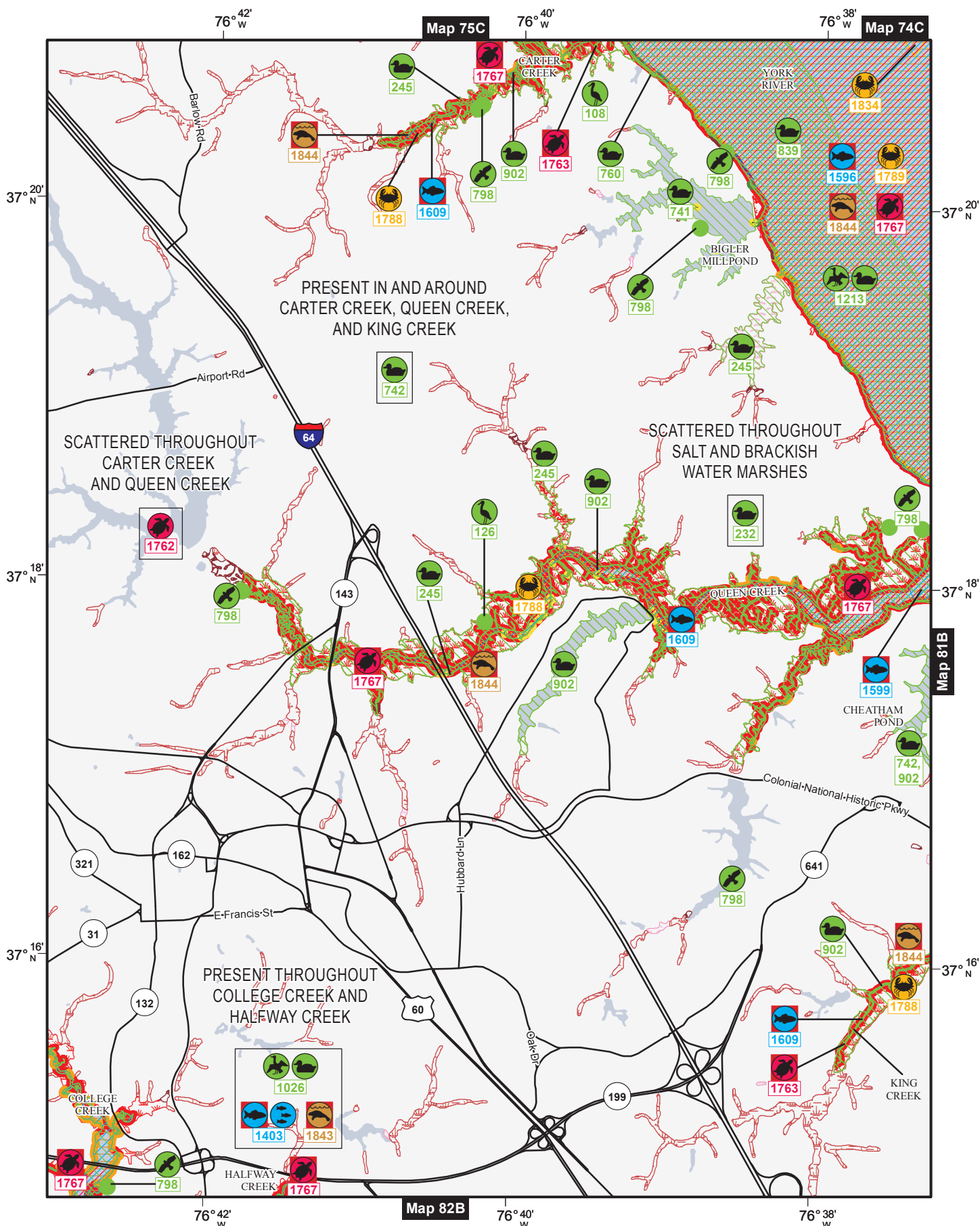
ESI SHORELINE HABITAT TYPES

ESI Rank	Shoreline Habitat Classification	Length (Meters)	Length (Miles)	% of ESI Shoreline
10A	Salt and Brackish Water Marshes	293,390.54	182.30	66%
10B	Freshwater Marshes	30,394.39	18.89	7%
10C	Swamps	14,689.45	9.13	3%
10D	Scrub and Shrub Wetlands	2,349.57	1.46	1%
9A	Sheltered Tidal Flats	841.16	0.52	< 1%
9B	Vegetated Low Banks	30,739.88	19.10	7%
8B	Sheltered, Solid Man-Made Structures	6,721.70	4.18	2%
8C	Sheltered Riprap	3,055.11	1.90	1%
7	Exposed Tidal Flats	3,496.54	2.17	1%
6B	Riprap	20,927.30	13.00	5%
5	Mixed Sand and Gravel Beaches	929.15	0.58	< 1%
4	Coarse Grained Sand Beaches	28,164.88	17.50	6%
3A	Fine to Medium Grained Sand Beaches	759.68	0.47	< 1%
3B	Scarps and Steep Slopes (Sand)	6,990.45	4.34	2%
1B	Exposed, Solid Man-Made Structures	2,530.65	1.57	1%
Total ESI Shoreline:		445,980.46	277.12	
Total Shoreline:		401,377.63	249.40	

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 82A
Chesapeake South

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	MD/NVA	S	F	Concentration	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt
								J	F	M	A	M	J	J	A	S	O	N	D				
108	Wading	Great blue heron	Nesting				6 Nests													Feb-Jun	-	-	-
126	Wading	Great blue heron	Nesting				3 Nests													Feb-Jun	-	-	-
232	Waterfowl	Canada goose	Nesting				Present													Mar-Aug	-	-	Jun-Jul
245	Waterfowl	Mallard	Nesting				Present													Mar-Aug	-	-	Jul-Aug
	Waterfowl	American black duck	Wintering				100S													-	-	-	-
	Waterfowl	American wigeon	Wintering				Present													-	-	-	-
	Waterfowl	Blue-winged teal	Migration				10S													-	Feb-Apr	Aug-Oct	-
	Waterfowl	Canada goose	Nesting				Present													Mar-Aug	-	-	Jun-Jul
741	Waterfowl	Canada goose	Wintering				100S													-	-	-	-
	Waterfowl	Gadwall	Wintering				10S													-	-	-	-
	Waterfowl	Green-winged teal	Wintering				10S													-	-	-	-
	Waterfowl	Mallard	Nesting				Present													Mar-Aug	-	-	Jul-Aug
	Waterfowl	Mallard	Wintering				100S													-	-	-	-
	Waterfowl	Tundra swan	Wintering				100S													-	-	-	-
	Waterfowl	American black duck	Wintering				100S													-	-	-	-
	Waterfowl	American wigeon	Wintering				Present													-	-	-	-
	Waterfowl	Blue-winged teal	Migration				10S													-	Feb-Apr	Aug-Oct	-
	Waterfowl	Bufflehead	Wintering				100S													-	-	-	-
	Waterfowl	Canada goose	Wintering				100S													-	-	-	-
	Waterfowl	Canvasback	Wintering				1,000S													-	-	-	-
	Waterfowl	Common goldeneye	Wintering				10S													-	-	-	-
	Waterfowl	Gadwall	Wintering				10S													-	-	-	-
	Waterfowl	Green-winged teal	Wintering				10S													-	-	-	-
	Waterfowl	Mallard	Wintering				100S													-	-	-	-
	Waterfowl	Mergansers	Wintering				10S													-	-	-	-
	Waterfowl	Ring-necked duck	Wintering				100S													-	-	-	-
	Waterfowl	Ruddy duck	Wintering				1,000S													-	-	-	-
	Waterfowl	Scaup	Wintering				10S													-	-	-	-
742	Waterfowl	Tundra swan	Wintering				100S													-	-	-	-
	Waterfowl	American black duck	Wintering				100S													-	-	-	-
	Waterfowl	American wigeon	Wintering				Present													-	-	-	-
	Waterfowl	Blue-winged teal	Migration				10S													-	Feb-Apr	Aug-Oct	-
	Waterfowl	Canada goose	Wintering				100S													-	-	-	-
	Waterfowl	Gadwall	Wintering				10S													-	-	-	-
	Waterfowl	Green-winged teal	Wintering				10S													-	-	-	-
	Waterfowl	Mallard	Wintering				100S													-	-	-	-
	Waterfowl	Tundra swan	Wintering				100S													-	-	-	-
	Waterfowl		Wintering				100S													-	-	-	-

BIRDS (continued)

Map ID	Subelement	Species	Mapping Qualifier	MD/VA		Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt
				S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N				
760	Waterfowl	American black duck	Wintering			100S												-	-	-	-
	Waterfowl	American wigeon	Wintering			Present												-	-	-	-
	Waterfowl	Blue-winged teal	Migration			10S												-	Feb-Apr	Aug-Oct	-
	Waterfowl	Gadwall	Wintering			10S												-	-	-	-
	Waterfowl	Green-winged teal	Wintering			10S												-	-	-	-
	Waterfowl	Mallard	Wintering			100S												-	-	-	-
	Waterfowl	Tundra swan	Wintering			100S												-	-	-	-
798	Raptor	Bald eagle	Nesting			1 Nest												Dec-Jun	-	-	-
839	Waterfowl	Canada goose	Wintering			100S												-	-	-	-
902	Waterfowl	Bufflehead	Wintering			100S												-	-	-	-
	Waterfowl	Canvasback	Wintering			1,000S												-	-	-	-
	Waterfowl	Common goldeneye	Wintering			10S												-	-	-	-
	Waterfowl	Mergansers	Wintering			10S												-	-	-	-
	Waterfowl	Ring-necked duck	Wintering			100S												-	-	-	-
	Waterfowl	Ruddy duck	Wintering			1,000S												-	-	-	-
	Waterfowl	Scaup	Wintering			10S												-	-	-	-
1026	Diving	Common loon	Wintering			10S												-	-	-	-
	Diving	D. crested cormorant	Wintering			1,000S												-	Mar-May	Aug-Nov	-
	Diving	Red-throated loon	Wintering			10S												-	-	-	-
	Waterfowl	Long-tailed duck	Wintering			Present												-	-	-	-
	Waterfowl	Scoters	Wintering			10S												-	-	-	-
	Diving	Common loon	Wintering			Present												-	-	-	-
	Diving	Grebes	Wintering			10S												-	-	-	-
	Waterfowl	American black duck	Wintering			10S												-	-	-	-
	Waterfowl	Bufflehead	Wintering			10S												-	-	-	-
	Waterfowl	Canvasback	Wintering			1,000S												-	-	-	-
	Waterfowl	Common goldeneye	Wintering			Present												-	-	-	-
	Waterfowl	Mallard	Wintering			10S												-	-	-	-
	Waterfowl	Mergansers	Wintering			10S												-	-	-	-
	Waterfowl	Redhead	Wintering			10S												-	-	-	-
	Waterfowl	Ruddy duck	Wintering			1,000S												-	-	-	-
	Waterfowl	Scaup	Wintering			100S												-	-	-	-

FISH

Map ID	Subelement	Species	Mapping Qualifier	MD/VA		Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
				S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N					
1403	Diadromous	Alewife	Nursery Area			-												-	-	Feb-Apr	Apr-Oct	-
	Diadromous	Alewife	Spawning Area			-												Feb-Apr	Feb-Apr	-	-	Feb-Apr
	Diadromous	American shad	Nursery Area			-												-	-	Mar-Jul	Mar-Oct	Feb-Jun
	Diadromous	Atlantic sturgeon	General Distribution			-												-	-	Jan-Dec	Jan-Dec	Jan-Dec
	Diadromous	Blueback herring	Nursery Area			-												-	-	Apr-Jun	May-Oct	-
	Diadromous	Blueback herring	Spawning Area			-												Mar-Jun	Mar-Jun	-	-	Mar-Jun
	Diadromous	Striped bass	Nursery Area			-												-	-	Mar-May	Jan-Dec	-
	Estuarine Nursery	White perch	Spawning Area			-												Mar-May	Mar-May	Apr-Jun	-	Mar-May

FISH (continued)

Map ID	Subelement	Species	Mapping Qualifier	MD/VA	S	F	Concentration	Monthly Presence												Eggs	Larvae	Juveniles	Adults
								J	F	M	A	M	J	J	A	S	O	N	D				
1596	Freshwater	Yellow perch	Spawning Area				-													Feb-Mar	Mar-Apr	-	Feb-Mar
	Diadromous	Alewife	Migration				-													-	-	Aug-Nov	Feb-Apr
	Diadromous	American shad	Migration				-													-	-	Aug-Nov	Feb-Jun
	Diadromous	Atlantic sturgeon	General Distribution				-													-	Jan-Dec	Jan-Dec	Jan-Dec
	Diadromous	Atlantic sturgeon	Migration				-													-	-	-	Jun-Nov
	Diadromous	Blueback herring	Migration				-													-	-	-	Mar-Jun
	Diadromous	Hickory shad	Migration				-													-	-	Aug-Nov	Mar-Jun
1599	Diadromous	Striped bass	Migration				-													-	-	Jun-Sep	Feb-May
	Diadromous	Striped bass	Nursery Area				-													-	Mar-May	Jan-Dec	-
	Diadromous	Alewife	Migration				-													-	-	Aug-Nov	Feb-Apr
	Diadromous	American shad	Migration				-													-	-	Aug-Nov	Feb-Jun
	Diadromous	Atlantic sturgeon	Migration				-													-	-	-	Jun-Nov
	Diadromous	Blueback herring	Migration				-													-	-	Aug-Nov	Mar-Jun
	Diadromous	Hickory shad	Migration				-													-	-	Jun-Sep	Feb-May
1609	Diadromous	Atlantic sturgeon	General Distribution				-													-	Jan-Dec	Jan-Dec	Jan-Dec
	Diadromous	Atlantic sturgeon	Nursery Area				-													-	Mar-May	Jan-Dec	-
	Diadromous	Striped bass					-													-	-	-	-

REPTILES & AMPHIBIANS

Map ID	Subelement	Species	Mapping Qualifier	MD/VA	S	F	Concentration	Monthly Presence												Hatch	Internest	Juveniles	Adults
								J	F	M	A	M	J	J	A	S	O	N	D				
1762	Turtle	Diamondback terrapin	Concentration Area				High													May-Aug	-	Apr-Oct	Apr-Oct
1763	Turtle	Diamondback terrapin	Concentration Area				High													May-Aug	-	Apr-Oct	Apr-Oct
	Turtle	Green sea turtle	General Distribution				Rare													-	-	May-Dec*	-
	Turtle	Green sea turtle	General Distribution				Common													-	-	Jul-Oct	-
1767	Turtle	Green sea turtle	General Distribution				Rare													-	-	May-Dec*	-
	Turtle	Green sea turtle	General Distribution				Common													-	-	Jul-Oct	-




INVERTEBRATES

Map ID	Subelement	Species	Mapping Qualifier	MD/VA	S	F	Concentration	Monthly Presence												Eggs	Larvae	Juveniles	Adults
								J	F	M	A	M	J	J	A	S	O	N	D				
1788	Crab	Blue crab	Concentration Area				Highly Abundant-Summ													-	-	Jun-Oct	Jun-Oct
1789	Crab	Blue crab	Concentration Area				Highly Abundant													-	-	Jun-Mar*	Jun-Mar*
1834	Crab	Blue crab	Concentration Area				Highly Abundant-Wint													-	-	Dec-Mar	Dec-Mar





MARINE MAMMALS

Map ID	Subelement	Species	Mapping Qualifier	MD/VA		Monthly Presence												Calving	Pupping	Molt																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
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1843	Manatee	West Indian manatee	General Distribution	-/E	E																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													

BIRDS

Subelement	Species	Monthly Presence												Nest	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	Brown pelican													-	-	-	-	-
	D. crested cormorant													-	Mar-May	Aug-Nov	-	-
	D. crested cormorant													-	-	-	-	-
	Gulls													-	-	-	-	-
	Terns													-	-	-	-	-
	Wood duck													Apr-Jul	-	-	Jul-Aug	-

FISH

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	Alewife													Feb-Apr	Feb-Apr	Feb-Apr	Apr-Oct	Feb-Apr
	American eel													-	-	-	Jan-May	Jan-Dec
	Blueback herring													Mar-Jun	Mar-Jun	Apr-Jun	May-Oct	Mar-Jun
	Striped bass													-	-	-	Jan-Dec	Jan-Dec
	Atlantic croaker													-	-	Apr-Dec	Jan-Dec	May-Oct
	Atlantic herring													-	-	-	-	Jan-Jun
	Atlantic menhaden													-	-	-	Jan-Dec	Jan-Dec
	Black drum													Apr-Jun	-	-	Apr-Dec	Apr-Dec
	Bluefish													-	-	-	May-Oct	May-Oct
	Kingfishes													-	-	-	-	Apr-Nov
	Northern puffer													-	-	-	Mar-Oct	Mar-Oct
	Pigfish													-	-	-	-	Apr-Nov
	Red drum													-	-	-	-	May-Nov
	Sheepshead													-	-	-	-	Apr-Nov
	Spot													-	-	-	-	Apr-Nov
	Spotted seatrout													-	-	-	Nov-Apr	Apr-Dec
	Summer flounder													May-Jul	-	-	Apr-Nov	Apr-Nov
	Summer flounder													-	-	-	Apr-Oct	Jan-Dec
	Weakfish													-	-	Feb-May	Apr-Dec	Jan-Dec
	White perch													-	-	May-Aug	Jun-Dec	Apr-Dec
	Pipefish													-	-	-	Jan-Dec	Jan-Dec
	Silversides													Mar-Jul	Mar-Jul	Apr-Sep	Jan-Dec	Jan-Dec
	Anchovies													Apr-Sep	-	-	-	Jan-Dec
	Blue catfish													May-Jun	May-Jun	May-Jun	Jan-Dec	Jan-Dec
	Bullhead catfish													Apr-Jun	-	-	-	Jan-Dec
	Channel catfish													May-Jun	-	-	Jan-Dec	Jan-Dec
	Common carp													May-Jun	-	-	-	Jan-Dec
	Spottail shiner													May-Aug	-	-	-	Jan-Dec
	Sunfish													Mar-Jul	-	-	-	Jan-Dec
	Tessellated darter													Apr-Jul	-	-	-	Jan-Dec
	Yellow perch													Apr-Jun	-	-	-	Jan-Dec
	Northern searobin													-	-	-	Jan-Dec	Jan-Dec
														-	-	-	-	Apr-Sep





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													-	-	-	Jan-Dec	Jan-Dec
	Spotted hake																Jan-Dec	Jan-Dec
	Butterfish													-	-	-	Jul-Nov	Mar-Nov
	Harvestfish													-	-	-	-	May-Nov
	Lined seahorse													May-Oct	-	-	-	Jan-Dec
	Spanish mackerel													-	-	-	-	May-Sep

REPTILES & AMPHIBIANS

Subelement	Species	Monthly Presence												Nest	Hatch	Internest	Juveniles	Adults
Turtle	Diamondback terrapin	J	F	M	A	M	J	J	A	S	O	N	D	May-Aug	-	-	Apr-Oct	Apr-Oct
	Diamondback terrapin																	

INVERTEBRATES

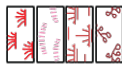
Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	Bivalve													Jun-Sep	Jun-Sep	Jun-Oct	Jan-Dec	Jan-Dec
	Eastern oyster													Jun-Sep	Jun-Sep	Jun-Oct	Jan-Dec	Jan-Dec
	Hard clam													May-Dec*	May-Dec*	May-Jan*	-	Jan-Dec
	Softshell clam													Jun-Nov	-	-	Jan-Dec	Jan-Dec
	Cephalopod													-	Apr-Dec	Apr-Dec	Apr-Dec	Apr-Dec
	Squid													-	-	-	Jan-Dec	Jan-Dec
	Blue crab													-	-	-	May-Oct	May-Oct
	Crab													-	-	-	Jan-Dec	Jan-Dec
	Brown shrimp													-	-	-	Jan-Dec	Jan-Dec
	Mantis shrimp													-	-	-	May-Oct	May-Oct
	Shrimp													-	-	-	Jan-Dec	Jan-Dec
	White shrimp													-	-	-	May-Oct	May-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	918.42	1.44
10B	Freshwater Marshes	58.73	0.09
10C	Swamps	593.57	0.93
10D	Scrub and Shrub Wetlands	30.43	0.05



ESI SHORELINE HABITAT TYPES

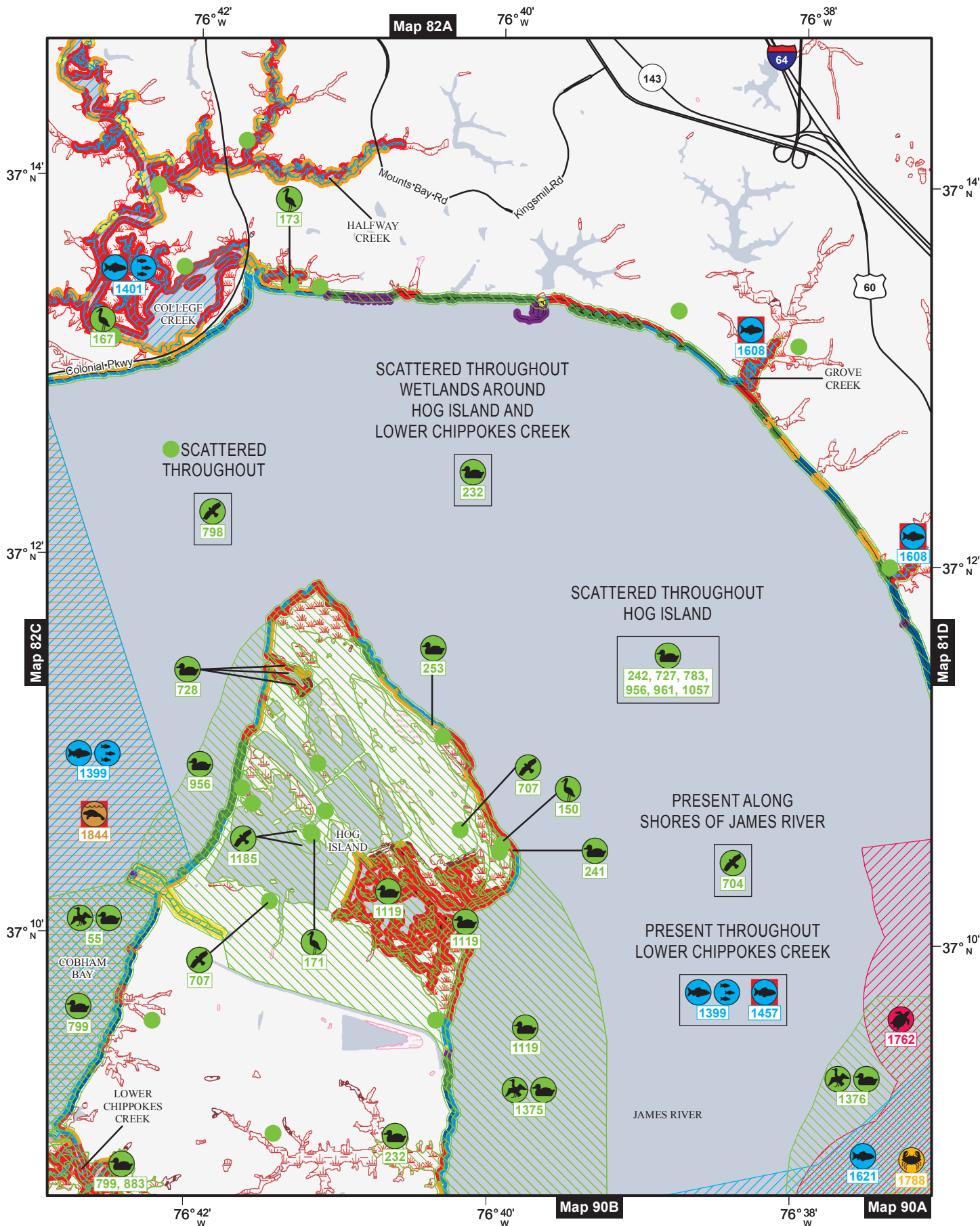
<i>ESI Rank</i>	<i>Shoreline Habitat Classification</i>	<i>Length (Meters)</i>	<i>Length (Miles)</i>	<i>% of ESI Shoreline</i>
10A	Salt and Brackish Water Marshes	86,241.26	53.59	88%
10C	Swamps	256.01	0.16	< 1%
10D	Scrub and Shrub Wetlands	508.63	0.32	1%
9A	Sheltered Tidal Flats	223.82	0.14	< 1%
9B	Vegetated Low Banks	3,876.25	2.41	4%
8B	Sheltered, Solid Man-Made Structures	991.86	0.62	1%
8C	Sheltered Riprap	425.84	0.26	< 1%
7	Exposed Tidal Flats	3,496.54	2.17	4%
6B	Riprap	919.91	0.57	1%
3A	Fine to Medium Grained Sand Beaches	759.68	0.47	1%
1B	Exposed, Solid Man-Made Structures	339.36	0.21	< 1%

Total ESI Shoreline: 98,039.16 Total ESI Shoreline: 60.92
 Total Shoreline: 90,993.04 Total Shoreline: 56.54

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 82B
Chesapeake South



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

0 Not for Navigation 1 Miles
0 1 Kilometers

1:50,000



Map 82B
Chesapeake South

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	MD/VFA	S	F	Concentration	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt
								J	F	M	A	M	J	J	A	S	O	N	D				
55	Diving	Grebes	Wintering				10S													-	-	-	-
	Waterfowl	Canada goose	Wintering				100S													-	-	-	-
	Waterfowl	Canvasback	Wintering				100S													-	-	-	-
	Waterfowl	Mergansers	Wintering				100S													-	-	-	-
150	Wading	Great blue heron	Nesting				10 Nests													Feb-Jun	-	-	-
167	Wading	Great blue heron	Nesting				8 Nests													Feb-Jun	-	-	-
171	Wading	Great blue heron	Nesting				155 Nests													Feb-Jun	-	-	-
173	Wading	Great blue heron	Nesting				20 Nests													Feb-Jun	-	-	-
232	Waterfowl	Canada goose	Nesting				Present													Mar-Aug	-	-	Jun-Jul
241	Waterfowl	Mallard	Nesting				Present													Mar-Aug	-	-	Jul-Aug
	Waterfowl	American black duck	Wintering				100S													-	-	-	-
	Waterfowl	Blue-winged teal	Migration				10S													-	Feb-Apr	Aug-Oct	-
	Waterfowl	Bufflehead	Wintering				10S													-	-	-	-
	Waterfowl	Canada goose	Nesting				Present													Mar-Aug	-	-	Jun-Jul
	Waterfowl	Canada goose	Wintering				100S													-	-	-	-
	Waterfowl	Gadwall	Wintering				100S													-	-	-	-
	Waterfowl	Green-winged teal	Wintering				10S													-	-	-	-
	Waterfowl	Mallard	Nesting				Present													Mar-Aug	-	-	Jul-Aug
	Waterfowl	Mallard	Wintering				100S													-	-	-	-
	Waterfowl	Ring-necked duck	Wintering				10S													-	-	-	-
	Waterfowl	Ruddy duck	Wintering				10S													-	-	-	-
242	Waterfowl	Tundra swan	Wintering				Present													-	-	-	-
	Waterfowl	American black duck	Wintering				100S													-	-	-	-
	Waterfowl	Blue-winged teal	Migration				10S													-	Feb-Apr	Aug-Oct	-
	Waterfowl	Bufflehead	Wintering				10S													-	-	-	-
	Waterfowl	Canada goose	Nesting				Present													Mar-Aug	-	-	Jun-Jul
	Waterfowl	Canada goose	Wintering				100S													-	-	-	-
	Waterfowl	Gadwall	Wintering				100S													-	-	-	-
	Waterfowl	Green-winged teal	Wintering				10S													-	-	-	-
	Waterfowl	Mallard	Nesting				Present													Mar-Aug	-	-	Jul-Aug
	Waterfowl	Mallard	Wintering				100S													-	-	-	-
	Waterfowl	Mergansers	Wintering				Present													-	-	-	-
	Waterfowl	Ring-necked duck	Wintering				10S													-	-	-	-
253	Waterfowl	Ruddy duck	Wintering				10S													-	-	-	-
	Waterfowl	Tundra swan	Wintering				Present													-	-	-	-
	Waterfowl	American black duck	Wintering				10S													-	-	-	-
	Waterfowl	American coot	Wintering				10S													-	-	-	-

BIRDS (continued)

Map ID	Subelement	Species	Mapping Qualifier	MD/VA		Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt
				S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N				
	Waterfowl	American wigeon	Wintering			10S												-	-	-	-
	Waterfowl	Blue-winged teal	Migration			100S												-	Feb-Apr	Aug-Oct	-
	Waterfowl	Bufflehead	Wintering			10S												-	-	-	-
	Waterfowl	Canada goose	Nesting			Present												Mar-Aug	-	-	Jun-Jul
	Waterfowl	Gadwall	Wintering			10S												-	-	-	-
	Waterfowl	Green-winged teal	Wintering			100S												-	-	-	-
	Waterfowl	Mallard	Nesting			Present												Mar-Aug	-	-	Jul-Aug
	Waterfowl	Mallard	Wintering			100S												-	-	-	-
	Waterfowl	Mergansers	Wintering			100S												-	-	-	-
	Waterfowl	Northern pintail	Wintering			10S												-	-	-	-
	Waterfowl	Ring-necked duck	Wintering			100S												-	-	-	-
	Waterfowl	Tundra swan	Wintering			10S												-	-	-	-
704	Raptor	Bald eagle	Concentration Area			Moderate-High												-	-	-	-
707	Raptor	Bald eagle	Roosting			-												-	-	-	-
727	Waterfowl	American black duck	Wintering			100S												-	-	-	-
	Waterfowl	Blue-winged teal	Migration			10S												-	Feb-Apr	Aug-Oct	-
	Waterfowl	Bufflehead	Wintering			10S												-	-	-	-
	Waterfowl	Canada goose	Wintering			100S												-	-	-	-
	Waterfowl	Gadwall	Wintering			100S												-	-	-	-
	Waterfowl	Green-winged teal	Wintering			10S												-	-	-	-
	Waterfowl	Mallard	Wintering			100S												-	-	-	-
	Waterfowl	Ring-necked duck	Wintering			10S												-	-	-	-
	Waterfowl	Ruddy duck	Wintering			10S												-	-	-	-
	Waterfowl	Tundra swan	Wintering			Present												-	-	-	-
728	Waterfowl	American black duck	Wintering			100S												-	-	-	-
	Waterfowl	Blue-winged teal	Migration			10S												-	Feb-Apr	Aug-Oct	-
	Waterfowl	Bufflehead	Wintering			10S												-	-	-	-
	Waterfowl	Canada goose	Wintering			100S												-	-	-	-
	Waterfowl	Gadwall	Wintering			100S												-	-	-	-
	Waterfowl	Green-winged teal	Wintering			10S												-	-	-	-
	Waterfowl	Mallard	Wintering			100S												-	-	-	-
	Waterfowl	Mergansers	Wintering			Present												-	-	-	-
	Waterfowl	Ring-necked duck	Wintering			10S												-	-	-	-
	Waterfowl	Ruddy duck	Wintering			10S												-	-	-	-
	Waterfowl	Tundra swan	Wintering			Present												-	-	-	-
783	Waterfowl	American black duck	Wintering			10S												-	-	-	-
	Waterfowl	American black duck	Wintering			10S												-	-	-	-
	Waterfowl	American coot	Wintering			10S												-	-	-	-
	Waterfowl	American wigeon	Wintering			10S												-	-	-	-
	Waterfowl	Blue-winged teal	Migration			100S												-	Feb-Apr	Aug-Oct	-
	Waterfowl	Bufflehead	Wintering			10S												-	-	-	-
	Waterfowl	Gadwall	Wintering			10S												-	-	-	-
	Waterfowl	Green-winged teal	Wintering			100S												-	-	-	-
	Waterfowl	Mallard	Wintering			100S												-	-	-	-
	Waterfowl	Mergansers	Wintering			100S												-	-	-	-

BIRDS (continued)

Map ID	Subelement	Species	Mapping Qualifier	MD/VA		Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt
				S	F	J	F	M	A	M	J	J	A	S	O	N	D				
	Waterfowl	Northern pintail	Wintering															-	-	-	-
	Waterfowl	Ring-necked duck	Wintering															-	-	-	-
	Waterfowl	Tundra swan	Wintering															-	-	-	-
798	Raptor	Bald eagle	Nesting															Dec-Jun	-	-	-
799	Waterfowl	Bufflehead	Wintering															-	-	-	-
883	Waterfowl	American black duck	Wintering															-	-	-	-
	Waterfowl	American wigeon	Wintering															-	-	-	-
	Waterfowl	Blue-winged teal	Migration															Feb-Apr	Aug-Oct	-	-
	Waterfowl	Canada goose	Wintering															-	-	-	-
	Waterfowl	Canvasback	Wintering															-	-	-	-
	Waterfowl	Gadwall	Wintering															-	-	-	-
	Waterfowl	Green-winged teal	Wintering															-	-	-	-
	Waterfowl	Mallard	Wintering															-	-	-	-
	Waterfowl	Mergansers	Wintering															-	-	-	-
	Waterfowl	Redhead	Wintering															-	-	-	-
	Waterfowl	Ring-necked duck	Wintering															-	-	-	-
956	Waterfowl	Canada goose	Wintering															-	-	-	-
961	Waterfowl	Canada goose	Wintering															-	-	-	-
	Waterfowl	Tundra swan	Wintering															-	-	-	-
1057	Waterfowl	Tundra swan	Wintering															-	-	-	-
1119	Waterfowl	Mergansers	Wintering															-	-	-	-
1185	Raptor	Bald eagle	Concentration Area															-	-	-	-
1375	Diving	Grebes	Wintering															-	-	-	-
	Waterfowl	Bufflehead	Wintering															-	-	-	-
	Waterfowl	Canada goose	Wintering															-	-	-	-
	Waterfowl	Canvasback	Wintering															-	-	-	-
1376	Diving	Grebes	Wintering															-	-	-	-
	Waterfowl	Bufflehead	Wintering															-	-	-	-
	Waterfowl	Canada goose	Wintering															-	-	-	-
	Waterfowl	Canvasback	Wintering															-	-	-	-
	Waterfowl	Mergansers	Wintering															-	-	-	-

FISH

Map ID	Subelement	Species	Mapping Qualifier	MD/VA		Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
				S	F	J	F	M	A	M	J	J	A	S	O	N	D					
1399	Diadromous	Alewife	Nursery Area															Feb-Apr	Feb-Apr	Feb-Apr	Apr-Oct	-
	Diadromous	Alewife	Spawning Area															Feb-Apr	Feb-Apr	-	-	Feb-Apr
	Diadromous	Blueback herring	Nursery Area															-	-	Apr-Jun	May-Oct	-
	Diadromous	Blueback herring	Spawning Area															Mar-Jun	Mar-Jun	-	-	Mar-Jun
	Estuarine Nursery	White perch	Spawning Area															Mar-May	Mar-May	Apr-Jun	-	Mar-May
1401	Diadromous	Alewife	Nursery Area															-	-	Feb-Apr	Apr-Oct	-
	Diadromous	Alewife	Spawning Area															Feb-Apr	Feb-Apr	-	-	Feb-Apr
	Diadromous	Atlantic sturgeon	General Distribution	-	E													-	-	Jan-Dec	Jan-Dec	Jan-Dec
	Diadromous	Blueback herring	Nursery Area															-	-	Apr-Jun	May-Oct	-

FISH (continued)

Map ID	Subelement	Species	Mapping Qualifier	MD/VA		Concentration	Monthly Presence												Eggs	Larvae	Juveniles	Adults
				S	F		J	F	M	A	M	J	J	A	S	O	N	D				
	Diadromous	Blueback herring	Spawning Area			-													Mar-Jun	-	-	Mar-Jun
	Estuarine Nursery	White perch	Spawning Area			-													Mar-May	Apr-Jun	-	Mar-May
	Freshwater	Yellow perch	Spawning Area			-													Feb-Mar	Mar-Apr	-	Feb-Mar
1457	Diadromous	Atlantic sturgeon	General Distribution	-/E	E	-													-	Jan-Dec	Jan-Dec	-
	Diadromous	Striped bass	Spawning Area			-													Apr-Jun	-	-	Mar-Jun
	Freshwater	Yellow perch	Spawning Area			-													Feb-Mar	Mar-Apr	-	Feb-Mar
1608	Diadromous	Atlantic sturgeon	General Distribution	-/E	E	-													-	Jan-Dec	Jan-Dec	-
1621	Diadromous	Alewife	Migration			-													-	-	-	Aug-Nov
	Diadromous	American shad	Migration			-													-	-	-	Aug-Nov
	Diadromous	Blueback herring	Migration			-													-	-	-	Aug-Nov

REPTILES & AMPHIBIANS

Map ID	Subelement	Species	Mapping Qualifier	MD/VA		Concentration	Monthly Presence												Hatch	Internest	Juveniles	Adults
				S	F		J	F	M	A	M	J	J	A	S	O	N	D				
1762	Turtle	Diamondback terrapin	Concentration Area			High													May-Aug	-	-	Apr-Oct

INVERTEBRATES



Map ID	Subelement	Species	Mapping Qualifier	MD/VA		Concentration	Monthly Presence												Eggs	Larvae	Juveniles	Adults
				S	F		J	F	M	A	M	J	J	A	S	O	N	D				
1788	Crab	Blue crab	Concentration Area			Highly Abundant-Summ													-	-	-	Jun-Oct

MARINE MAMMALS



Map ID	Subelement	Species	Mapping Qualifier	MD/VA		Concentration	Monthly Presence												Calving	Pupping	Molt																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
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1844	Manatee	West Indian manatee	General Distribution	-/E	E	Rare																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														

WIDESPREAD IN MAPPED AREA (> 10 SQUARE KILOMETERS)


BIRDS

Map ID	Subelement	Species	Mapping Qualifier	MD/VA		Concentration	Monthly Presence												Mig.(S)	Mig.(F)	Molt
				S	F		J	F	M	A	M	J	J	A	S	O	N	D			
	Diving	Common loon	Wintering			10S													-	-	-
		D. crested cormorant	Wintering			1,000S													Mar-May	Aug-Nov	-
		Red-throated loon	Wintering			10S													-	-	-
	Waterfowl	Long-tailed duck	Wintering			Present													-	-	-
		Ruddy duck	Wintering			100S													-	-	-
		Scoters	Wintering			10S													-	-	-

FISH

Subelement	Species	Mapping Qualifier	MD/VA		Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
			S	F		J	F	M	A	M	J	J	A	S	O	N	D					
	Diadromous	Alewife																-	-	Feb-Apr	Apr-Oct	Feb-Apr
		American shad																-	-	Mar-Jul	Mar-Oct	Feb-Jun
		Atlantic sturgeon																-	-	Jan-Dec	Jan-Dec	Jan-Dec
		Atlantic sturgeon																-	-	-	-	Jun-Nov
		Atlantic sturgeon																-	-	-	-	Apr-May
		Blueback herring																-	-	Apr-Jun	May-Oct	Mar-Jun
		Hickory shad																-	-	-	-	Feb-May
		Striped bass																-	-	Mar-May	Jan-Dec	-
		White perch																-	-	Apr-Jun	Jan-Dec	-
																		-	-	-	-	-

REPTILES & AMPHIBIANS


Subelement	Species	Mapping Qualifier	MD/VA		Concentration	Monthly Presence												Nest	Hatch	Internest	Juveniles	Adults
			S	F		J	F	M	A	M	J	J	A	S	O	N	D					
	Turtle	Green sea turtle																-	-	-	Jul-Oct	-
		Green sea turtle																-	-	-	May-Dec*	-

MARINE MAMMALS



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

ALSO PRESENT IN MAPPED AREA (GENERAL DISTRIBUTION)

BIRDS

Subelement	Species	Mapping Qualifier	MD/VA		Concentration	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt
			S	F		J	F	M	A	M	J	J	A	S	O	N	D				
	Diving	Brown pelican																-	-	-	-
		D. crested cormorant																-	-	-	-
	Gull/Tern	Gulls																-	-	-	-
		Terns																-	-	-	-
	Raptor	Osprey																-	-	-	-
		Clapper rail																-	-	-	-
	Waterfowl	Wood duck																May-Aug	-	-	-
																		Apr-Jul	-	-	Jul-Aug

FISH

Subelement	Species	Mapping Qualifier	MD/VA		Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
			S	F		J	F	M	A	M	J	J	A	S	O	N	D					
	Diadromous	Alewife																Feb-Apr	Feb-Apr	Feb-Apr	Apr-Oct	Feb-Apr
		American eel																-	-	-	Jan-May	Jan-Dec
		Blueback herring																Mar-Jun	Mar-Jun	Apr-Jun	May-Oct	Mar-Jun
		Striped bass																-	-	-	Jan-Dec	Jan-Dec
		Atlantic croaker																-	-	Apr-Dec	Jan-Dec	May-Oct
	Estuarine Nursery	Atlantic menhaden																-	-	-	Jan-Dec	Jan-Dec
		Kingfishes																-	-	-	-	Apr-Nov

FISH (continued)

Map ID	Subelement	Species	Mapping Qualifier	MD/VA S F	Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
						J	F	M	A	M	J	J	A	S	O	N	D					
		Sheepshead																-	-	-	-	Apr-Nov
		Spot																-	-	-	Nov-Apr	Apr-Dec
		Spotted seatrout																May-Jul	-	-	Apr-Nov	Apr-Nov
		Summer flounder																-	-	-	Apr-Oct	Jan-Dec
		Weakfish																-	-	May-Aug	Jun-Dec	Apr-Dec
		White perch																-	-	-	Jan-Dec	Jan-Dec
		Pipefish																-	-	-	Jan-Dec	Jan-Dec
		Silversides																Mar-Jul	Mar-Jul	Apr-Sep	Jan-Dec	Jan-Dec
		Anchovies																Apr-Sep	-	-	-	Jan-Dec
		Blue catfish																May-Jun	May-Jun	May-Jun	Jan-Dec	Jan-Dec
		Bullhead catfish																Apr-Jun	-	-	-	Jan-Dec
		Channel catfish																May-Jun	-	-	Jan-Dec	Jan-Dec
		Common carp																May-Jun	-	-	-	Jan-Dec
		Longnose gar																May-Jun	-	-	Jan-Dec	Jan-Dec
		Spottail shiner																May-Aug	-	-	-	Jan-Dec
		Sunfish																Mar-Jul	-	-	-	Jan-Dec
		Tessellated darter																Apr-Jun	-	-	-	Jan-Dec
		Yellow perch																-	-	-	Jan-Dec	Jan-Dec
		Butterfish																-	-	-	Jul-Nov	Mar-Nov
		Harvestfish																-	-	-	-	May-Nov
		Spanish mackerel																-	-	-	-	May-Sep

INVERTEBRATES

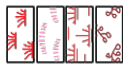
Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	Eastern oyster													Jun-Sep	Jun-Sep	Jun-Oct	Jan-Dec	Jan-Dec
	Softshell clam													May-Dec*	May-Dec*	May-Jan*	-	Jan-Dec
	Stout razor clam													Jun-Nov	-	-	Jan-Dec	Jan-Dec
	Blue crab													-	-	-	Jan-Dec	Jan-Dec
	Brown shrimp													-	-	-	May-Oct	May-Oct
	White shrimp													-	-	-	May-Oct	May-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	796.27	1.24
10B	Freshwater Marshes	129.80	0.20
10C	Swamps	367.98	0.57
10D	Scrub and Shrub Wetlands	25.03	0.04



ESI SHORELINE HABITAT TYPES

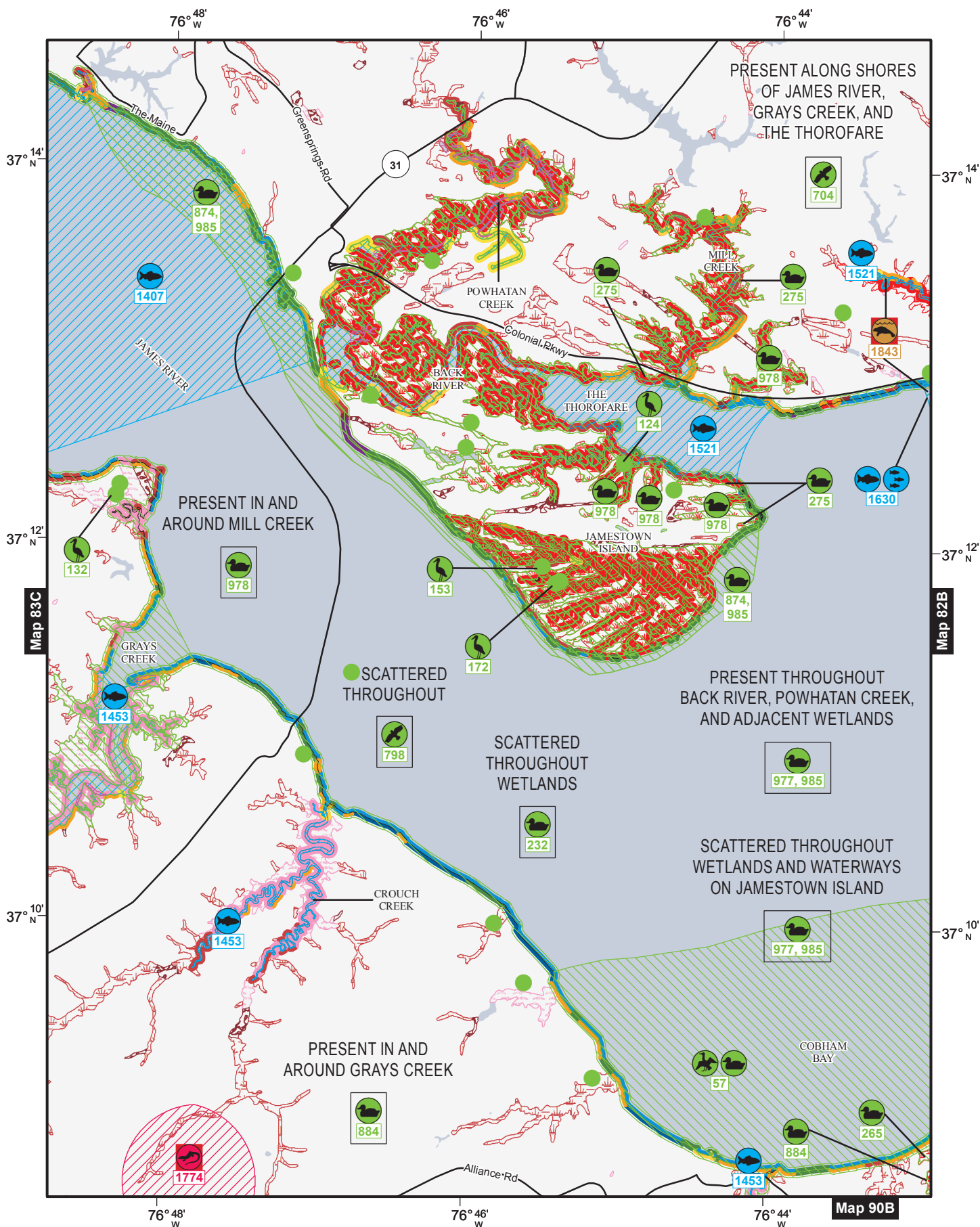
ESI Rank	Shoreline Habitat Classification	Length (Meters)	Length (Miles)	% of ESI Shoreline
10A	Salt and Brackish Water Marshes	80,408.47	49.96	62%
10B	Freshwater Marshes	578.09	0.36	< 1%
10C	Swamps	3,656.44	2.27	3%
10D	Scrub and Shrub Wetlands	690.62	0.43	1%
9A	Sheltered Tidal Flats	166.57	0.10	< 1%
9B	Vegetated Low Banks	14,809.54	9.20	11%
8B	Sheltered, Solid Man-Made Structures	1,931.37	1.20	1%
8C	Sheltered Riprap	1,150.64	0.71	1%
6B	Riprap	7,908.88	4.91	6%
5	Mixed Sand and Gravel Beaches	182.38	0.11	< 1%
4	Coarse Grained Sand Beaches	12,966.21	8.06	10%
3B	Scarps and Steep Slopes (Sand)	3,917.95	2.43	3%
1B	Exposed, Solid Man-Made Structures	1,415.11	0.88	1%

Total ESI Shoreline: 129,782.25 Total ESI Shoreline: 80.64
Total Shoreline: 112,847.14 Total Shoreline: 70.12

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 82C
Chesapeake South



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

0 Not for Navigation 1 Miles
0 1 Kilometers

1:50,000



Map 82C
Chesapeake South

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	MD/VA		Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt
			S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N	D			
SAV	Submerged aquatic veg	High Ecological Value			Ephemeral													-	-	-
SAV	Submerged aquatic veg	High Ecological Value			High													-	-	-

BIRDS

Map ID	Subelement	Species	Mapping Qualifier	MD/VA		Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt
				S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N	D			
57	Diving	Grebes	Wintering			10S												-	-	-	-
	Waterfowl	Canvasback	Wintering			100S												-	-	-	-
	Waterfowl	Mergansers	Wintering			100S												-	-	-	-
124	Wading	Great blue heron	Nesting			2 Nests												Feb-Jun	-	-	-
132	Wading	Great blue heron	Nesting			52 Nests												Feb-Jun	-	-	-
153	Wading	Great blue heron	Nesting			4 Nests												Feb-Jun	-	-	-
172	Wading	Great blue heron	Nesting			38 Nests												Feb-Jun	-	-	-
232	Waterfowl	Canada goose	Nesting			Present												Mar-Aug	-	-	Jun-Jul
	Waterfowl	Mallard	Nesting			Present												Mar-Aug	-	-	Jul-Aug
265	Waterfowl	American wigeon	Wintering			10S												-	-	-	-
	Waterfowl	Blue-winged teal	Migration			10S												-	Feb-Apr	Aug-Oct	-
	Waterfowl	Canada goose	Nesting			Present												Mar-Aug	-	-	Jun-Jul
	Waterfowl	Canada goose	Wintering			1,000S												-	-	-	-
	Waterfowl	Canvasback	Wintering			1,000S												-	-	-	-
	Waterfowl	Gadwall	Wintering			10S												-	-	-	-
	Waterfowl	Green-winged teal	Wintering			10S												-	-	-	-
	Waterfowl	Mallard	Nesting			Present												Mar-Aug	-	-	Jul-Aug
	Waterfowl	Mallard	Wintering			100S												-	-	-	-
	Waterfowl	Mergansers	Wintering			10S												-	-	-	-
	Waterfowl	Redhead	Wintering			10S												-	-	-	-
	Waterfowl	Ring-necked duck	Wintering			10S												-	-	-	-
275	Waterfowl	American wigeon	Wintering			10S												-	-	-	-
	Waterfowl	Blue-winged teal	Migration			10S												-	Feb-Apr	Aug-Oct	-
	Waterfowl	Canada goose	Nesting			Present												Mar-Aug	-	-	Jun-Jul
	Waterfowl	Gadwall	Wintering			10S												-	-	-	-
	Waterfowl	Green-winged teal	Wintering			10S												-	-	-	-
	Waterfowl	Mallard	Nesting			Present												Mar-Aug	-	-	Jul-Aug
	Waterfowl	Mallard	Wintering			10S												-	-	-	-
704	Raptor	Bald eagle	Concentration Area			Moderate-High												-	-	-	-
798	Raptor	Bald eagle	Nesting			1 Nest												Dec-Jun	-	-	-
874	Waterfowl	Canada goose	Wintering			1,000S												-	-	-	-

BIRDS (continued)

Map ID	Subelement	Species	Mapping Qualifier	MD/VFA		Monthly Presence												Molt
				S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N	
	Waterfowl	Canvasback	Wintering			10S												-
	Waterfowl	Common goldeneye	Wintering			10S												-
	Waterfowl	Mergansers	Wintering			Present												-
	Waterfowl	Scaup	Wintering			10S												-
884	Waterfowl	American wigeon	Wintering			10S												-
	Waterfowl	Blue-winged teal	Migration			10S												-
	Waterfowl	Canada goose	Wintering			1,000S												-
	Waterfowl	Canvasback	Wintering			1,000S												-
	Waterfowl	Gadwall	Wintering			10S												-
	Waterfowl	Green-winged teal	Wintering			10S												-
	Waterfowl	Mallard	Wintering			100S												-
	Waterfowl	Mergansers	Wintering			10S												-
	Waterfowl	Redhead	Wintering			10S												-
	Waterfowl	Ring-necked duck	Wintering			10S												-
977	Waterfowl	American wigeon	Wintering			10S												-
	Waterfowl	Blue-winged teal	Migration			10S												-
	Waterfowl	Gadwall	Wintering			10S												-
	Waterfowl	Green-winged teal	Wintering			10S												-
978	Waterfowl	American wigeon	Wintering			10S												-
	Waterfowl	Blue-winged teal	Migration			10S												-
	Waterfowl	Gadwall	Wintering			10S												-
	Waterfowl	Green-winged teal	Wintering			10S												-
985	Waterfowl	Mallard	Wintering			10S												-
	Waterfowl	Mallard	Wintering			10S												-

FISH

Map ID	Subelement	Species	Mapping Qualifier	MD/VFA		Monthly Presence												Adults
				S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N	
1407	Diadromous	American shad	Nursery Area			-												-
	Diadromous	American shad	Spawning Area			-												-
	Diadromous	Hickory shad	Nursery Area			-												-
	Diadromous	Hickory shad	Spawning Area			-												-
	Diadromous	Striped bass	Spawning Area			-												-
1453	Diadromous	Striped bass	Spawning Area			-												-
	Freshwater	Yellow perch	Spawning Area			-												-
1521	Freshwater	Yellow perch	Spawning Area			-												-
1630	Diadromous	Alewife	Nursery Area			-												-
	Diadromous	Blueback herring	Nursery Area			-												-
	Estuarine Nursery	White perch	Nursery Area			-												-

REPTILES & AMPHIBIANS

Map ID	Subelement	Species	Mapping Qualifier	MD/VFA		Monthly Presence												Adults
				S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N	
1774	Amphibian	Barking treefrog	Vulnerable Occurrence			EIT												-

MARINE MAMMALS



Map ID	Subelement	Species	Mapping Qualifier	MD/VA		Concentration	Monthly Presence												Mating	Calving	Pupping	Molt																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
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1843	Manatee	West Indian manatee	General Distribution	-/E	E	-																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					</

WIDESPREAD IN MAPPED AREA (> 10 SQUARE KILOMETERS)

BIRDS

<div><div></div></div>	Subelement	Species	Mapping Qualifier	MD/VA		Concentration	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
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FISH

Subelement	Species	Mapping Qualifier	MD/VA		Monthly Presence												Concentration	Spawn	Eggs	Larvae	Juveniles	Adults
			S	F	J	F	M	A	M	J	J	A	S	O	N	D						
	Diadromous	Alewife	Nursery Area			-											-	Feb-Apr	Apr-Oct	-		
		Alewife	Spawning Area			-											Feb-Apr	-	-	Feb-Apr		
		American shad	Nursery Area			-											-	Mar-Jul	Mar-Oct	Feb-Jun		
		Atlantic sturgeon	Concentration Area	-/E	E	High											-	Jan-Dec	Jan-Dec	Jan-Dec		
		Atlantic sturgeon	General Distribution	-/E	E	-											-	Jan-Dec	Jan-Dec	Jan-Dec		
		Atlantic sturgeon	Migration	-/E	E	Spring Run Migration											-	-	-	Apr-May		
		Atlantic sturgeon	Migration	-/E	E	Fall Run Migration											-	-	-	Jun-Nov		
		Blueback herring	Nursery Area			-											-	Apr-Jun	May-Oct	-		
		Blueback herring	Spawning Area			-											Mar-Jun	Mar-Jun	-	Mar-Jun		
		Hickory shad	Migration			-											-	-	-	Jun-Sep		
	Estuarine Nursery	Striped bass	Nursery Area			-											-	Mar-May	Jan-Dec	-		
		White perch	Spawning Area			-											Mar-May	Apr-Jun	-	Mar-May		

REPTILES & AMPHIBIANS

Subelement	Species	Mapping Qualifier	MD/VA		Concentration	Monthly Presence												Nest	Hatch	Internest	Juveniles	Adults
			S	F		J	F	M	A	M	J	J	A	S	O	N	D					
	Green sea turtle	General Distribution	T/T	T	Rare														-	-	May-Dec*	-
	Green sea turtle	General Distribution	T/T	T	Common														-	-	-	Jul-Oct














MARINE MAMMALS

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



BIRDS

Subelement	Species	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	Diving													-	-	-	-	-
	Brown pelican													-	-	-	-	-
	Gull/Tern													-	-	-	-	-
	D. crested cormorant													-	-	-	-	-
	Raptor													-	-	-	-	-
	Gulls													-	-	-	-	-
	Waterfowl													-	-	-	-	-
	Terns													-	-	-	-	-
	Osprey													-	-	-	-	-
	Wood duck													Apr-Jul	-	-	Jul-Aug	-

FISH

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	Diadromous													Feb-Apr	Feb-Apr	Feb-Apr	Apr-Oct	Feb-Apr
	Alewife													-	-	-	Jan-May	Jan-Dec
	Estuarine Nursery													Mar-Jun	Mar-Jun	Apr-Jun	May-Oct	Mar-Jun
	American eel													-	-	-	Jan-Dec	Jan-Dec
	Fish													-	-	-	Jan-Dec	Jan-Dec
	Blue catfish													-	-	-	Jan-Dec	Jan-Dec
	Freshwater													-	-	-	Jan-Dec	Jan-Dec
	Striped bass													-	-	-	Jan-Dec	Jan-Dec
	Atlantic croaker													-	-	-	Jan-Dec	Jan-Dec
	Atlantic menhaden													-	-	-	Jan-Dec	Jan-Dec
	Kingfishes													-	-	-	Jan-Dec	Jan-Dec
	Sheepshead													-	-	-	Jan-Dec	Jan-Dec
	Spot													-	-	-	Jan-Dec	Jan-Dec
	Spotted seatrout													-	-	-	Jan-Dec	Jan-Dec
	Summer flounder													-	-	-	Jan-Dec	Jan-Dec
	Weakfish													-	-	-	Jan-Dec	Jan-Dec
	White perch													-	-	-	Jan-Dec	Jan-Dec
	Pipefish													-	-	-	Jan-Dec	Jan-Dec
	Estuarine Resident													-	-	-	Jan-Dec	Jan-Dec
	Silversides													-	-	-	Jan-Dec	Jan-Dec
	Fish													-	-	-	Jan-Dec	Jan-Dec
	Anchovies													-	-	-	Jan-Dec	Jan-Dec
	Freshwater													-	-	-	Jan-Dec	Jan-Dec
	Blue catfish													-	-	-	Jan-Dec	Jan-Dec
	Bullhead catfish													-	-	-	Jan-Dec	Jan-Dec
	Channel catfish													-	-	-	Jan-Dec	Jan-Dec
	Common carp													-	-	-	Jan-Dec	Jan-Dec
	Longnose gar													-	-	-	Jan-Dec	Jan-Dec
	Spottail shiner													-	-	-	Jan-Dec	Jan-Dec
	Sunfish													-	-	-	Jan-Dec	Jan-Dec
	Tessellated darter													-	-	-	Jan-Dec	Jan-Dec
	Yellow perch													-	-	-	Jan-Dec	Jan-Dec
	Marine Pelagic													-	-	-	Jan-Dec	Jan-Dec
	Butterfish													-	-	-	Jan-Dec	Jan-Dec
	Harvestfish													-	-	-	Jan-Dec	Jan-Dec
	Spanish mackerel													-	-	-	Jan-Dec	Jan-Dec

INVERTEBRATES

 Subelement	Species	Monthly Presence												Eggs	Larvae	Juveniles	Adults
		J F M A M J J A S O N D															
		J	F	M	A	M	J	J	A	S	O	N	D				
Crab	Blue crab													-	-	Jan-Dec	Jan-Dec
 Shrimp	Brown shrimp													-	-	May-Oct	May-Oct
	White shrimp													-	-	May-Oct	May-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	1,249.00	1.95
10B	Freshwater Marshes	387.84	0.61
10C	Swamps	620.32	0.97
10D	Scrub and Shrub Wetlands	78.84	0.12

ESI SHORELINE HABITAT TYPES

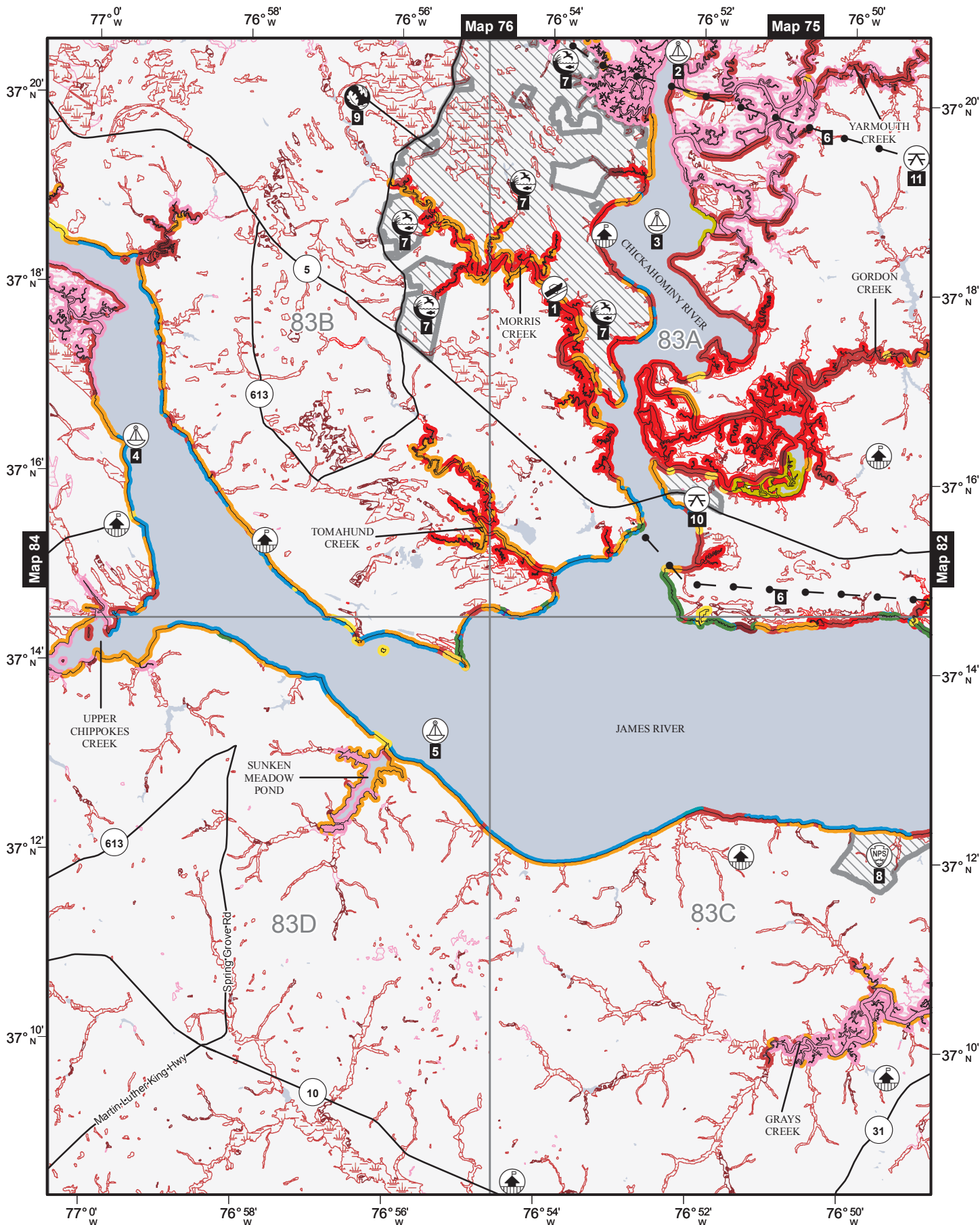
ESI Rank	Shoreline Habitat Classification	Length (Meters)	Length (Miles)	% of ESI Shoreline
10A	Salt and Brackish Water Marshes	126,528.11	78.62	58%
10B	Freshwater Marshes	29,816.30	18.53	14%
10C	Swamps	10,777.00	6.70	5%
10D	Scrub and Shrub Wetlands	1,150.32	0.71	1%
9A	Sheltered Tidal Flats	450.77	0.28	< 1%
9B	Vegetated Low Banks	12,027.06	7.47	6%
8B	Sheltered, Solid Man-Made Structures	3,798.47	2.36	2%
8C	Sheltered Riprap	1,478.63	0.92	1%
6B	Riprap	12,098.52	7.52	6%
5	Mixed Sand and Gravel Beaches	746.77	0.46	< 1%
4	Coarse Grained Sand Beaches	15,198.67	9.44	7%
3B	Scarps and Steep Slopes (Sand)	3,072.51	1.91	1%
1B	Exposed, Solid Man-Made Structures	776.17	0.48	< 1%

Total ESI Shoreline: 217,919.32 Total ESI Shoreline: 135.41
Total Shoreline: 197,297.73 Total Shoreline: 122.60

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 83

Chesapeake South



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

0 2 Miles
Not for Navigation
0 2 Kilometers

1:100,000



Map 83
Chesapeake South

HUMAN USE RESOURCES

DISPLAYED ON MAP (POINTS)				
Map ID	Type	Name	Contact	Phone
1	BOAT RAMP	MORRIS CREEK	LENE PENNINGTON, VDGIF	804-367-0058
2	REPEATED MEASUREMENT SITE	WQ - STATION RET5.1	CHESAPEAKE BAY PROGRAM	800-968-7229
3	REPEATED MEASUREMENT SITE	WQ - STATION RET5.1A	CHESAPEAKE BAY PROGRAM	800-968-7229
4	REPEATED MEASUREMENT SITE	WQ - STATION TF5.6	CHESAPEAKE BAY PROGRAM	800-968-7229
5	REPEATED MEASUREMENT SITE	WQ - STATION TF5.6A	CHESAPEAKE BAY PROGRAM	800-968-7229

DISPLAYED ON MAP (LINES)		
Map ID	Type	Phone
6	PIPELINE	

DISPLAYED ON MAP (POLYGONS)				
Map ID	Type	Name	Contact	Phone
7	MANAGEMENT AREA	CHICKAHOMINY WILDLIFE MANAGEMENT AREA	KENDELL RYAN, VDGIF	804-367-0068
8	NATIONAL PARK	COLONIAL		
9	NATURE CONSERVANCY	LOWER CHICKAHOMINY RIVER FEE	THE NATURE CONSERVANCY	703-841-5300
10	PARK	CHICKAHOMINY RIVERSIDE PARK	JAMES CITY COUNTY	
11	PARK	FREEDOM PARK	JAMES CITY COUNTY	

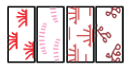
JURISDICTIONS

COUNTY: CHARLES CITY CO., JAMES CITY CO., PRINCE GEORGE CO., SURRY CO. **FEMA:** REGION I
COAST GUARD: DISTRICT 5, SECTOR HAMPTON ROADS **EPA:** REGION 3
USACE: NORTH ATLANTIC DIVISION, NORFOLK DISTRICT

SHORELINE RESOURCES

ESI POLYGON HABITAT TYPES

ESI Rank	Habitat Classification	Area (Acres)	Area (Sq. Miles)
10A	Salt and Brackish Water Marshes	2,041.18	3.19
10B	Freshwater Marshes	2,609.29	4.08
10C	Swamps	5,950.27	9.30
10D	Scrub and Shrub Wetlands	706.27	1.10



ESI SHORELINE HABITAT TYPES

ESI Rank	Shoreline Habitat Classification	Length (Meters)	Length (Miles)	% of ESI Shoreline
10A	Salt and Brackish Water Marshes	154,107.55	95.76	30%
10B	Freshwater Marshes	178,736.81	111.06	35%
10C	Swamps	50,670.34	31.49	10%
10D	Scrub and Shrub Wetlands	2,230.58	1.39	< 1%
9A	Sheltered Tidal Flats	764.68	0.48	< 1%
9B	Vegetated Low Banks	62,610.80	38.90	12%
8B	Sheltered, Solid Man-Made Structures	3,995.76	2.48	1%
8C	Sheltered Riprap	2,112.11	1.31	< 1%
7	Exposed Tidal Flats	10,360.33	6.44	2%
6B	Riprap	4,856.44	3.02	1%
5	Mixed Sand and Gravel Beaches	399.02	0.25	< 1%
4	Coarse Grained Sand Beaches	34,547.72	21.47	7%
1B	Exposed, Solid Man-Made Structures	397.24	0.25	< 1%
Total ESI Shoreline:		505,789.37	314.28	
Total Shoreline:		438,244.49	272.31	

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

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



Map 83A
Chesapeake South

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	MD/VA S F	Concentration	Monthly Presence											
					J	F	M	A	M	J	J	A	S	O	N	D
SAV	Submerged aquatic veg	High Ecological Value		Ephemeral												
SAV	Submerged aquatic veg	High Ecological Value		High												
SAV	Submerged aquatic veg	High Ecological Value		Low												

BIRDS

Map ID	Subelement	Species	Mapping Qualifier	MD/VA S F	Concentration	Monthly Presence											
						J	F	M	A	M	J	J	A	S	O	N	D
175	Wading	Great blue heron	Nesting		55 Nests												
181	Wading	Great blue heron	Nesting		25 Nests												
704	Raptor	Bald eagle	Concentration Area		Moderate-High												
707	Raptor	Bald eagle	Roosting		-												
798	Raptor	Bald eagle	Nesting		1 Nest												
819	Waterfowl	American black duck	Wintering		10S												
	Waterfowl	Bufflehead	Wintering		10S												
	Waterfowl	Canvasback	Wintering		1,000S												
	Waterfowl	Mergansers	Wintering		10S												
	Waterfowl	Ring-necked duck	Wintering		1,000S												
	Waterfowl	Tundra swan	Wintering		10S												
	Waterfowl	American black duck	Wintering		10S												
851	Waterfowl	American wigeon	Wintering		10S												
	Waterfowl	Blue-winged teal	Migration		10S												
	Waterfowl	Canada goose	Wintering		100S												
	Waterfowl	Gadwall	Wintering		10S												
	Waterfowl	Green-winged teal	Wintering		10S												
	Waterfowl	Mallard	Wintering		10S												
956	Waterfowl	Canada goose	Wintering		1,000S												
1026	Diving	Common loon	Wintering		10S												
	Diving	D. crested cormorant	Wintering		1,000S												
	Diving	Red-throated loon	Wintering		10S												
	Waterfowl	Long-tailed duck	Wintering		Present												
	Waterfowl	Scooters	Wintering		10S												
1028	Diving	Common loon	Wintering		10S												
	Diving	D. crested cormorant	Wintering		1,000S												
	Diving	Red-throated loon	Wintering		10S												
	Waterfowl	American black duck	Wintering		10S												
	Waterfowl	Bufflehead	Wintering		10S												
	Waterfowl	Canvasback	Wintering		1,000S												

BIRDS (continued)

Map ID	Subelement	Species	Mapping Qualifier	MDVA		Monthly Presence												Nest	Eggs	Larvae	Juveniles	Adults
				S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N					
	Waterfowl	Long-tailed duck	Wintering			Present												-				-
	Waterfowl	Mergansers	Wintering			10S												-				-
	Waterfowl	Ring-necked duck	Wintering			1,000S												-				-
	Waterfowl	Scoters	Wintering			10S												-				-
	Waterfowl	Tundra swan	Wintering			10S												-				-

FISH

Map ID	Subelement	Species	Mapping Qualifier	MDVA		Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
				S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N					
1612	Diadromous	American shad	Nursery Area															-	-	Mar-Jul	Mar-Oct	Feb-Jun
1618	Diadromous	Atlantic sturgeon	Migration	-/E	E	Spring Run Migration												-	-	-	-	Apr-May

INVERTEBRATES

Map ID	Subelement	Species	Mapping Qualifier	MDVA		Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
				S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N					
1813	Bivalve	Eastern elliptio	Vulnerable Occurrence			-												-	-	-	Jan-Dec	Jan-Dec
	Bivalve	Eastern floater	Vulnerable Occurrence			-												-	-	-	Jan-Dec	Jan-Dec

MARINE MAMMALS

Map ID	Subelement	Species	Mapping Qualifier	MDVA		Monthly Presence												Mating	Calving	Pupping	Molt
				S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N				
1844	Manatee	West Indian manatee	General Distribution	-/E	E	Rare												-	-	-	-



WIDESPREAD IN MAPPED AREA (> 10 SQUARE KILOMETERS)

BIRDS

Map ID	Subelement	Species	Mapping Qualifier	MDVA		Monthly Presence												Nest	Eggs	Larvae	Juveniles	Adults
				S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N					
	Diving	D. crested cormorant	Wintering			100S												-	Mar-May	Aug-Nov	-	-
	Waterfowl	American black duck	Wintering			100S												-	-	-	-	-
		American coot	Wintering			100S												-	-	-	-	-
		American wigeon	Wintering			1,000S												-	-	-	-	-
		Blue-winged teal	Migration			100S												-	Feb-Apr	Aug-Oct	-	-
		Bufflehead	Wintering			100S												-	-	-	-	-
		Canada goose	Nesting			Present												Mar-Aug	-	-	Jun-Jul	-
		Canada goose	Wintering			10,000S												-	-	-	-	-
		Canvasback	Wintering			100S												-	-	-	-	-
		Gadwall	Wintering			1,000S												-	-	-	-	-
		Green-winged teal	Wintering			100S												-	-	-	-	-
		Mallard	Nesting			Present												Mar-Aug	-	-	Jul-Aug	-
		Mallard	Wintering			1,000S												-	-	-	-	-
		Mergansers	Wintering			100S												-	-	-	-	-
		Northern pintail	Wintering			100S												-	-	-	-	-
		Redhead	Wintering			10S												-	-	-	-	-





BIRDS (continued)



Map ID	Subelement	Species	Mapping Qualifier	MD/VFA		Monthly Presence												Nest	Eggs	Larvae	Juveniles	Adults
				S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N					
		Ring-necked duck	Wintering			10,000S												-	-	Feb-Apr	Apr-Oct	-
		Ruddy duck	Wintering			1,000S												-	-	-	-	-
		Scaup	Wintering			1,000S												-	-	-	-	-
		Tundra swan	Wintering			100S												-	-	-	-	-

Subelement	Species	Mapping Qualifier	MD/VFA		Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
			S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N					
	Alewife	Nursery Area			-												-	-	Feb-Apr	Apr-Oct	-
	Alewife	Spawning Area			-												Feb-Apr	Feb-Apr	-	-	Feb-Apr
	American shad	Nursery Area			-												-	-	Mar-Jul	Mar-Oct	-
	American shad	Spawning Area			-												Feb-Jun	Feb-Jun	-	-	Feb-Jun
	Atlantic sturgeon	General Distribution	-/E	E	-												-	-	Jan-Dec	Jan-Dec	Jan-Dec
	Atlantic sturgeon	Migration	-/E	E	Fall Run Migration												-	-	-	-	Jun-Nov
	Blueback herring	Nursery Area			-												-	-	Apr-Jun	May-Oct	-
	Blueback herring	Spawning Area			-												Mar-Jun	Mar-Jun	-	-	Mar-Jun
	Hickory shad	Nursery Area			-												-	-	Apr-Jun	Apr-Oct	-
	Hickory shad	Spawning Area			-												Feb-May	Feb-May	-	-	Feb-May
	Striped bass	Nursery Area			-												-	-	Mar-May	Jan-Dec	-
	Striped bass	Spawning Area			-												Mar-May	Mar-May	-	-	Feb-Jun
	White perch	Spawning Area			-												Mar-May	Mar-May	Apr-Jun	-	Mar-May
	Yellow perch	Spawning Area			-												Feb-Mar	Feb-Mar	Mar-Apr	-	Feb-Mar


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				
	Brown pelican													-	-	-	-
	D. crested cormorant													-	-	-	-
	Gulls													-	-	-	-
	Terns													-	-	-	-
	Osprey													-	-	-	-
	Wood duck													-	-	-	-
	Waterfowl													Apr-Jul	-	-	Jul-Aug

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	Alewife													Feb-Apr	Feb-Apr	Feb-Apr	Apr-Oct	Feb-Apr
	American eel													-	-	-	Jan-May	Jan-Dec
	Blueback herring													Mar-Jun	Mar-Jun	Apr-Jun	Mar-Oct	Mar-Jun
	Gizzard shad													Mar-Jun	-	-	Jan-Dec	Jan-Dec
	Striped bass													-	-	-	Jan-Dec	Jan-Dec
	Atlantic croaker													-	-	Apr-Dec	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					
	Atlantic menhaden													-	-	-	Jan-Dec	Jan-Dec
	Spot													-	-	-	Nov-Apr	Apr-Dec
	Spotted seatrout													May-Jul	-	-	Apr-Nov	Apr-Nov
	Summer flounder													-	-	-	Apr-Oct	Jan-Dec
	Weakfish													-	-	May-Aug	Jun-Dec	Apr-Dec
	White perch													-	-	-	Jan-Dec	Jan-Dec
	Pipefish													-	-	-	Jan-Dec	Jan-Dec
	Silversides													Mar-Jul	Mar-Jul	Apr-Sep	Jan-Dec	Jan-Dec
	Anchovies													Apr-Sep	-	-	-	Jan-Dec
	Black crappie													Mar-Jul	-	-	Jan-Dec	-
Fish	Blue catfish													May-Jun	May-Jun	May-Jun	Jan-Dec	Jan-Dec
	Bullhead catfish													Apr-Jun	-	-	-	Jan-Dec
	Chain pickerel													Feb-Apr	-	-	-	Jan-Dec
	Channel catfish													May-Jun	-	-	Jan-Dec	Jan-Dec
	Common carp													May-Jun	-	-	-	Jan-Dec
Freshwater	Golden shiner													Apr-Aug	-	-	Jan-Dec	Jan-Dec
	Largemouth bass													Mar-May	-	-	-	Jan-Dec
	Longnose gar													May-Jun	-	-	Jan-Dec	Jan-Dec
	Redfin pickerel													Feb-Mar	-	-	Jan-Dec	Jan-Dec
	Spotfin shiner													Jun-Aug	-	-	-	Jan-Dec
	Spottail shiner													May-Aug	-	-	-	Jan-Dec
	Sunfish													Mar-Jul	-	-	-	Jan-Dec
	Tessellated darter													Apr-Jun	-	-	-	Jan-Dec
	Yellow perch													-	-	-	Jan-Dec	Jan-Dec

INVERTEBRATES

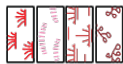
Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	Blue crab													-	-	-	Jan-Dec	Jan-Dec
	Brown shrimp													-	-	-	May-Oct	May-Oct
	White shrimp													-	-	-	May-Oct	May-Oct

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	1,769.09	2.76
10B	Freshwater Marshes	1,595.62	2.49
10C	Swamps	1,177.85	1.84
10D	Scrub and Shrub Wetlands	150.49	0.24



ESI SHORELINE HABITAT TYPES

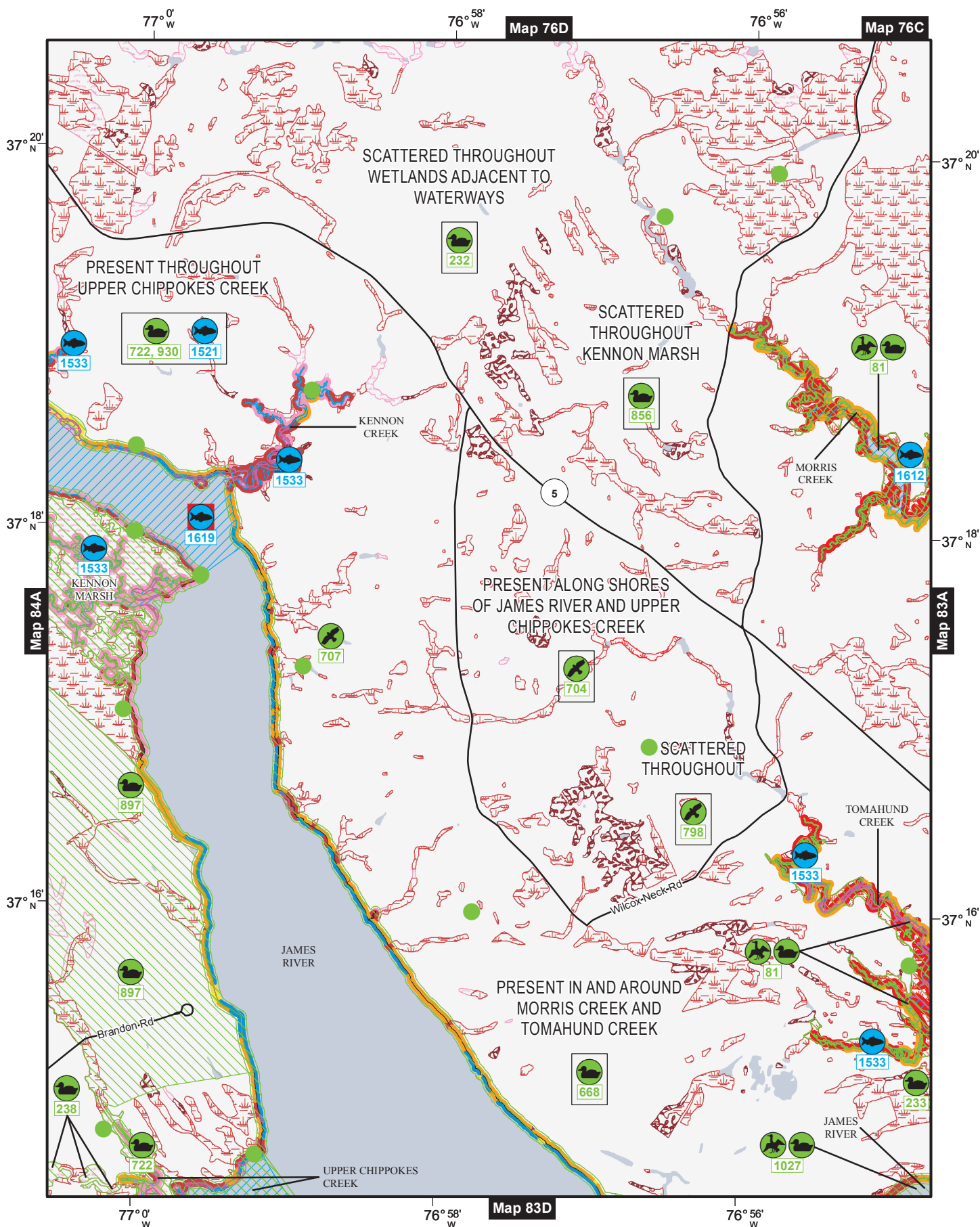
ESI Rank	Shoreline Habitat Classification	Length (Meters)	Length (Miles)	% of ESI Shoreline
10A	Salt and Brackish Water Marshes	121,454.81	75.47	42%
10B	Freshwater Marshes	105,631.55	65.64	36%
10C	Swamps	27,353.06	17.00	9%
10D	Scrub and Shrub Wetlands	837.32	0.52	< 1%
9A	Sheltered Tidal Flats	666.01	0.41	< 1%
9B	Vegetated Low Banks	14,129.72	8.78	5%
8B	Sheltered, Solid Man-Made Structures	958.53	0.60	< 1%
8C	Sheltered Riprap	1,404.13	0.87	< 1%
7	Exposed Tidal Flats	10,360.33	6.44	4%
6B	Riprap	2,097.05	1.30	1%
4	Coarse Grained Sand Beaches	5,328.82	3.31	2%
1B	Exposed, Solid Man-Made Structures	211.21	0.13	< 1%

Total ESI Shoreline: 290,432.52 Total ESI Shoreline: 180.47
 Total Shoreline: 271,090.87 Total Shoreline: 168.45

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

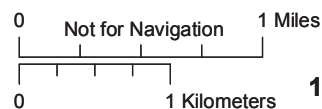




Map 83B
Chesapeake South



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



1:50,000



Map 83B
Chesapeake South

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	MD/VFA S F	Concentration	Monthly Presence											
					J	F	M	A	M	J	J	A	S	O	N	D
SAV	Submerged aquatic veg	High Ecological Value		Ephemeral												
SAV	Submerged aquatic veg	High Ecological Value		High												
SAV	Submerged aquatic veg	High Ecological Value		Low												

BIRDS

Map ID	Subelement	Species	Mapping Qualifier	MD/VFA S F	Concentration	Monthly Presence										Nest	Mig.(S) Mar-May	Mig.(F) Aug-Nov	Molt
						J	F	M	A	M	J	J	A	S	O	N			
81	Diving	D. crested cormorant	Wintering		100S												-		-
	Waterfowl	Bufflehead	Wintering		100S												-		-
	Waterfowl	Canvasback	Wintering		100S												-		-
	Waterfowl	Mergansers	Wintering		100S												-		-
	Waterfowl	Redhead	Wintering		10S												-		-
	Waterfowl	Ring-necked duck	Wintering		10,000S												-		-
	Waterfowl	Ruddy duck	Wintering		1,000S												-		-
	Waterfowl	Scaup	Wintering		1,000S												-		-
	Waterfowl	Canada goose	Nesting		Present												-		-
	Waterfowl	Mallard	Nesting		Present												-		-
232	Waterfowl	American black duck	Wintering		100S												-		-
	Waterfowl	American coot	Wintering		100S												-		-
	Waterfowl	American wigeon	Wintering		1,000S												-		-
	Waterfowl	Blue-winged teal	Migration		100S												-		-
	Waterfowl	Canada goose	Nesting		Present												-		-
	Waterfowl	Canada goose	Wintering		10,000S												-		-
	Waterfowl	Gadwall	Wintering		1,000S												-		-
	Waterfowl	Green-winged teal	Wintering		100S												-		-
	Waterfowl	Mallard	Nesting		Present												-		-
	Waterfowl	Mallard	Wintering		1,000S												-		-
238	Waterfowl	Northern pintail	Wintering		100S												-		-
	Waterfowl	Tundra swan	Wintering		100S												-		-
	Waterfowl	American black duck	Wintering		100S												-		-
	Waterfowl	American wigeon	Wintering		10S												-		-
	Waterfowl	Blue-winged teal	Migration		100S												-		-
	Waterfowl	Canada goose	Nesting		Present												-		-
	Waterfowl	Canada goose	Wintering		100S												-		-
	Waterfowl	Gadwall	Wintering		100S												-		-
	Waterfowl	Green-winged teal	Wintering		100S												-		-
	Waterfowl	Mallard	Nesting		Present												-		-

BIRDS (continued)

Map ID	Subelement	Species	Mapping Qualifier	MD/VA		Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt
				S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N	D			
	Waterfowl	Mallard	Wintering			100S													-	-	-
	Waterfowl	Northern pintail	Wintering			Present													-	-	-
	Waterfowl	Tundra swan	Wintering			Present													-	-	-
668	Waterfowl	American black duck	Wintering			100S													-	-	-
	Waterfowl	American coot	Wintering			100S													-	-	-
	Waterfowl	American wigeon	Wintering			1,000S													-	-	-
	Waterfowl	Blue-winged teal	Migration			100S													-	-	-
	Waterfowl	Canada goose	Wintering			10,000S													-	-	-
	Waterfowl	Gadwall	Wintering			1,000S													-	-	-
	Waterfowl	Green-winged teal	Wintering			100S													-	-	-
	Waterfowl	Mallard	Wintering			1,000S													-	-	-
	Waterfowl	Northern pintail	Wintering			100S													-	-	-
	Waterfowl	Tundra swan	Wintering			100S													-	-	-
704	Raptor	Bald eagle	Concentration Area			Moderate-High													-	-	-
707	Raptor	Bald eagle	Roosting			-													-	-	-
722	Waterfowl	American black duck	Wintering			100S													-	-	-
	Waterfowl	American wigeon	Wintering			10S													-	-	-
	Waterfowl	Blue-winged teal	Migration			100S													-	-	-
	Waterfowl	Canada goose	Wintering			100S													-	-	-
	Waterfowl	Gadwall	Wintering			100S													-	-	-
	Waterfowl	Green-winged teal	Wintering			100S													-	-	-
	Waterfowl	Mallard	Wintering			100S													-	-	-
	Waterfowl	Northern pintail	Wintering			Present													-	-	-
	Waterfowl	Tundra swan	Wintering			Present													-	-	-
798	Raptor	Bald eagle	Nesting			1 Nest													-	-	-
856	Waterfowl	American black duck	Wintering			10S													-	-	-
	Waterfowl	Canada goose	Wintering			100S													-	-	-
	Waterfowl	Mallard	Wintering			10S													-	-	-
	Waterfowl	Gadwall	Wintering			100S													-	-	-
897	Waterfowl	Mallard	Wintering			100S													-	-	-
	Waterfowl	Northern pintail	Wintering			100S													-	-	-
	Waterfowl	Northern shoveler	Wintering			100S													-	-	-
	Waterfowl	Tundra swan	Wintering			100S													-	-	-
930	Waterfowl	Bufflehead	Wintering			100S													-	-	-
	Waterfowl	Mergansers	Wintering			100S													-	-	-
	Waterfowl	Ring-necked duck	Wintering			100S													-	-	-
	Waterfowl	Common loon	Wintering			10S													-	-	-
1027	Diving	D. crested cormorant	Wintering			1,000S													-	-	-
	Diving	Red-throated loon	Wintering			10S													-	-	-
	Waterfowl	American black duck	Wintering			10S													-	-	-
	Waterfowl	American wigeon	Wintering			1,000S													-	-	-
	Waterfowl	Blue-winged teal	Migration			100S													-	-	-
	Waterfowl	Bufflehead	Wintering			10S													-	-	-
	Waterfowl	Canvasback	Wintering			1,000S													-	-	-

BIRDS (continued)

Map ID	Subelement	Species	Mapping Qualifier	MD/VA		Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
				S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N					D																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
	Waterfowl	Gadwall	Wintering			1,000S																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							

FISH



Map ID	Subelement	Species	Mapping Qualifier	MD/VA		Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
				S	F		J	F	M	A	M	J	J	A	S	O	N	D					
1521	Freshwater	Yellow perch	Spawning Area			-													Feb-Mar	Feb-Mar	Mar-Apr	-	Feb-Mar
1533	Diadromous	American shad	Nursery Area			-													-	-	Mar-Jul	Mar-Oct	Feb-Jun
	Freshwater	Yellow perch	Spawning Area			-													Feb-Mar	Feb-Mar	Mar-Apr	-	Feb-Mar
1612	Diadromous	American shad	Nursery Area			-													-	-	Mar-Jul	Mar-Oct	Feb-Jun
1619	Diadromous	Atlantic sturgeon	Spawning Area	-/E	E	Potential Spawning													Apr-May	Apr-May	-	-	Apr-May

WIDESPREAD IN MAPPED AREA (> 10 SQUARE KILOMETERS)

BIRDS





Subelement	Species	Mapping Qualifier	MD/VA	S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N	D	Nest	Mig.(S)	Mig.(F)	Molt
 Waterfowl	Canada goose	Wintering				1,000S													-	-	-	-

FISH





Subelement	Species	Mapping Qualifier	MD/VA	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				-													Feb-Apr	-	Feb-Apr	-	-
	Alewife	Spawning Area				-													-	-	Mar-Jul	Mar-Oct	-
	American shad	Nursery Area				-													-	-	-	-	-
	American shad	Spawning Area				-													Feb-Jun	Feb-Jun	-	-	Feb-Jun
	Atlantic sturgeon	General Distribution	-/E	E	-	-													-	-	Jan-Dec	Jan-Dec	Jan-Dec
	Atlantic sturgeon	Migration	-/E	E	Fall Run Migration	-													-	-	-	-	Jun-Nov
	Atlantic sturgeon	Migration	-/E	E	Spring Run Migration	-													-	-	-	-	Apr-May
	Blueback herring	Nursery Area				-													-	-	Apr-Jun	May-Oct	-
	Blueback herring	Spawning Area				-													Mar-Jun	Mar-Jun	-	-	Mar-Jun
	Hickory shad	Nursery Area				-													-	-	Apr-Jun	Apr-Oct	-
	Hickory shad	Spawning Area				-													Feb-May	Feb-May	-	-	Feb-May
	Striped bass	Nursery Area				-													-	-	Mar-May	Jan-Dec	-
	Striped bass	Spawning Area				-													Mar-May	Mar-May	-	-	Feb-Jun
 Estuarine Nursery	White perch	Spawning Area				-													Mar-May	Mar-May	Apr-Jun	-	Mar-May

ALSO PRESENT IN MAPPED AREA (GENERAL DISTRIBUTION)

BIRDS

Subelement	Species	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	Diving													-	-	-	-	-
	Brown pelican													-	-	-	-	-
	Gull/Tern													-	-	-	-	-
	D. crested cormorant													-	-	-	-	-
	Raptor													-	-	-	-	-
	Terns													-	-	-	-	-
	Waterfowl													-	-	-	-	-
	Osprey													-	-	-	-	-
	Wood duck													Apr-Jul	-	-	Jul-Aug	-

FISH

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	Diadromous													Feb-Apr	Feb-Apr	Feb-Apr	Apr-Oct	Feb-Apr
	Alewife													-	-	-	Jan-May	Jan-Dec
	American eel													Mar-Jun	Mar-Jun	Apr-Jun	May-Oct	Mar-Jun
	Blueback herring													Mar-Jun	-	-	Jan-Dec	Jan-Dec
	Gizzard shad													-	-	-	Jan-Dec	Jan-Dec
	Striped bass													-	-	Apr-Dec	Jan-Dec	May-Oct
	Estuarine Nursery													-	-	-	Jan-Dec	Jan-Dec
	Atlantic croaker													-	-	-	Jan-Dec	Jan-Dec
	Atlantic menhaden													-	-	-	Nov-Apr	Apr-Dec
	Spot													-	-	-	Jan-Dec	Jan-Dec
	White perch													-	-	-	Jan-Dec	Jan-Dec
	Anchovies													Apr-Sep	-	-	-	Jan-Dec
	Fish													Mar-Jul	-	-	Jan-Dec	-
	Black crappie													May-Jun	May-Jun	May-Jun	Jan-Dec	Jan-Dec
	Freshwater													Apr-Jun	-	-	-	Jan-Dec
	Blue catfish													Feb-Apr	-	-	-	Jan-Dec
	Bullhead catfish													May-Jun	-	-	Jan-Dec	Jan-Dec
	Chain pickerel													May-Jun	-	-	Jan-Dec	Jan-Dec
	Channel catfish													May-Jun	-	-	Jan-Dec	Jan-Dec
	Common carp													May-Jun	-	-	-	Jan-Dec
	Golden shiner													Apr-Aug	-	-	Jan-Dec	Jan-Dec
	Largemouth bass													Mar-May	-	-	-	Jan-Dec
	Longnose gar													May-Jun	-	-	Jan-Dec	Jan-Dec
	Redfin pickerel													Feb-Mar	-	-	Jan-Dec	Jan-Dec
	Spotfin shiner													Jun-Aug	-	-	-	Jan-Dec
	Spottail shiner													May-Aug	-	-	-	Jan-Dec
	Sunfish													Mar-Jul	-	-	-	Jan-Dec
	Tessellated darter													Apr-Jun	-	-	-	Jan-Dec
	Yellow perch													-	-	-	Jan-Dec	Jan-Dec

INVERTEBRATES

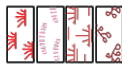
Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	Crab													-	-	-	Jan-Dec	Jan-Dec
	Blue crab													-	-	-	Jan-Dec	Jan-Dec

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	220.13	0.34
10B	Freshwater Marshes	535.11	0.84
10C	Swamps	2,750.14	4.30
10D	Scrub and Shrub Wetlands	316.35	0.49



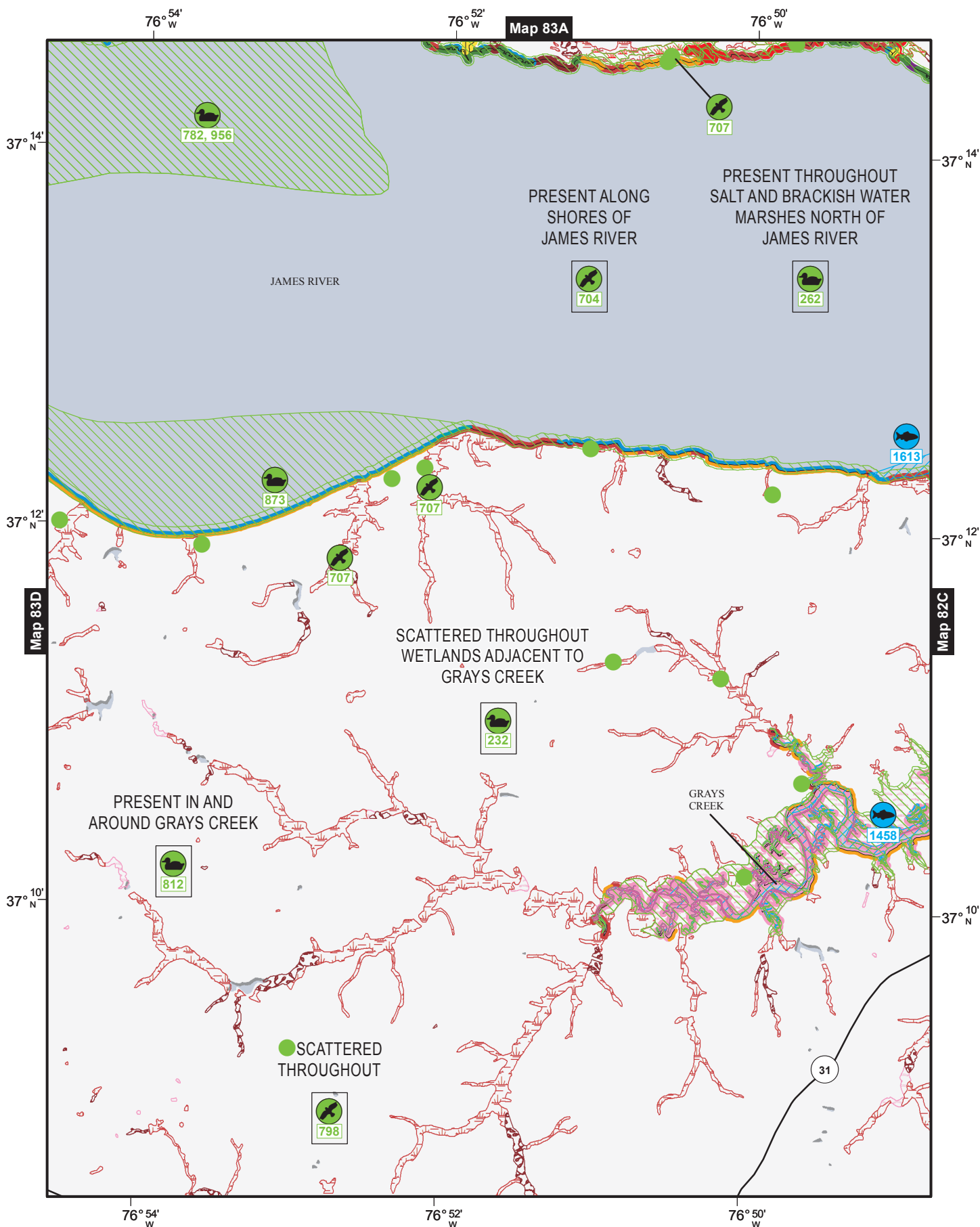
ESI SHORELINE HABITAT TYPES

<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	30,343.85	18.85	28%
10B	Freshwater Marshes	30,671.81	19.06	29%
10C	Swamps	14,919.96	9.27	14%
10D	Scrub and Shrub Wetlands	423.74	0.26	< 1%
9B	Vegetated Low Banks	19,486.84	12.11	18%
8B	Sheltered, Solid Man-Made Structures	1,041.35	0.65	1%
8C	Sheltered Riprap	117.24	0.07	< 1%
4	Coarse Grained Sand Beaches	10,314.86	6.41	10%
1B	Exposed, Solid Man-Made Structures	49.23	0.03	< 1%
Total ESI Shoreline:		107,368.87	66.72	
Total Shoreline:		87,712.62	54.50	

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 83C
Chesapeake South

BIOLOGICAL RESOURCES

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

DISPLAYED ON MAP

BENTHIC

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

BIRDS

Map ID	Subelement	Species	Mapping Qualifier	MD/VA		Concentration	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt
				S	F		J	F	M	A	M	J	J	A	S	O	N	D				
232	Waterfowl	Canada goose	Nesting			Present												Mar-Aug	-	-	Jun-Jul	-
	Waterfowl	Mallard	Nesting			Present												Mar-Aug	-	-	Jul-Aug	-
262	Waterfowl	American black duck	Wintering			10S												-	-	-	-	-
	Waterfowl	American wigeon	Wintering			10S												-	-	-	-	-
	Waterfowl	Blue-winged teal	Migration			10S												-	Feb-Apr	Aug-Oct	-	-
	Waterfowl	Canada goose	Nesting			Present												Mar-Aug	-	-	Jun-Jul	-
	Waterfowl	Canada goose	Wintering			100S												-	-	-	-	-
	Waterfowl	Gadwall	Wintering			10S												-	-	-	-	-
	Waterfowl	Green-winged teal	Wintering			10S												-	-	-	-	-
	Waterfowl	Mallard	Nesting			Present												Mar-Aug	-	-	Jul-Aug	-
	Waterfowl	Mallard	Wintering			10S												-	-	-	-	-
704	Raptor	Bald eagle	Concentration Area			Moderate-High												-	-	-	-	-
707	Raptor	Bald eagle	Roosting			-												-	-	-	-	-
782	Waterfowl	American black duck	Wintering			10S												-	-	-	-	-
	Waterfowl	American wigeon	Wintering			1,000S												-	-	-	-	-
	Waterfowl	Blue-winged teal	Migration			100S												-	Feb-Apr	Aug-Oct	-	-
	Waterfowl	Bufflehead	Wintering			10S												-	-	-	-	-
	Waterfowl	Canvasback	Wintering			1,000S												-	-	-	-	-
	Waterfowl	Gadwall	Wintering			1,000S												-	-	-	-	-
	Waterfowl	Green-winged teal	Wintering			100S												-	-	-	-	-
	Waterfowl	Mallard	Wintering			1,000S												-	-	-	-	-
	Waterfowl	Mergansers	Wintering			10S												-	-	-	-	-
	Waterfowl	Ring-necked duck	Wintering			1,000S												-	-	-	-	-
	Waterfowl	Scaup	Wintering			1,000S												-	-	-	-	-
	Waterfowl	Tundra swan	Wintering			10S												-	-	-	-	-
798	Raptor	Bald eagle	Nesting			1 Nest												Dec-Jun	-	-	-	-
812	Waterfowl	American black duck	Wintering			10S												-	-	-	-	-
	Waterfowl	American wigeon	Wintering			10S												-	-	-	-	-
	Waterfowl	Blue-winged teal	Migration			10S												-	Feb-Apr	Aug-Oct	-	-
	Waterfowl	Bufflehead	Wintering			10S												-	-	-	-	-

BIRDS (continued)

Map ID	Subelement	Species	Mapping Qualifier	MD/VA		Monthly Presence												Nest	Eggs	Larvae	Juveniles	Adults
				S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N					
	Waterfowl	Canada goose	Wintering			1,000S												-	-	-	-	-
	Waterfowl	Canvasback	Wintering			1,000S												-	-	-	-	-
	Waterfowl	Gadwall	Wintering			10S												-	-	-	-	-
	Waterfowl	Green-winged teal	Wintering			10S												-	-	-	-	-
	Waterfowl	Mallard	Wintering			100S												-	-	-	-	-
	Waterfowl	Mergansers	Wintering			10S												-	-	-	-	-
	Waterfowl	Redhead	Wintering			10S												-	-	-	-	-
	Waterfowl	Ring-necked duck	Wintering			10S												-	-	-	-	-
	Waterfowl	Ruddy duck	Wintering			100S												-	-	-	-	-
873	Waterfowl	Canvasback	Wintering			10S												-	-	-	-	-
	Waterfowl	Ruddy duck	Wintering			100S												-	-	-	-	-
956	Waterfowl	Canada goose	Wintering			1,000S												-	-	-	-	-

FISH

Map ID	Subelement	Species	Mapping Qualifier	MD/VA		Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
				S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N					
1458	Diadromous	American shad	Nursery Area			-												-	-	Mar-Jul	Mar-Oct	Feb-Jun
	Diadromous	Striped bass	Spawning Area			-												Apr-Jun	Apr-Jun	-	-	Mar-Jun
	Freshwater	Yellow perch	Spawning Area			-												Feb-Mar	Feb-Mar	Mar-Apr	-	Feb-Mar
1613	Diadromous	American shad	Nursery Area			-												-	-	Mar-Jul	Mar-Oct	Feb-Jun
	Diadromous	Hickory shad	Migration			-												-	-	-	Jun-Sep	Feb-May

WIDESPREAD IN MAPPED AREA (> 10 SQUARE KILOMETERS)

BIRDS



Subelement	Species	Mapping Qualifier	MD/VA		Monthly Presence												Nest	Eggs	Mig.(S)	Mig.(F)	Molt
			S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N					
Diving	Common loon	Wintering			10S												-	-	-	-	-
	D. crested cormorant	Wintering			1,000S												-	Mar-May	Aug-Nov	-	-
	Red-throated loon	Wintering			10S												-	-	-	-	-
	Long-tailed duck	Wintering			Present												-	-	-	-	-
	Scoters	Wintering			10S												-	-	-	-	-

FISH

Subelement	Species	Mapping Qualifier	MD/VA		Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
			S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N					
Diadromous	Alewife	Nursery Area			-												-	-	Feb-Apr	Apr-Oct	-
	Alewife	Spawning Area			-												Feb-Apr	Feb-Apr	-	-	Feb-Apr
	American shad	Nursery Area			-												-	-	Mar-Jul	Mar-Oct	-
	American shad	Spawning Area			-												Feb-Jun	Feb-Jun	-	-	Feb-Jun
	Atlantic sturgeon	General Distribution	-/E	E	-												-	-	Jan-Dec	Jan-Dec	Jan-Dec
	Atlantic sturgeon	Migration	-/E	E	Fall Run Migration												-	-	-	-	Jun-Nov
	Atlantic sturgeon	Migration	-/E	E	Spring Run Migration												-	-	-	-	Apr-May
	Blueback herring	Nursery Area			-												-	-	Apr-Jun	May-Oct	-

Chesapeake South: Map 83C

FISH (continued)

Subelement	Species	Mapping Qualifier	MD/VA		Concentration	Monthly Presence												Eggs	Larvae	Juveniles	Adults
			S	F		J	F	M	A	M	J	J	A	S	O	N	D				
	Blueback herring	Spawning Area	-	-	-													Mar-Jun	-	-	Mar-Jun
	Hickory shad	Nursery Area	-	-	-													-	Apr-Jun	Apr-Oct	-
	Hickory shad	Spawning Area	-	-	-													Feb-May	-	-	Feb-May
	Striped bass	Nursery Area	-	-	-													-	Mar-May	Jan-Dec	-
	Striped bass	Spawning Area	-	-	-													Mar-May	-	-	Feb-Jun
	White perch	Spawning Area	-	-	-													Mar-May	Apr-Jun	-	Mar-May

MARINE MAMMALS





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

ALSO PRESENT IN MAPPED AREA (GENERAL DISTRIBUTION)

BIRDS

Subelement	Species	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt
		J	F	M	A	M	J	J	A	S	O	N	D				
	Brown pelican													-	-	-	-
	D. crested cormorant													-	-	-	-
	Gulls													-	-	-	-
	Terns													-	-	-	-
	Osprey													-	-	-	-
	Wood duck													Apr-Jul	-	-	Jul-Aug

FISH

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	Alewife													Feb-Apr	-	-	Apr-May	Feb-Apr
	American eel													Mar-Jun	Mar-Jun	Apr-Jun	May-Oct	Mar-Jun
	Blueback herring													Mar-Jun	-	-	Jan-Dec	Jan-Dec
	Gizzard shad													-	-	-	Jan-Dec	Jan-Dec
	Striped bass													-	-	-	Jan-Dec	Jan-Dec
	Atlantic croaker													-	-	Apr-Dec	Jan-Dec	May-Oct
	Atlantic menhaden													-	-	-	Jan-Dec	Jan-Dec
	Spot													-	-	-	Nov-Apr	Apr-Dec
	Spotted seatrout													May-Jul	-	-	Apr-Nov	Apr-Nov
	Summer flounder													-	-	-	Apr-Oct	Jan-Dec
	Weakfish													-	-	May-Aug	Jun-Dec	Apr-Dec
	White perch													-	-	-	Jan-Dec	Jan-Dec
	Pipefish													-	-	-	Jan-Dec	Jan-Dec
	Silversides													Mar-Jul	Mar-Jul	Apr-Sep	Jan-Dec	Jan-Dec
	Anchovies													Apr-Sep	-	-	-	Jan-Dec
	Black crappie													Mar-Jul	-	-	Jan-Dec	Jan-Dec
	Blue catfish													May-Jun	May-Jun	May-Jun	Jan-Dec	Jan-Dec

Chesapeake South: Map 83C

FISH (continued)

Subelement	Species	Mapping Qualifier	MD/VA		Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
			S	F		J	F	M	A	M	J	J	A	S	O	N	D					
	Bullhead catfish																	Apr-Jun	-	-	-	Jan-Dec
	Chain pickerel																	Feb-Apr	-	-	-	Jan-Dec
	Channel catfish																	May-Jun	-	-	Jan-Dec	Jan-Dec
	Common carp																	May-Jun	-	-	-	Jan-Dec
	Golden shiner																	Apr-Aug	-	-	Jan-Dec	Jan-Dec
	Largemouth bass																	Mar-May	-	-	-	Jan-Dec
	Longnose gar																	May-Jun	-	-	Jan-Dec	Jan-Dec
	Redfin pickerel																	Feb-Mar	-	-	Jan-Dec	Jan-Dec
	Spotfin shiner																	Jun-Aug	-	-	-	Jan-Dec
	Spottail shiner																	May-Aug	-	-	-	Jan-Dec
	Sunfish																	Mar-Jul	-	-	-	Jan-Dec
	Tessellated darter																	Apr-Jun	-	-	-	Jan-Dec
	Yellow perch																	-	-	-	Jan-Dec	Jan-Dec

INVERTEBRATES

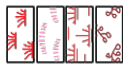
Subelement	Species	Mapping Qualifier	MD/VA		Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
			S	F		J	F	M	A	M	J	J	A	S	O	N	D					
Crab	Blue crab																	-	-	-	Jan-Dec	Jan-Dec
Shrimp	Brown shrimp																	-	-	-	May-Oct	May-Oct
	White shrimp																	-	-	-	May-Oct	May-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	43.44	0.07
10B	Freshwater Marshes	372.27	0.58
10C	Swamps	852.30	1.33
10D	Scrub and Shrub Wetlands	117.64	0.18



ESI SHORELINE HABITAT TYPES

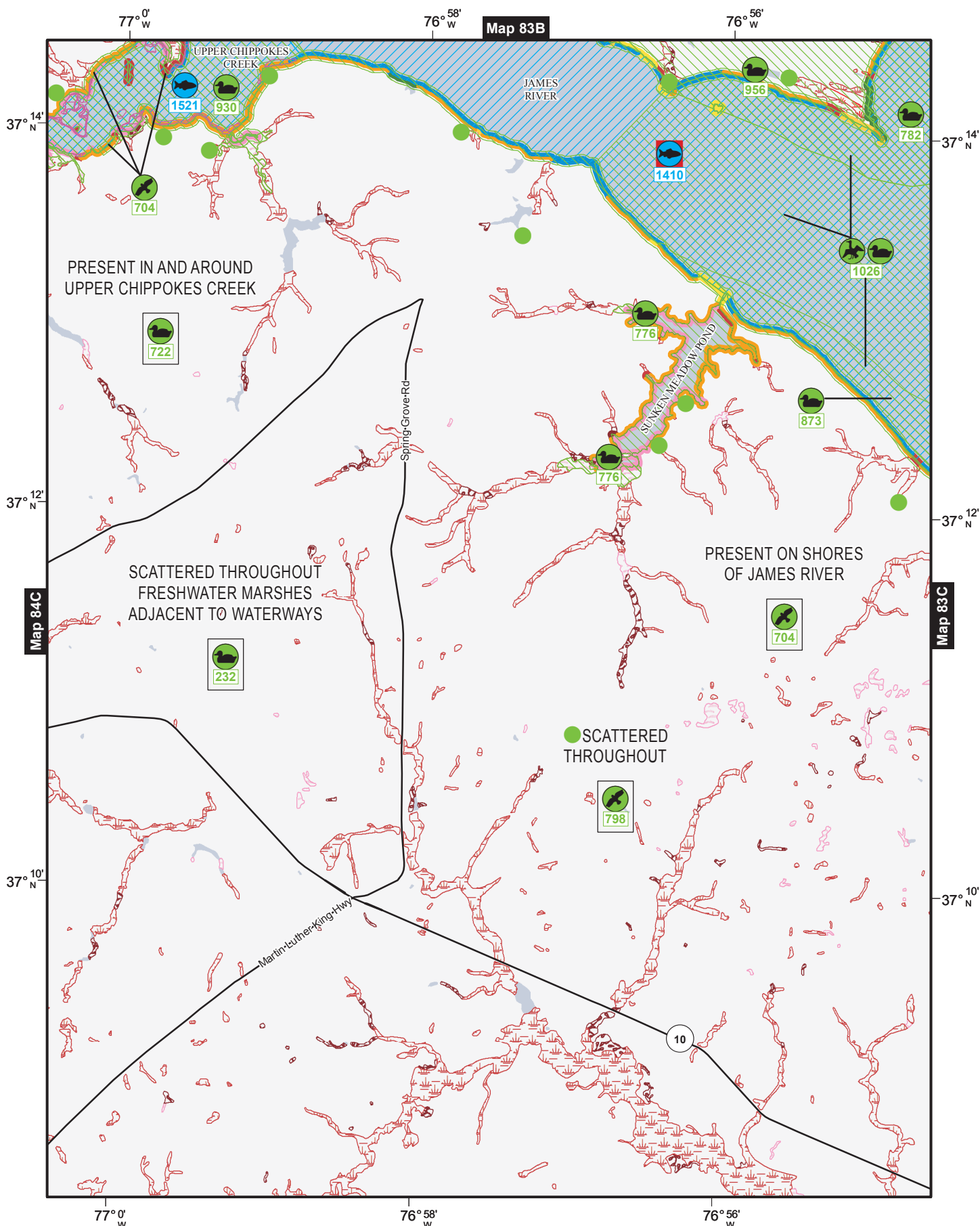
<i>ESI Rank</i>	<i>Shoreline Habitat Classification</i>	<i>Length (Meters)</i>	<i>Length (Miles)</i>	<i>% of ESI Shoreline</i>
10A	Salt and Brackish Water Marshes	2,308.89	1.43	4%
10B	Freshwater Marshes	32,291.99	20.07	52%
10C	Swamps	5,964.19	3.71	10%
10D	Scrub and Shrub Wetlands	580.55	0.36	1%
9B	Vegetated Low Banks	10,085.93	6.27	16%
8B	Sheltered, Solid Man-Made Structures	242.49	0.15	< 1%
6B	Riprap	1,701.03	1.06	3%
5	Mixed Sand and Gravel Beaches	399.02	0.25	1%
4	Coarse Grained Sand Beaches	8,302.17	5.16	13%
1B	Exposed, Solid Man-Made Structures	121.18	0.08	< 1%

Total ESI Shoreline: 61,997.44 Total ESI Shoreline: 38.52
Total Shoreline: 49,562.70 Total Shoreline: 30.80

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 83D
Chesapeake South

BIOLOGICAL RESOURCES

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

DISPLAYED ON MAP

BENTHIC

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

BIRDS

Map ID	Subelement	Species	Mapping Qualifier	MD/VA		Concentration	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt
				S	F		J	F	M	A	M	J	J	A	S	O	N	D				
232	Waterfowl	Canada goose	Nesting			Present												Mar-Aug	-	-	Jun-Jul	-
	Waterfowl	Mallard	Nesting			Present												Mar-Aug	-	-	Jul-Aug	-
704	Raptor	Bald eagle	Concentration Area			Moderate-High												-	-	-	-	-
722	Waterfowl	American black duck	Wintering			100S												-	-	-	-	-
	Waterfowl	American wigeon	Wintering			10S												-	-	-	-	-
776	Waterfowl	Blue-winged teal	Migration			100S												-	Feb-Apr	Aug-Oct	-	-
	Waterfowl	Canada goose	Wintering			100S												-	-	-	-	-
	Waterfowl	Gadwall	Wintering			100S												-	-	-	-	-
	Waterfowl	Green-winged teal	Wintering			100S												-	-	-	-	-
	Waterfowl	Mallard	Wintering			100S												-	-	-	-	-
	Waterfowl	Northern pintail	Wintering			Present												-	-	-	-	-
	Waterfowl	Tundra swan	Wintering			Present												-	-	-	-	-
	Waterfowl	American wigeon	Wintering			100S												-	-	-	-	-
	Waterfowl	Bufflehead	Wintering			Present												-	-	-	-	-
	Waterfowl	Canada goose	Wintering			10S												-	-	-	-	-
782	Waterfowl	Gadwall	Wintering			100S												-	-	-	-	-
	Waterfowl	Mallard	Wintering			10S												-	-	-	-	-
	Waterfowl	Mergansers	Wintering			10S												-	-	-	-	-
	Waterfowl	Ring-necked duck	Wintering			10S												-	-	-	-	-
	Waterfowl	Tundra swan	Wintering			10S												-	-	-	-	-
	Waterfowl	American black duck	Wintering			10S												-	-	-	-	-
	Waterfowl	American wigeon	Wintering			1,000S												-	-	-	-	-
	Waterfowl	Blue-winged teal	Migration			100S												-	Feb-Apr	Aug-Oct	-	-
	Waterfowl	Bufflehead	Wintering			10S												-	-	-	-	-
	Waterfowl	Canvasback	Wintering			1,000S												-	-	-	-	-
782	Waterfowl	Gadwall	Wintering			1,000S												-	-	-	-	-
	Waterfowl	Green-winged teal	Wintering			100S												-	-	-	-	-
	Waterfowl	Mallard	Wintering			1,000S												-	-	-	-	-
	Waterfowl	Mergansers	Wintering			10S												-	-	-	-	-
	Waterfowl	Ring-necked duck	Wintering			1,000S												-	-	-	-	-
	Waterfowl	Scaup	Wintering			1,000S												-	-	-	-	-

BIRDS (continued)

Map ID	Subelement	Species	Mapping Qualifier	MD/VA		Monthly Presence												Nest	Mig.(S)	Mig.(F)	Juveniles	Adults
				S	F	J	F	M	A	M	J	J	A	S	O	N	D					
798	Waterfowl	Tundra swan	Wintering															-	-	-	-	-
	Raptor	Bald eagle	Nesting															Dec-Jun	-	-	-	-
873	Waterfowl	Canvasback	Wintering															-	-	-	-	-
	Waterfowl	Ruddy duck	Wintering															-	-	-	-	-
930	Waterfowl	Bufflehead	Wintering															-	-	-	-	-
	Waterfowl	Mergansers	Wintering															-	-	-	-	-
	Waterfowl	Ring-necked duck	Wintering															-	-	-	-	-
956	Waterfowl	Canada goose	Wintering															-	-	-	-	-
1026	Diving	Common loon	Wintering															-	-	-	-	-
	Diving	D. crested cormorant	Wintering															-	Mar-May	Aug-Nov	-	-
	Diving	Red-throated loon	Wintering															-	-	-	-	-
	Waterfowl	Long-tailed duck	Wintering															-	-	-	-	-
	Waterfowl	Scooters	Wintering															-	-	-	-	-

FISH




Map ID	Subelement	Species	Mapping Qualifier	MD/VA		Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
				S	F	J	F	M	A	M	J	J	A	S	O	N	D					
1410	Diadromous	Atlantic sturgeon	Migration	-/E	E													-	-	-	-	Apr-May
	Diadromous	Atlantic sturgeon	Migration	-/E	E													-	-	-	-	Jun-Nov
	Diadromous	Hickory shad	Nursery Area															-	-	Apr-Jun	Apr-Oct	-
	Diadromous	Hickory shad	Spawning Area															Feb-May	Feb-May	-	-	Feb-May
1521	Freshwater	Yellow perch	Spawning Area															Feb-Mar	Feb-Mar	Mar-Apr	-	Feb-Mar

WIDESPREAD IN MAPPED AREA (> 10 SQUARE KILOMETERS)





FISH

Map ID	Subelement	Species	Mapping Qualifier	MD/VA		Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
				S	F	J	F	M	A	M	J	J	A	S	O	N	D					
	Diadromous	Alewife	Nursery Area															-	-	Feb-Apr	Apr-Oct	-
		Alewife	Spawning Area															Feb-Apr	Feb-Apr	-	-	Feb-Apr
		American shad	Nursery Area															-	-	Mar-Jul	Mar-Oct	-
		American shad	Spawning Area															Feb-Jun	Feb-Jun	-	-	Feb-Jun
		Atlantic sturgeon	General Distribution	-/E	E													-	-	Jan-Dec	Jan-Dec	Jan-Dec
		Blueback herring	Nursery Area															-	-	Apr-Jun	May-Oct	-
		Blueback herring	Spawning Area															Mar-Jun	Mar-Jun	-	-	Mar-Jun
		Striped bass	Nursery Area															-	-	Mar-May	Jan-Dec	-
		Striped bass	Spawning Area															Mar-May	Mar-May	-	-	Feb-Jun
	Estuarine Nursery	White perch	Spawning Area															Mar-May	Mar-May	Apr-Jun	-	Mar-May

BIRDS

Subelement	Species	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt
		J	F	M	A	M	J	J	A	S	O	N	D				
	Diving													-	-	-	-
	Brown pelican																
	D. crested cormorant													-	-	-	-
	Gulls													-	-	-	-
	Terns													-	-	-	-
	Osprey													-	-	-	-
	Wood duck													Apr-Jul	-	-	Jul-Aug

FISH

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	Diadromous													Feb-Apr	Feb-Apr	Feb-Apr	Apr-Oct	Feb-Apr
	Alewife													-	-	-	Jan-May	Jan-Dec
	American eel													Mar-Jun	Mar-Jun	Apr-Jun	May-Oct	Mar-Jun
	Blueback herring													Mar-Jun	-	-	Jan-Dec	Jan-Dec
	Gizzard shad													-	-	-	Jan-Dec	Jan-Dec
	Striped bass													-	-	-	Jan-Dec	Jan-Dec
	Atlantic croaker													-	-	Apr-Dec	Jan-Dec	May-Oct
	Atlantic menhaden													-	-	-	Jan-Dec	Jan-Dec
	Spot													-	-	-	Nov-Apr	Apr-Dec
	White perch													-	-	-	Jan-Dec	Jan-Dec
	Anchovies													Apr-Sep	-	-	-	Jan-Dec
	Black crappie													Mar-Jul	-	-	Jan-Dec	-
	Blue catfish													May-Jun	May-Jun	May-Jun	Jan-Dec	Jan-Dec
	Bullhead catfish													Apr-Jun	-	-	-	Jan-Dec
	Chain pickerel													Feb-Apr	-	-	-	Jan-Dec
	Channel catfish													May-Jun	-	-	Jan-Dec	Jan-Dec
	Common carp													May-Jun	-	-	-	Jan-Dec
	Golden shiner													Apr-Aug	-	-	Jan-Dec	Jan-Dec
	Largemouth bass													Mar-May	-	-	-	Jan-Dec
	Longnose gar													May-Jun	-	-	Jan-Dec	Jan-Dec
	Redfin pickerel													Feb-Mar	-	-	Jan-Dec	Jan-Dec
	Spotfin shiner													Jun-Aug	-	-	-	Jan-Dec
	Spottail shiner													May-Aug	-	-	-	Jan-Dec
	Sunfish													Mar-Jul	-	-	-	Jan-Dec
	Tessellated darter													Apr-Jun	-	-	-	Jan-Dec
	Yellow perch													-	-	-	Jan-Dec	Jan-Dec

INVERTEBRATES

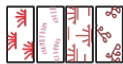
Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	Crab													-	-	-	Jan-Dec	Jan-Dec
	Blue crab													-	-	-	Jan-Dec	Jan-Dec

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	8.52	0.01
10B	Freshwater Marshes	106.29	0.17
10C	Swamps	1,169.98	1.83
10D	Scrub and Shrub Wetlands	121.79	0.19



ESI SHORELINE HABITAT TYPES

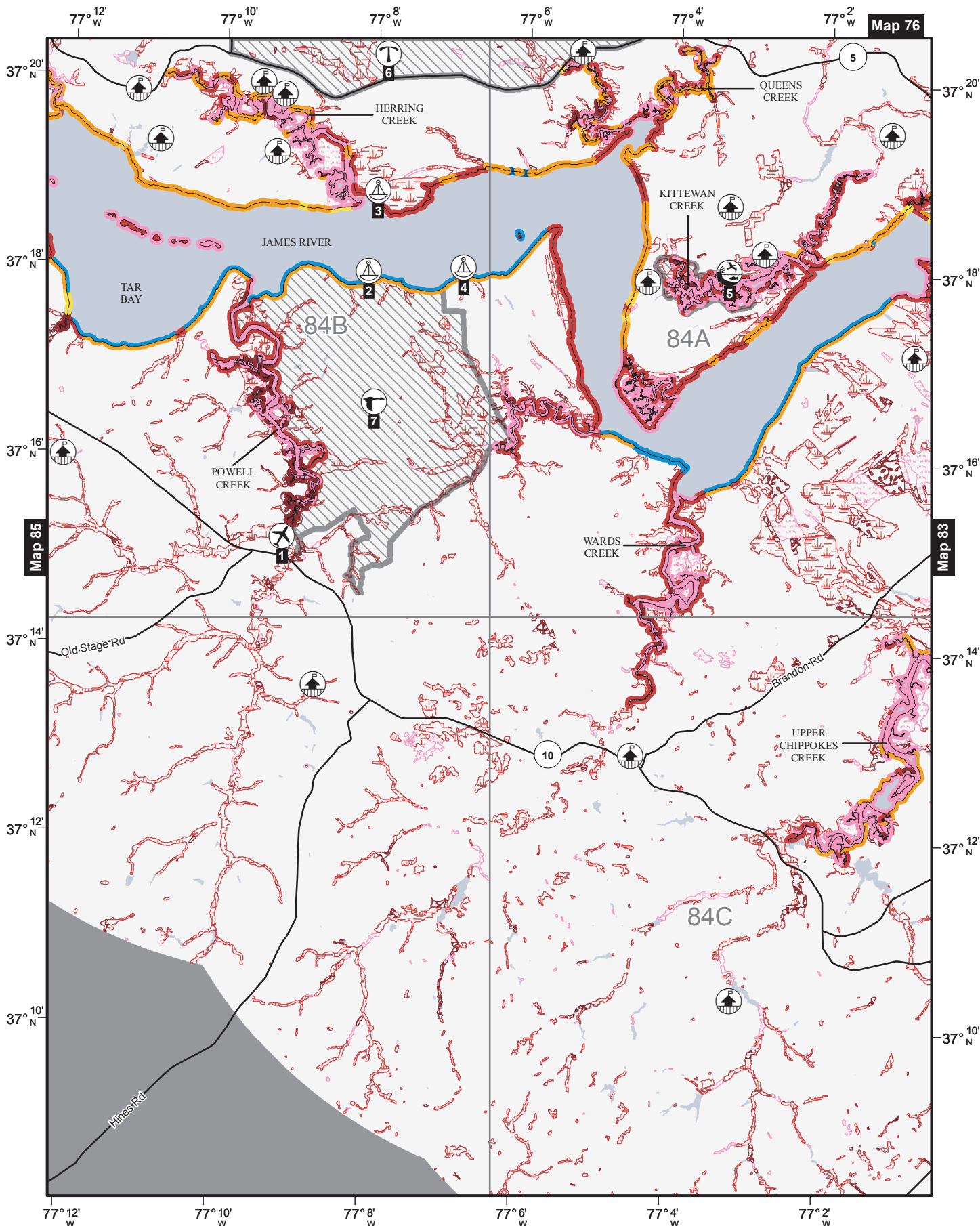
<i>ESI Rank</i>	<i>Shoreline Habitat Classification</i>	<i>Length (Meters)</i>	<i>Length (Miles)</i>	<i>% of ESI Shoreline</i>
10B	Freshwater Marshes	10,141.46	6.30	22%
10C	Swamps	2,433.13	1.51	5%
10D	Scrub and Shrub Wetlands	388.96	0.24	1%
9A	Sheltered Tidal Flats	98.67	0.06	< 1%
9B	Vegetated Low Banks	18,908.31	11.75	41%
8B	Sheltered, Solid Man-Made Structures	1,753.38	1.09	4%
8C	Sheltered Riprap	590.74	0.37	1%
6B	Riprap	1,058.37	0.66	2%
4	Coarse Grained Sand Beaches	10,601.87	6.59	23%
1B	Exposed, Solid Man-Made Structures	15.63	0.01	< 1%

Total ESI Shoreline: 45,990.54 Total ESI Shoreline: 28.58
Total Shoreline: 29,878.30 Total Shoreline: 18.57

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

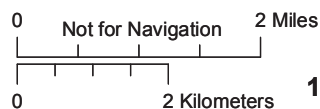




Map 84
Chesapeake South



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



1:100,000

Map 84
Chesapeake South

HUMAN USE RESOURCES

DISPLAYED ON MAP (POINTS)				
Map ID	Type	Name	Contact	Phone
1	AIRPORT	HENSHAW		
2	REPEATED MEASUREMENT SITE	WQ - STATION TF5.5A	CHESAPEAKE BAY PROGRAM	800-968-7229
3	REPEATED MEASUREMENT SITE	WQ - STATION TF5.5AN	CHESAPEAKE BAY PROGRAM	800-968-7229
4	REPEATED MEASUREMENT SITE	WQ - STATION TF5.5AS	CHESAPEAKE BAY PROGRAM	800-968-7229
DISPLAYED ON MAP (POLYGONS)				
Map ID	Type	Name	Contact	Phone
5	MANAGEMENT AREA	KITTEWAN WILDLIFE MANAGEMENT AREA	KENDELL RYAN, VDGIF	804-367-0068
6	TRIBAL LAND	CHICKAHOMINY SDTSA		
7	WILDLIFE REFUGE	JAMES RIVER NATIONAL WILDLIFE REFUGE	UNITED STATES FISH AND WILDLIFE SERVICE	804-829-9020

JURISDICTIONS

COUNTY: CHARLES CITY COUNTY, PRINCE GEORGE COUNTY, SURRY COUNTY
COAST GUARD: DISTRICT 5, SECTOR HAMPTON ROADS
USACE: NORTH ATLANTIC DIVISION, NORFOLK DISTRICT

FEMA: REGION I
EPA: REGION 3

SHORELINE RESOURCES

ESI POLYGON HABITAT TYPES

ESI Rank	Habitat Classification	Area (Acres)	Area (Sq. Miles)
10B	Freshwater Marshes	2,344.74	3.66
10C	Swamps	6,943.77	10.85
10D	Scrub and Shrub Wetlands	773.59	1.21



ESI SHORELINE HABITAT TYPES

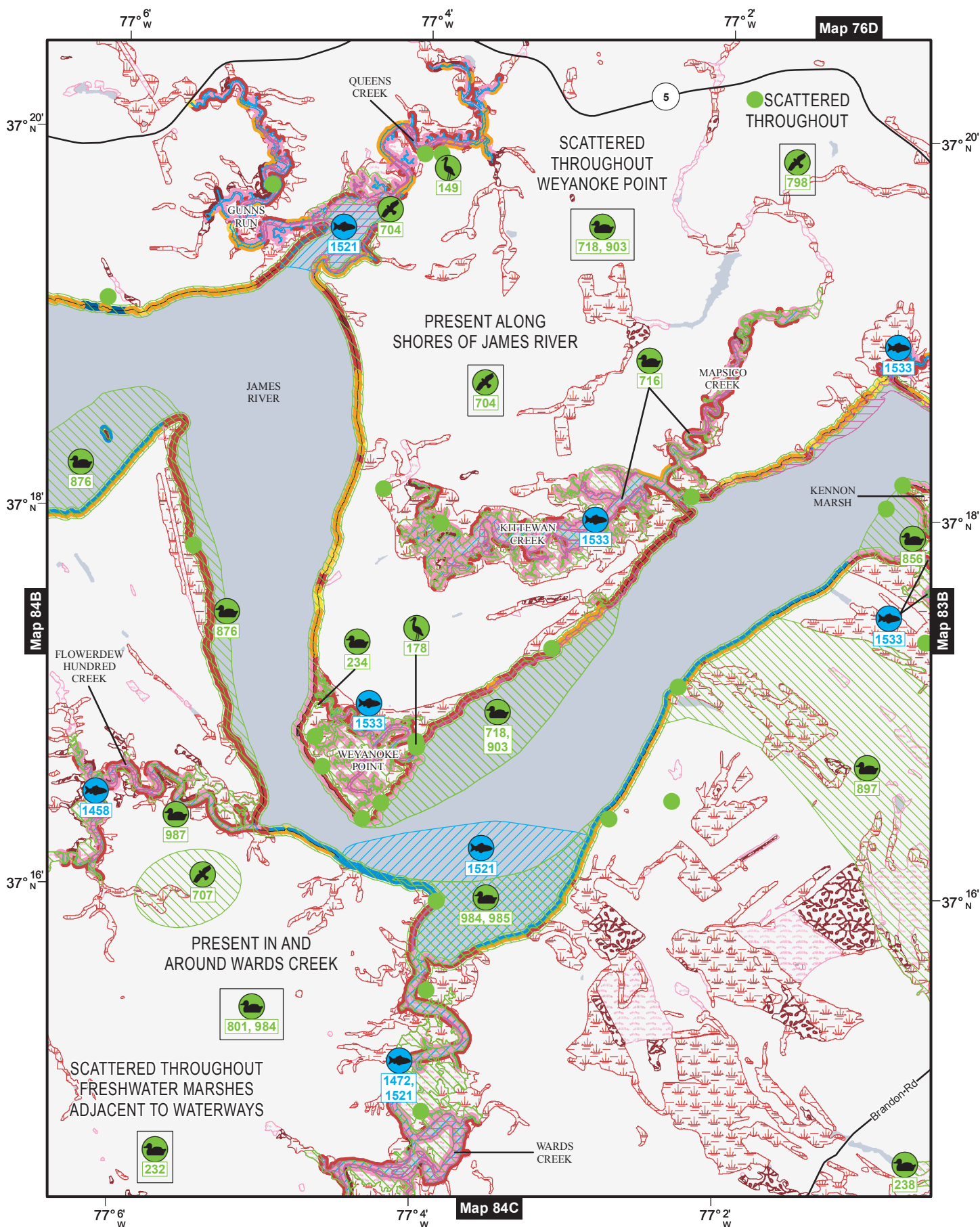
ESI Rank	Shoreline Habitat Classification	Length (Meters)	Length (Miles)	% of ESI Shoreline
10B	Freshwater Marshes	212,323.54	131.93	55%
10C	Swamps	90,292.93	56.11	23%
10D	Scrub and Shrub Wetlands	20,864.11	12.96	5%
9A	Sheltered Tidal Flats	1,668.47	1.04	< 1%
9B	Vegetated Low Banks	40,329.88	25.06	10%
8B	Sheltered, Solid Man-Made Structures	2,275.99	1.41	1%
8C	Sheltered Riprap	1,168.04	0.73	< 1%
4	Coarse Grained Sand Beaches	19,672.27	12.22	5%
3B	Scarps and Steep Slopes (Sand)	407.35	0.25	< 1%

Total ESI Shoreline: 389,002.59
 Total ESI Shoreline: 241.72
 Total Shoreline: 273,846.84
 Total Shoreline: 170.16

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 84A
Chesapeake South



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

0 1 Miles
Not for Navigation
0 1 Kilometers

1:50,000



Map 84A
Chesapeake South

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	MD/VA S F	Concentration	Monthly Presence											
					J	F	M	A	M	J	J	A	S	O	N	D
SAV	Submerged aquatic veg	High Ecological Value		Ephemeral												
SAV	Submerged aquatic veg	High Ecological Value		High												
SAV	Submerged aquatic veg	High Ecological Value		Low												

BIRDS

Map ID	Subelement	Species	Mapping Qualifier	MD/VA		Concentration	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt
				S	F		J	F	M	A	M	J	J	A	S	O	N	D				
149	Wading	Great blue heron	Nesting			18 Nests												Feb-Jun	-	-	-	
178	Wading	Great blue heron	Nesting			64 Nests												Feb-Jun	-	-	-	
232	Waterfowl	Canada goose	Nesting			Present												Mar-Aug	-	-	Jun-Jul	
	Waterfowl	Mallard	Nesting			Present												Mar-Aug	-	-	Jul-Aug	
234	Waterfowl	American black duck	Wintering			100S												-	-	-	-	
	Waterfowl	American wigeon	Wintering			100S												-	-	-	-	
	Waterfowl	Blue-winged teal	Migration			100S												-	Feb-Apr	Aug-Oct	-	
	Waterfowl	Canada goose	Nesting			Present												Mar-Aug	-	-	Jun-Jul	
	Waterfowl	Gadwall	Wintering			100S												-	-	-	-	
	Waterfowl	Green-winged teal	Wintering			100S												-	-	-	-	
	Waterfowl	Mallard	Nesting			Present												Mar-Aug	-	-	Jul-Aug	
	Waterfowl	Mallard	Wintering			100S												-	-	-	-	
238	Waterfowl	American black duck	Wintering			100S												-	-	-	-	
	Waterfowl	American wigeon	Wintering			10S												-	-	-	-	
	Waterfowl	Blue-winged teal	Migration			100S												-	Feb-Apr	Aug-Oct	-	
	Waterfowl	Canada goose	Nesting			Present												Mar-Aug	-	-	Jun-Jul	
	Waterfowl	Canada goose	Wintering			100S												-	-	-	-	
	Waterfowl	Gadwall	Wintering			100S												-	-	-	-	
	Waterfowl	Green-winged teal	Wintering			100S												-	-	-	-	
	Waterfowl	Mallard	Nesting			Present												Mar-Aug	-	-	Jul-Aug	
	Waterfowl	Mallard	Wintering			100S												-	-	-	-	
	Waterfowl	Northern pintail	Wintering			Present												-	-	-	-	
	Waterfowl	Tundra swan	Wintering			Present												-	-	-	-	
704	Raptor	Bald eagle	Concentration Area			Present												-	-	-	-	
707	Raptor	Bald eagle	Roosting			-												-	-	-	-	
716	Waterfowl	American black duck	Wintering			100S												-	-	-	-	
	Waterfowl	American wigeon	Wintering			100S												-	-	-	-	
	Waterfowl	Blue-winged teal	Migration			100S												-	Feb-Apr	Aug-Oct	-	
	Waterfowl	Bufflehead	Wintering			Present												-	-	-	-	
	Waterfowl	Gadwall	Wintering			100S												-	-	-	-	

BIRDS (continued)

Map ID	Subelement	Species	Mapping Qualifier	MD/VA	S	F	Concentration	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt
								J	F	M	A	M	J	J	A	S	O	N	D				
718	Waterfowl	Green-winged teal	Wintering				100S													-	-	-	-
	Waterfowl	Mallard	Wintering				100S													-	-	-	-
	Waterfowl	Mergansers	Wintering				10S													-	-	-	-
	Waterfowl	Ring-necked duck	Wintering				100S													-	-	-	-
	Waterfowl	American black duck	Wintering				100S													-	-	-	-
	Waterfowl	American wigeon	Wintering				100S													-	-	-	-
	Waterfowl	Blue-winged teal	Migration				100S													-	Feb-Apr	Aug-Oct	-
	Waterfowl	Gadwall	Wintering				100S													-	-	-	-
	Waterfowl	Green-winged teal	Wintering				100S													-	-	-	-
798	Raptor	Bald eagle	Nesting				1 Nest													-	-	-	-
	Waterfowl	Blue-winged teal	Migration				10S													-	Feb-Apr	Aug-Oct	-
801	Waterfowl	Bufflehead	Wintering				10S													-	-	-	-
	Waterfowl	Canada goose	Wintering				100S													-	-	-	-
	Waterfowl	Green-winged teal	Wintering				10S													-	-	-	-
	Waterfowl	Mallard	Wintering				100S													-	-	-	-
	Waterfowl	Mergansers	Wintering				10S													-	-	-	-
	Waterfowl	Ring-necked duck	Wintering				10S													-	-	-	-
	Waterfowl	Tundra swan	Wintering				Present													-	-	-	-
	Waterfowl	American black duck	Wintering				10S													-	-	-	-
	Waterfowl	Canada goose	Wintering				100S													-	-	-	-
856	Waterfowl	Mallard	Wintering				10S													-	-	-	-
	Waterfowl	American black duck	Wintering				10S													-	-	-	-
	Waterfowl	Canvasback	Wintering				Present													-	-	-	-
	Waterfowl	Gadwall	Wintering				10S													-	-	-	-
	Waterfowl	Mallard	Wintering				10S													-	-	-	-
	Waterfowl	Ring-necked duck	Wintering				10S													-	-	-	-
897	Waterfowl	Scaup	Wintering				10S													-	-	-	-
	Waterfowl	Gadwall	Wintering				100S													-	-	-	-
	Waterfowl	Mallard	Wintering				100S													-	-	-	-
	Waterfowl	Northern pintail	Wintering				100S													-	-	-	-
	Waterfowl	Northern shoveler	Wintering				100S													-	-	-	-
	Waterfowl	Tundra swan	Wintering				100S													-	-	-	-
903	Waterfowl	Bufflehead	Wintering				Present													-	-	-	-
	Waterfowl	Mergansers	Wintering				10S													-	-	-	-
	Waterfowl	Ring-necked duck	Wintering				100S													-	-	-	-
984	Waterfowl	American black duck	Wintering				10S													-	-	-	-
	Waterfowl	Gadwall	Wintering				10S													-	-	-	-
	Waterfowl	Mallard	Wintering				10S													-	-	-	-
985	Waterfowl	American black duck	Wintering				Present													-	-	-	-
	Waterfowl	Bufflehead	Wintering				Present													-	-	-	-
	Waterfowl	Mallard	Wintering				10S													-	-	-	-
987	Waterfowl	American black duck	Wintering				10S													-	-	-	-
	Waterfowl	Bufflehead	Wintering				Present													-	-	-	-
	Waterfowl	Mallard	Wintering				10S													-	-	-	-
	Waterfowl	Mergansers	Wintering				Present													-	-	-	-

FISH

Map ID	Subelement	Species	Mapping Qualifier	MD/VA		Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
				S	F		J	F	M	A	M	J	J	A	S	O	N	D					
1458	Diadromous	American shad	Nursery Area			-													-	-	Mar-Jul	Mar-Oct	Feb-Jun
		Striped bass	Spawning Area			-													Apr-Jun	Apr-Jun	-	-	Mar-Jun
1472	Freshwater	Yellow perch	Spawning Area			-													Feb-Mar	Feb-Mar	Mar-Apr	-	Feb-Mar
		American shad	Nursery Area			-													-	-	Mar-Jul	Mar-Oct	Feb-Jun
1521	Diadromous	Striped bass	Spawning Area			-													Apr-Jun	Apr-Jun	-	-	Mar-Jun
		Yellow perch	Spawning Area			-													Feb-Mar	Feb-Mar	Mar-Apr	-	Feb-Mar
1533	Diadromous	American shad	Nursery Area			-													-	-	Mar-Jul	Mar-Oct	Feb-Jun
		Yellow perch	Spawning Area			-													Feb-Mar	Feb-Mar	Mar-Apr	-	Feb-Mar

WIDESPREAD IN MAPPED AREA (> 10 SQUARE KILOMETERS)




BIRDS

Subelement	Species	Mapping Qualifier	MD/VA		Concentration	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt
			S	F		J	F	M	A	M	J	J	A	S	O	N	D				
Waterfowl	Canada goose	Wintering			1,000S													-	-	-	-




FISH

Subelement	Species	Mapping Qualifier	MD/VA		Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
			S	F		J	F	M	A	M	J	J	A	S	O	N	D					
Diadromous	Alewife	Nursery Area			-													-	-	Feb-Apr	Apr-Oct	-
	Alewife	Spawning Area			-													Feb-Apr	Feb-Apr	-	-	Feb-Apr
American shad	American shad	Nursery Area			-													-	-	Mar-Jul	Mar-Oct	-
	American shad	Spawning Area			-													Feb-Jun	Feb-Jun	-	-	Feb-Jun
Atlantic sturgeon	Atlantic sturgeon	General Distribution	-/E	E	-													-	-	Jan-Dec	Jan-Dec	Jan-Dec
	Atlantic sturgeon	Migration	-/E	E	-													-	-	-	-	Jun-Nov
Atlantic sturgeon	Atlantic sturgeon	Spawning Area	-/E	E	Potential Spawning													Apr-May	Apr-May	-	-	Apr-May
	Blueback herring	Nursery Area			-													-	-	Apr-Jun	May-Oct	-
Blueback herring	Blueback herring	Spawning Area			-													Mar-Jun	Mar-Jun	-	-	Mar-Jun
	Hickory shad	Nursery Area			-													-	-	Apr-Jun	Apr-Oct	-
Hickory shad	Hickory shad	Spawning Area			-													Feb-May	Feb-May	-	-	Feb-May
	Striped bass	Nursery Area			-													-	-	Mar-May	Jan-Dec	-
Estuarine Nursery	Striped bass	Spawning Area			-													Mar-May	Mar-May	-	-	Feb-Jun
	White perch	Spawning Area			-													Mar-May	Mar-May	Apr-Jun	-	Mar-May

BIRDS

Subelement	Species	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt
		J	F	M	A	M	J	J	A	S	O	N	D				
	D. crested cormorant													-	-	-	-
	Bonaparte's gull													-	Mar-Apr	Oct-Dec	-
	Caspian tern													-	Apr-Jun	Jul-Oct	-
	Forster's tern													-	-	Aug-Oct	-
	Herring gull													-	-	-	-
	Swamp sparrow													-	Oct-May	-	-
	Osprey													-	-	-	-
	Great blue heron													-	-	-	-
	Little blue heron													-	-	-	-
	Wood duck													Apr-Jul	-	-	Jul-Aug

FISH

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	Alewife													Feb-Apr	Feb-Apr	Feb-Apr	Apr-Oct	Feb-Apr
	American eel													-	-	-	Jan-May	Jan-Dec
	Blueback herring													Mar-Jun	Mar-Jun	Apr-Jun	May-Oct	Mar-Jun
	Gizzard shad													Mar-Jun	-	-	Jan-Dec	Jan-Dec
	Striped bass													-	-	-	Jan-Dec	Jan-Dec
	White perch													-	-	-	Jan-Dec	Jan-Dec
	Black crappie													Mar-Jul	-	-	Jan-Dec	-
	Blue catfish													May-Jun	May-Jun	May-Jun	Jan-Dec	Jan-Dec
	Bullhead catfish													Apr-Jun	-	-	-	Jan-Dec
	Chain pickerel													Feb-Apr	-	-	-	Jan-Dec
	Channel catfish													May-Jun	-	-	Jan-Dec	Jan-Dec
	Common carp													May-Jun	-	-	-	Jan-Dec
	Golden shiner													Apr-Aug	-	-	Jan-Dec	Jan-Dec
	Largemouth bass													Mar-May	-	-	-	Jan-Dec
	Longnose gar													May-Jun	-	-	Jan-Dec	Jan-Dec
	Redfin pickerel													Feb-Mar	-	-	Jan-Dec	Jan-Dec
	Spotfin shiner													Jun-Aug	-	-	-	Jan-Dec
	Spottail shiner													May-Aug	-	-	-	Jan-Dec
	Sunfish													Mar-Jul	-	-	-	Jan-Dec
	Tessellated darter													Apr-Jun	-	-	-	Jan-Dec
	Yellow perch													-	-	-	Jan-Dec	Jan-Dec

INVERTEBRATES

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

TERRESTRIAL MAMMALS

Subelement	Species	Monthly Presence											
		J	F	M	A	M	J	J	A	S	O	N	D
Small Mammal	Northern river otter												

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	1,056.77	1.65
10C	Swamps	2,717.77	4.25
10D	Scrub and Shrub Wetlands	317.02	0.50

ESI SHORELINE HABITAT TYPES

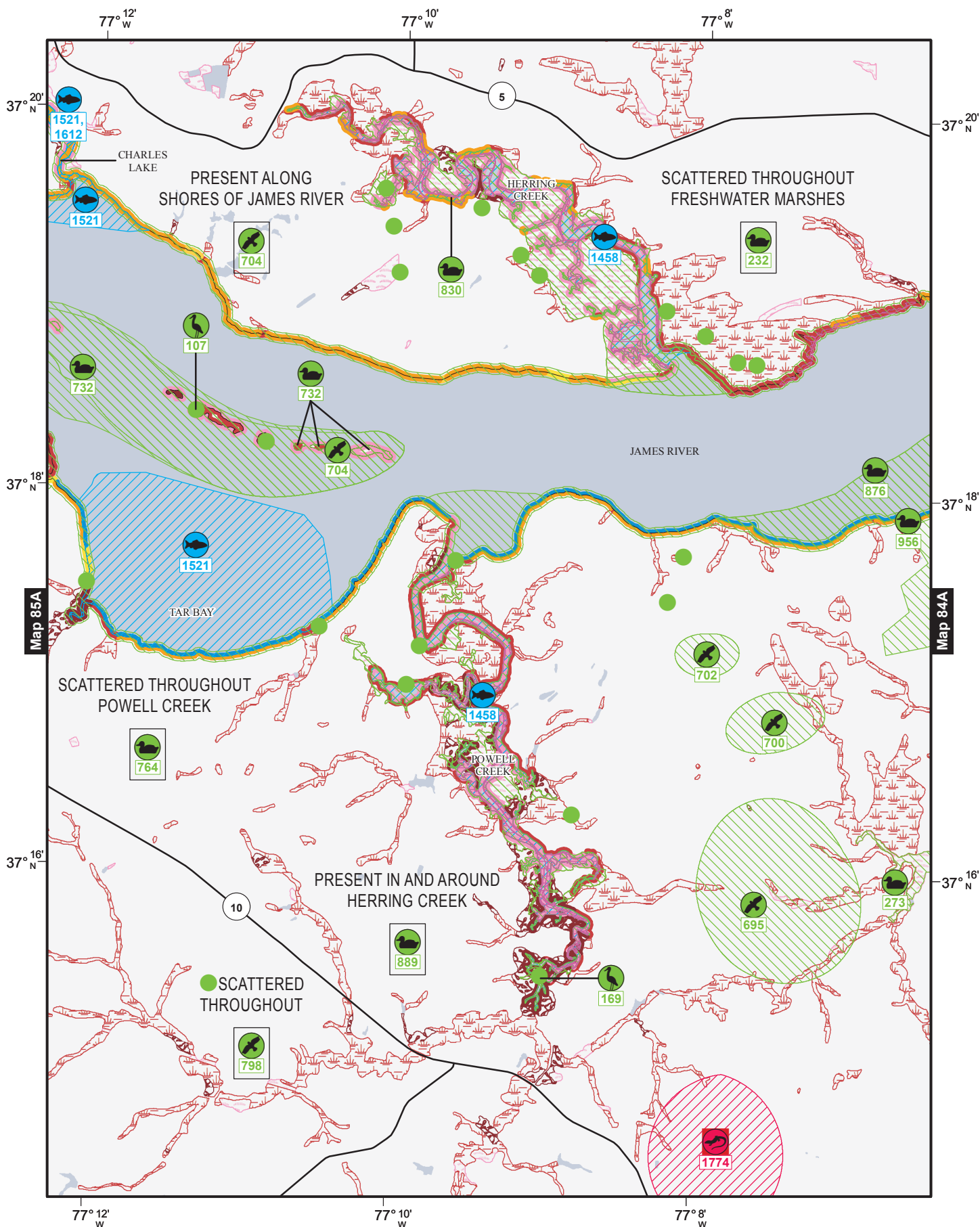
ESI Rank	Shoreline Habitat Classification	Length (Meters)	Length (Miles)	% of ESI Shoreline
10B	Freshwater Marshes	111,306.78	69.16	56%
10C	Swamps	55,996.39	34.79	28%
10D	Scrub and Shrub Wetlands	4,122.36	2.56	2%
9A	Sheltered Tidal Flats	38.64	0.02	< 1%
9B	Vegetated Low Banks	17,387.71	10.80	9%
8B	Sheltered, Solid Man-Made Structures	932.35	0.58	< 1%
8C	Sheltered Riprap	768.14	0.48	< 1%
4	Coarse Grained Sand Beaches	9,216.76	5.73	5%
3B	Scarps and Steep Slopes (Sand)	407.35	0.25	< 1%

Total ESI Shoreline: 200,176.48 Total ESI Shoreline: 124.38
 Total Shoreline: 146,948.97 Total Shoreline: 91.31

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

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

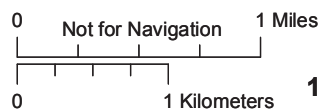




Map 84B
Chesapeake South



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



Map 84B
Chesapeake South

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	MD/VA S F	Concentration	Monthly Presence											
					J	F	M	A	M	J	J	A	S	O	N	D
SAV	Submerged aquatic veg	High Ecological Value		Ephemeral												
SAV	Submerged aquatic veg	High Ecological Value		High												

BIRDS

Map ID	Subelement	Species	Mapping Qualifier	MD/VA S F	Concentration	Monthly Presence											
						J	F	M	A	M	J	J	A	S	O	N	D
107	Wading	Great blue heron	Nesting		22 Nests												
169	Wading	Great blue heron	Nesting		15 Nests												
232	Waterfowl	Canada goose	Nesting		Present												
273	Waterfowl	Mallard	Nesting		Present												
	Waterfowl	American black duck	Wintering		Present												
	Waterfowl	Bufflehead	Wintering		Present												
	Waterfowl	Canada goose	Nesting		Present												
	Waterfowl	Canada goose	Wintering		1,000S												
	Waterfowl	Mallard	Nesting		Present												
	Waterfowl	Mallard	Wintering		10S												
	Waterfowl	Mergansers	Wintering		Present												
695	Raptor	Bald eagle	Concentration Area		101 Birds												
700	Raptor	Bald eagle	Concentration Area		100 Birds												
702	Raptor	Bald eagle	Concentration Area		80 Birds												
704	Raptor	Bald eagle	Concentration Area		Moderate-High												
732	Waterfowl	American black duck	Wintering		100S												
	Waterfowl	Blue-winged teal	Migration		10S												
	Waterfowl	Bufflehead	Wintering		10S												
	Waterfowl	Canada goose	Wintering		1,000S												
	Waterfowl	Green-winged teal	Wintering		10S												
	Waterfowl	Mallard	Wintering		100S												
764	Waterfowl	Mergansers	Wintering		10S												
	Waterfowl	American black duck	Wintering		100S												
	Waterfowl	American wigeon	Wintering		10S												
	Waterfowl	Bufflehead	Wintering		Present												
	Waterfowl	Canada goose	Wintering		1,000S												
	Waterfowl	Gadwall	Wintering		10S												
	Waterfowl	Mallard	Wintering		10S												
	Waterfowl	Mergansers	Wintering		100S												
	Waterfowl	Ring-necked duck	Wintering		10S												
798	Raptor	Bald eagle	Nesting		1 Nest												

BIRDS (continued)

Map ID	Subelement	Species	Mapping Qualifier	MD/VA		Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt
				S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N	D			
830	Waterfowl	Bufflehead	Wintering			10S													-	-	-
	Waterfowl	Mergansers	Wintering			Present													-	-	-
	Waterfowl	Ring-necked duck	Wintering			10S													-	-	-
876	Waterfowl	American black duck	Wintering			10S													-	-	-
	Waterfowl	Canvasback	Wintering			10S													-	-	-
	Waterfowl	Gadwall	Wintering			Present													-	-	-
	Waterfowl	Mallard	Wintering			10S													-	-	-
	Waterfowl	Ring-necked duck	Wintering			10S													-	-	-
	Waterfowl	Scaup	Wintering			10S													-	-	-
889	Waterfowl	American black duck	Wintering			10S													-	-	-
	Waterfowl	Blue-winged teal	Migration			10S													-	-	-
	Waterfowl	Canada goose	Wintering			1,000S													-	-	-
	Waterfowl	Green-winged teal	Wintering			10S													-	-	-
	Waterfowl	Mallard	Wintering			100S													-	-	-
	Waterfowl	Northern pintail	Wintering			10S													-	-	-
	Waterfowl	Northern shoveler	Wintering			100S													-	-	-
	Waterfowl	Tundra swan	Wintering			10S													-	-	-
	Waterfowl	Canada goose	Wintering			1,000S													-	-	-

FISH



Map ID	Subelement	Species	Mapping Qualifier	MD/VA		Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
				S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N	D				
1458	Diadromous	American shad	Nursery Area			-													-	Mar-Jul	Mar-Oct	Feb-Jun
	Diadromous	Striped bass	Spawning Area			-													Apr-Jun	-	-	Mar-Jun
	Freshwater	Yellow perch	Spawning Area			-													Feb-Mar	Mar-Apr	-	Feb-Mar
1521	Freshwater	Yellow perch	Spawning Area			-													Feb-Mar	Mar-Apr	-	Feb-Mar
1612	Diadromous	American shad	Nursery Area			-													-	Mar-Jul	Mar-Oct	Feb-Jun

REPTILES & AMPHIBIANS

Map ID	Subelement	Species	Mapping Qualifier	MD/VA		Monthly Presence												Nest	Hatch	Internest	Juveniles	Adults																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
				S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N						D																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
1774	Amphibian	Barking treefrog	Vulnerable Occurrence	E/T	-	-																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									</






WIDESPREAD IN MAPPED AREA (> 10 SQUARE KILOMETERS)

FISH




Subelement	Species	Mapping Qualifier	MDVA		Concentration	Monthly Presence												Eggs	Larvae	Juveniles	Adults
			S	F		J	F	M	A	M	J	J	A	S	O	N	D				
	Diadromous	Alewife			-													-	Feb-Apr	Apr-Oct	-
		Alewife			-													Feb-Apr	-	-	Feb-Apr
	American shad	Nursery Area			-													-	Mar-Jul	Mar-Oct	-
	American shad	Spawning Area			-													Feb-Jun	-	-	Feb-Jun
	Atlantic sturgeon	General Distribution	-/E	E	-													-	Jan-Dec	Jan-Dec	Jan-Dec
	Atlantic sturgeon	Migration	-/E	E	Fall Run Migration													-	-	-	Jun-Nov
	Atlantic sturgeon	Spawning Area	-/E	E	Potential Spawning													Apr-May	Apr-May	-	Apr-May
	Blueback herring	Nursery Area			-													-	Apr-Jun	May-Oct	-
	Blueback herring	Spawning Area			-													Mar-Jun	-	-	Mar-Jun
	Hickory shad	Nursery Area			-													-	Apr-Jun	Apr-Oct	-
	Hickory shad	Spawning Area			-													Feb-May	Feb-May	-	Feb-May
	Striped bass	Nursery Area			-													-	Mar-May	Jan-Dec	-
	Striped bass	Spawning Area			-													Mar-May	-	-	Feb-Jun
	White perch	Spawning Area			-													Mar-May	Apr-Jun	-	Mar-May

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				
	D. crested cormorant													-	-	-	-
	Bonaparte's gull													-	Mar-Apr	Oct-Dec	-
	Caspian tern													-	Apr-Jun	Jul-Oct	-
	Forster's tern													-	-	Aug-Oct	-
	Herring gull													-	-	-	-
	Swamp sparrow													-	Oct-May	-	-
	Osprey													-	-	-	-
	Killdeer													-	-	-	-
	Great blue heron													-	-	-	-
	Little blue heron													-	-	-	-
	Wood duck													Apr-Jul	-	-	Jul-Aug

FISH

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	Diadromous													Feb-Apr	Feb-Apr	Feb-Apr	Apr-Oct	Feb-Apr
	Alewife													-	-	-	Jan-May	Jan-Dec
	American eel													Mar-Jun	Mar-Jun	Apr-Jun	May-Oct	Mar-Jun
	Blueback herring													Mar-Jun	-	-	Jan-Dec	Jan-Dec
	Estuarine Nursery													Feb-May	Feb-May	Apr-Jun	Apr-Oct	Feb-May
	Gizzard shad													-	-	-	Jan-Dec	Jan-Dec
	Hickory shad													-	-	-	Jan-Dec	Jan-Dec
	Striped bass													-	-	-	Jan-Dec	Jan-Dec
	Freshwater													Mar-Jul	-	-	Jan-Dec	-
	White perch													May-Jun	May-Jun	May-Jun	Jan-Dec	Jan-Dec
	Black crappie													Apr-Jun	-	-	Jan-Dec	Jan-Dec
	Blue catfish													Apr-Jun	-	-	Jan-Dec	Jan-Dec
	Bullhead catfish													Feb-Apr	-	-	-	Jan-Dec
	Chain pickerel													May-Jun	-	-	Jan-Dec	Jan-Dec
	Channel catfish													May-Jun	-	-	-	Jan-Dec
	Common carp													Apr-Aug	-	-	Jan-Dec	Jan-Dec
	Golden shiner													Mar-May	-	-	-	Jan-Dec
	Largemouth bass													May-Jun	-	-	Jan-Dec	Jan-Dec
	Longnose gar													Feb-Mar	-	-	Jan-Dec	Jan-Dec
	Redfin pickerel													Jun-Aug	-	-	-	Jan-Dec
	Spotfin shiner													May-Aug	-	-	-	Jan-Dec
	Spottail shiner													Mar-Jul	-	-	-	Jan-Dec
	Sunfish													Apr-Jun	-	-	-	Jan-Dec
	Tessellated darter													-	-	-	Jan-Dec	Jan-Dec
	Yellow perch													-	-	-	Jan-Dec	Jan-Dec

INVERTEBRATES

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

TERRESTRIAL MAMMALS

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	Small Mammal													-	-	-	-	-
	Northern river otter													-	-	-	-	-

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	643.46	1.01
10C	Swamps	2,013.92	3.15
10D	Scrub and Shrub Wetlands	225.76	0.35



ESI SHORELINE HABITAT TYPES

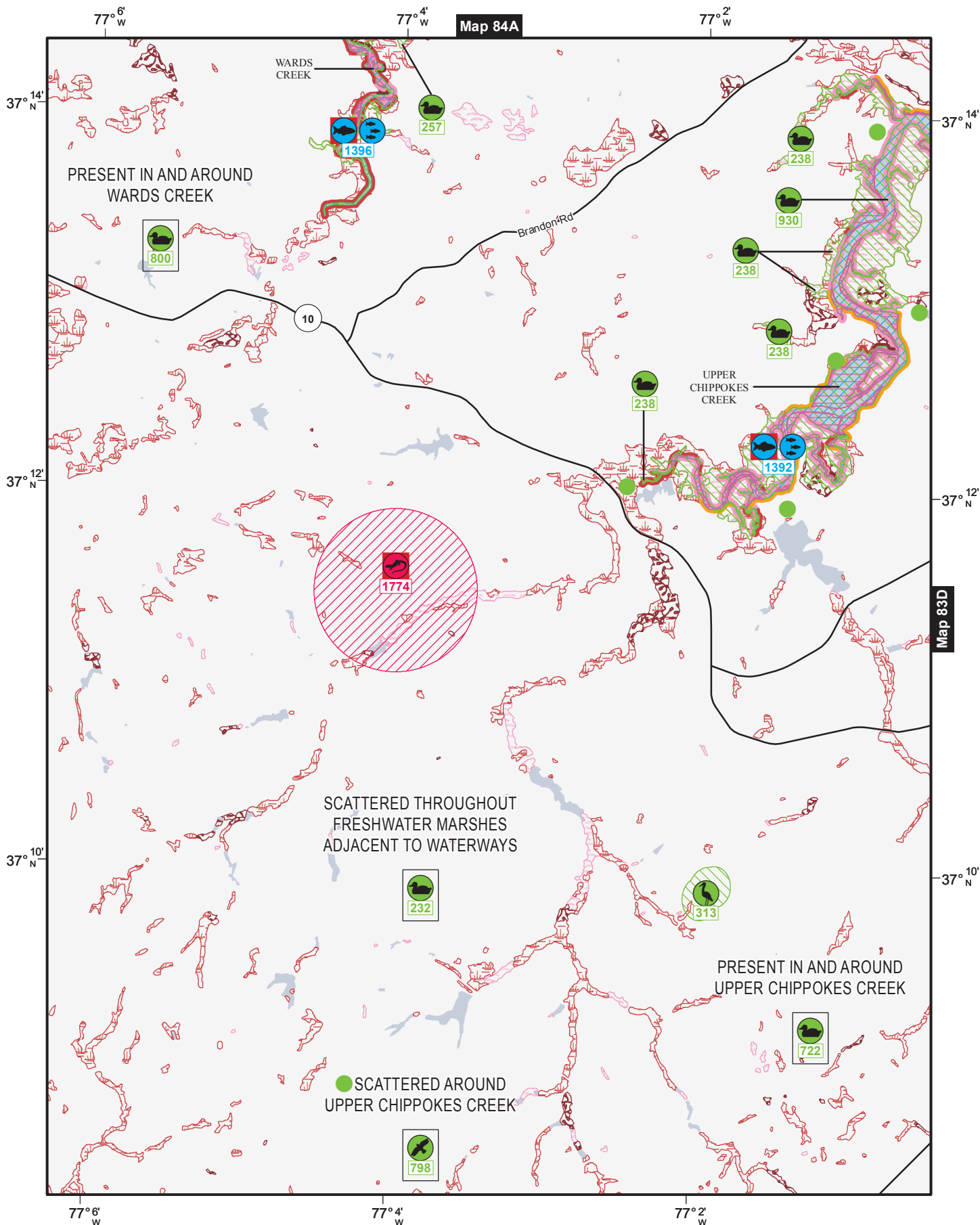
<i>ESI Rank</i>	<i>Shoreline Habitat Classification</i>	<i>Length (Meters)</i>	<i>Length (Miles)</i>	<i>% of ESI Shoreline</i>
10B	Freshwater Marshes	63,755.49	39.62	46%
10C	Swamps	26,655.54	16.56	19%
10D	Scrub and Shrub Wetlands	15,945.50	9.91	12%
9A	Sheltered Tidal Flats	1,629.83	1.01	1%
9B	Vegetated Low Banks	17,998.68	11.18	13%
8B	Sheltered, Solid Man-Made Structures	1,343.64	0.83	1%
8C	Sheltered Riprap	399.90	0.25	< 1%
4	Coarse Grained Sand Beaches	10,455.51	6.50	8%

Total ESI Shoreline: 138,184.10 Total ESI Shoreline: 85.86
 Total Shoreline: 89,404.74 Total Shoreline: 55.55

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 84C
Chesapeake South

BIOLOGICAL RESOURCES

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

DISPLAYED ON MAP

BENTHIC

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

BIRDS

Map ID	Subelement	Species	Mapping Qualifier	MD/VA		Concentration	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt
				S	F		J	F	M	A	M	J	J	A	S	O	N	D				
232	Waterfowl	Canada goose	Nesting			Present												Mar-Aug	-	-	Jun-Jul	-
	Waterfowl	Mallard	Nesting			Present												Mar-Aug	-	-	Jul-Aug	-
	Waterfowl	American black duck	Wintering			100S												-	-	-	-	
	Waterfowl	American wigeon	Wintering			10S												-	-	-	-	
	Waterfowl	Blue-winged teal	Migration			100S												-	Feb-Apr	Aug-Oct	-	-
238	Waterfowl	Canada goose	Nesting			Present												Mar-Aug	-	-	Jun-Jul	-
	Waterfowl	Canada goose	Wintering			100S												-	-	-	-	-
	Waterfowl	Gadwall	Wintering			100S												-	-	-	-	-
	Waterfowl	Green-winged teal	Wintering			100S												-	-	-	-	-
	Waterfowl	Mallard	Nesting			Present												Mar-Aug	-	-	Jul-Aug	-
	Waterfowl	Mallard	Wintering			100S												-	-	-	-	-
	Waterfowl	Northern pintail	Wintering			Present												-	-	-	-	-
	Waterfowl	Tundra swan	Wintering			Present												-	-	-	-	-
	Waterfowl	American black duck	Wintering			10S												-	-	-	-	-
	Waterfowl	Blue-winged teal	Migration			10S												-	Feb-Apr	Aug-Oct	-	-
257	Waterfowl	Bufflehead	Wintering			10S												-	-	-	-	-
	Waterfowl	Canada goose	Nesting			Present												Mar-Aug	-	-	Jun-Jul	-
	Waterfowl	Canada goose	Wintering			100S												-	-	-	-	-
	Waterfowl	Gadwall	Wintering			10S												-	-	-	-	-
	Waterfowl	Green-winged teal	Wintering			10S												-	-	-	-	-
	Waterfowl	Mallard	Nesting			Present												Mar-Aug	-	-	Jul-Aug	-
	Waterfowl	Mallard	Wintering			100S												-	-	-	-	-
	Waterfowl	Northern pintail	Wintering			Present												-	-	-	-	-
	Waterfowl	Tundra swan	Wintering			Present												-	-	-	-	-
	Waterfowl	American black duck	Wintering			10S												-	-	-	-	-
313	Waterfowl	Blue-winged teal	Migration			10S												-	Feb-Apr	Aug-Oct	-	-
	Waterfowl	Canada goose	Wintering			100S												-	-	-	-	-
	Waterfowl	Gadwall	Wintering			100S												-	-	-	-	-
	Waterfowl	Blue-winged teal	Wintering			100S												-	-	-	-	-
	Waterfowl	Canada goose	Wintering			100S												-	-	-	-	-

BIRDS (continued)

Map ID	Subelement	Species	Mapping Qualifier	MD/VA		Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt
				S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N				
	Waterfowl	Green-winged teal	Wintering			100S												-	-	-	-
	Waterfowl	Mallard	Wintering			100S												-	-	-	-
	Waterfowl	Northern pintail	Wintering			Present												-	-	-	-
	Waterfowl	Tundra swan	Wintering			Present												-	-	-	-
798	Raptor	Bald eagle	Nesting			1 Nest												Dec-Jun	-	-	-
800	Waterfowl	American black duck	Wintering			10S												-	-	-	-
	Waterfowl	Blue-winged teal	Migration			10S												-	Feb-Apr	Aug-Oct	-
	Waterfowl	Bufflehead	Wintering			10S												-	-	-	-
	Waterfowl	Canada goose	Wintering			100S												-	-	-	-
	Waterfowl	Gadwall	Wintering			10S												-	-	-	-
	Waterfowl	Green-winged teal	Wintering			10S												-	-	-	-
	Waterfowl	Mallard	Wintering			100S												-	-	-	-
	Waterfowl	Mergansers	Wintering			10S												-	-	-	-
	Waterfowl	Ring-necked duck	Wintering			10S												-	-	-	-
	Waterfowl	Tundra swan	Wintering			Present												-	-	-	-
930	Waterfowl	Bufflehead	Wintering			100S												-	-	-	-
	Waterfowl	Mergansers	Wintering			100S												-	-	-	-
	Waterfowl	Ring-necked duck	Wintering			100S												-	-	-	-

FISH

Map ID	Subelement	Species	Mapping Qualifier	MD/VA		Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
				S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N					
1392	Diadromous	Alewife	Nursery Area			-												-	-	Feb-Apr	Apr-Oct	-
	Diadromous	Alewife	Spawning Area			-												Feb-Apr	Feb-Apr	-	-	Feb-Apr
	Diadromous	American shad	Nursery Area			-												-	-	Mar-Jul	Mar-Oct	-
	Diadromous	American shad	Spawning Area			-												Feb-Jun	Feb-Jun	-	-	Feb-Jun
	Diadromous	Atlantic sturgeon	General Distribution	-/E	E	-												-	-	Jan-Dec	Jan-Dec	Jan-Dec
	Diadromous	Blueback herring	Nursery Area			-												-	-	Apr-Jun	May-Oct	-
	Diadromous	Blueback herring	Spawning Area			-												Mar-Jun	Mar-Jun	-	-	Mar-Jun
	Diadromous	Striped bass	Nursery Area			-												-	-	Mar-May	Jan-Dec	-
	Diadromous	Striped bass	Spawning Area			-												Mar-May	Mar-May	-	-	Feb-Jun
	Estuarine Nursery	White perch	Spawning Area			-												Feb-Mar	Mar-Mar	Apr-Jun	-	Mar-May
	Freshwater	Yellow perch	Spawning Area			-												-	-	Mar-Apr	-	Feb-Mar
1396	Diadromous	Alewife	Nursery Area			-												-	-	Feb-Apr	Apr-Oct	-
	Diadromous	Alewife	Spawning Area			-												Feb-Apr	Feb-Apr	-	-	Feb-Apr
	Diadromous	American shad	Nursery Area			-												-	-	Mar-Jul	Mar-Oct	Feb-Jun
	Diadromous	Atlantic sturgeon	General Distribution	-/E	E	-												-	-	Jan-Dec	Jan-Dec	Jan-Dec
	Diadromous	Blueback herring	Nursery Area			-												-	-	Apr-Jun	May-Oct	-
	Diadromous	Blueback herring	Spawning Area			-												Mar-Jun	Mar-Jun	-	-	Mar-Jun
	Diadromous	Striped bass	Nursery Area			-												-	-	Mar-May	Jan-Dec	-
	Diadromous	Striped bass	Spawning Area			-												Apr-Jun	Apr-Jun	-	-	Mar-Jun
	Estuarine Nursery	White perch	Spawning Area			-												Mar-May	Mar-May	Apr-Jun	-	Mar-May
	Freshwater	Yellow perch	Spawning Area			-												Feb-Mar	Feb-Mar	Mar-Apr	-	Feb-Mar

REPTILES & AMPHIBIANS







Map ID	Subelement	Species	Mapping Qualifier	MD/VA		Monthly Presence												Nest	Hatch	Internest	Juveniles	Adults
				S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N					
1774	Amphibian	Barking treefrog	Vulnerable Occurrence	E/T		-												-	-	-	-	Jan-Dec

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-Jul	-	-	Jul-Aug

FISH

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
	Diadromous													Feb-Apr	Feb-Apr	Feb-Apr	Apr-Oct	Feb-Apr
	Alewife													-	-	-	Jan-May	Jan-Dec
	American eel													Mar-Jun	Mar-Jun	Apr-Jun	May-Oct	Mar-Jun
	Blueback herring													Mar-Jun	-	-	Jan-Dec	Jan-Dec
	Gizzard shad													Feb-May	Feb-May	Apr-Jun	Apr-Oct	Feb-May
	Hickory shad													-	-	-	Jan-Dec	Jan-Dec
	Striped bass													-	-	-	Jan-Dec	Jan-Dec
	Atlantic croaker													-	-	Apr-Dec	Jan-Dec	May-Oct
	Atlantic menhaden													-	-	-	Jan-Dec	Jan-Dec
	Spot													-	-	-	Nov-Apr	Apr-Dec
	White perch													-	-	-	Jan-Dec	Jan-Dec
	Anchovies													Apr-Sep	-	-	-	Jan-Dec
	Black crappie													Mar-Jul	-	-	Jan-Dec	-
	Blue catfish													May-Jun	May-Jun	May-Jun	Jan-Dec	Jan-Dec
	Bullhead catfish													Apr-Jun	-	-	-	Jan-Dec
	Chain pickerel													Feb-Apr	-	-	-	Jan-Dec
	Channel catfish													May-Jun	-	-	Jan-Dec	Jan-Dec
	Common carp													May-Jun	-	-	-	Jan-Dec
	Golden shiner													May-Jun	-	-	-	Jan-Dec
	Largemouth bass													Apr-Aug	-	-	Jan-Dec	Jan-Dec
	Longnose gar													Mar-May	-	-	-	Jan-Dec
	Redfin pickerel													May-Jun	-	-	Jan-Dec	Jan-Dec
	Spotfin shiner													Jun-Aug	-	-	-	Jan-Dec
	Spottail shiner													May-Aug	-	-	-	Jan-Dec
	Sunfish													Mar-Jul	-	-	-	Jan-Dec
	Tessellated darter													Apr-Jun	-	-	-	Jan-Dec
	Yellow perch													-	-	-	Jan-Dec	Jan-Dec

INVERTEBRATES

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

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	548.20	0.86
10C	Swamps	1,102.21	1.72
10D	Scrub and Shrub Wetlands	157.07	0.25



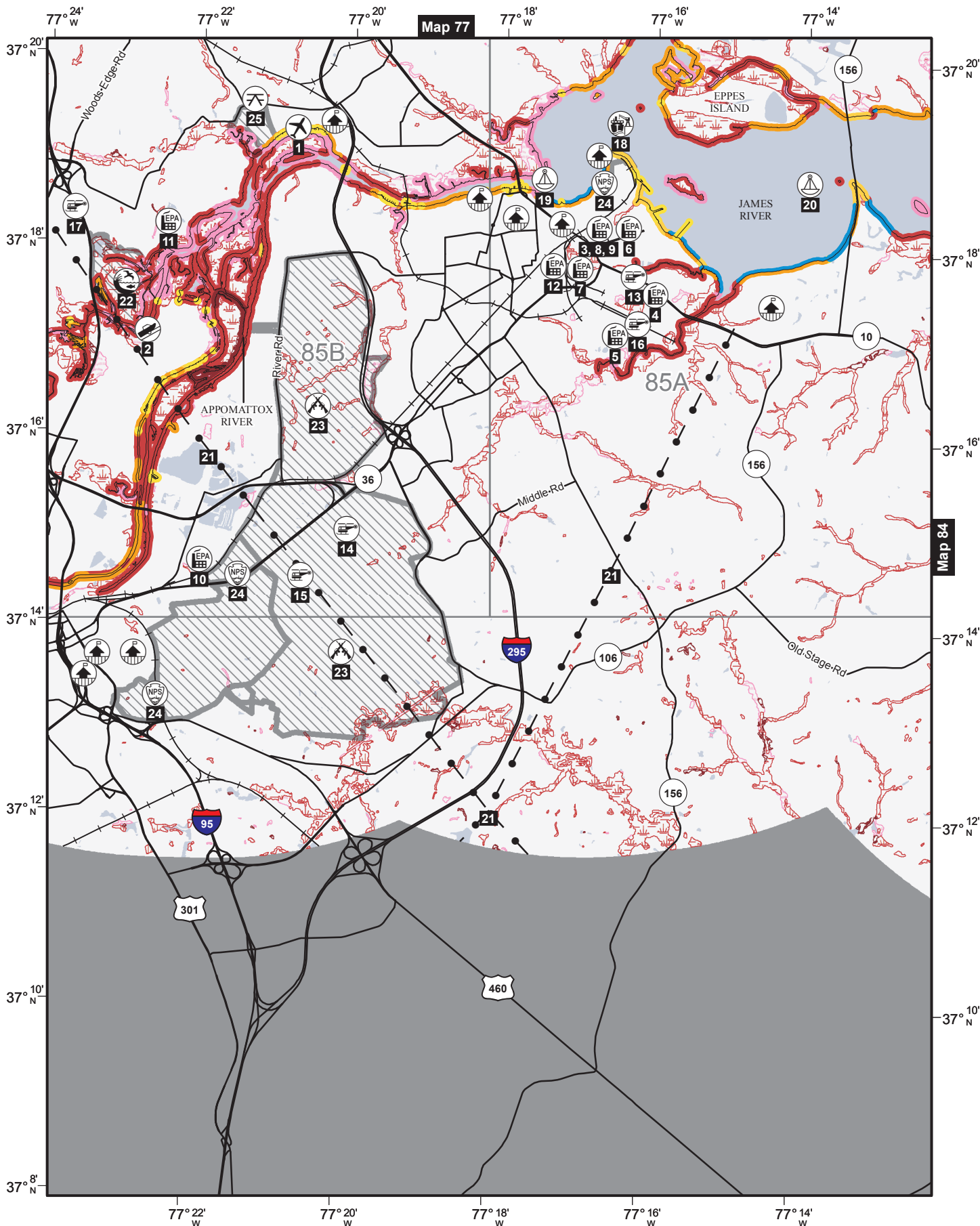
ESI SHORELINE HABITAT TYPES

<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	37,261.28	23.15	74%
10C	Swamps	7,640.99	4.75	15%
10D	Scrub and Shrub Wetlands	796.25	0.49	2%
9B	Vegetated Low Banks	4,943.49	3.07	10%
Total ESI Shoreline:		50,642.01	31.47	
Total Shoreline:		37,493.13	23.30	

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 85

Chesapeake South



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

0 Not for Navigation 2 Miles
0 2 Kilometers

1:100,000



Map 85
Chesapeake South

HUMAN USE RESOURCES

DISPLAYED ON MAP (POINTS)			
Map ID	Type	Name	Contact
1	AIRPORT	MC LAUGHLIN	
2	BOAT RAMP	WHITE BANK PARK	LENE PENNINGTON, VDGIF
3	EPA FACILITY	AIRGAS CARBONIC	HOPEWELL CARBONIC PLANT MANAGER
4	EPA FACILITY	EVONIK CORPORATION	MANAGER, EH&S
5	EPA FACILITY	HERCULES - HOPEWELL PLANT	SAFETY AND ENVIRONMENTAL MANAGER
6	EPA FACILITY	HONEYWELL HOPEWELL PLANT	PSM/RMP SENIOR ENGINEER
7	EPA FACILITY	HOPEWELL POWER STATION	COMPLIANCE COORDINATOR
8	EPA FACILITY	HOPEWELL WATER TREATMENT PLANT	OPERATIONS MANAGER
9	EPA FACILITY	LINDE - HOPEWELL	SITE MANAGER
10	EPA FACILITY	PRINCE GEORGE, VA 166	MANAGER
11	EPA FACILITY	SABRA DIPPING COMPANY, LLC - COLONIAL HEIGHTS	MAINTENANCE MANAGER
12	EPA FACILITY	VIREOL BIO ENERGY FACILITY	EHS&S MANAGER
13	HELIPORT	BERMUDA HUNDRED	
14	HELIPORT	FORT LEE AHP 3(QRTMST CEN)	
15	HELIPORT	FORT LEE NR 1/HQS/	
16	HELIPORT	HOPEWELL	
17	HELIPORT	TECHNICAL CENTER	
18	PORT	PORT OF HOPEWELL	
19	REPEATED MEASUREMENT SITE	WQ - STATION TF5.4	CHESAPEAKE BAY PROGRAM
20	REPEATED MEASUREMENT SITE	WQ - STATION TF5.5	CHESAPEAKE BAY PROGRAM

DISPLAYED ON MAP (LINES)			
Map ID	Type	Name	Contact
21	PIPELINE	PIPELINE	

DISPLAYED ON MAP (POLYGONS)			
Map ID	Type	Name	Contact
22	MANAGEMENT AREA	SWIFT CREEK CONSERVATION AREA	CHESTERFIELD COUNTY
23	MILITARY	FT LEE	
24	NATIONAL PARK	PETERSBURG	
25	PARK	POINT OF ROCKS PARK	CHESTERFIELD COUNTY

JURISDICTIONS

COUNTY: CHA. CTY CO., CHESTERF. CO., C. HTS CTY, HOPEW. CTY, PETERSB. CTY, P. GEO. CO. **FEMA:** REGION I
COAST GUARD: DISTRICT 5, SECTOR HAMPTON ROADS **EPA:** REGION 3
USACE: NORTH ATLANTIC DIVISION, NORFOLK DISTRICT

SHORELINE RESOURCES

ESI POLYGON HABITAT TYPES

ESI Rank	Habitat Classification	Area (Acres)	Area (Sq. Miles)
10B	Freshwater Marshes	1,176.61	1.84
10C	Swamps	4,938.67	7.72
10D	Scrub and Shrub Wetlands	163.48	0.26



ESI SHORELINE HABITAT TYPES

ESI Rank	Shoreline Habitat Classification	Length (Meters)	Length (Miles)	% of ESI Shoreline
10B	Freshwater Marshes	64,809.38	40.27	29%
10C	Swamps	106,392.47	66.11	47%
10D	Scrub and Shrub Wetlands	5,512.92	3.43	2%
9A	Sheltered Tidal Flats	6,683.30	4.15	3%
9B	Vegetated Low Banks	24,619.47	15.30	11%
8B	Sheltered, Solid Man-Made Structures	5,056.84	3.14	2%
8C	Sheltered Riprap	5,611.37	3.49	2%
4	Coarse Grained Sand Beaches	7,346.18	4.56	3%

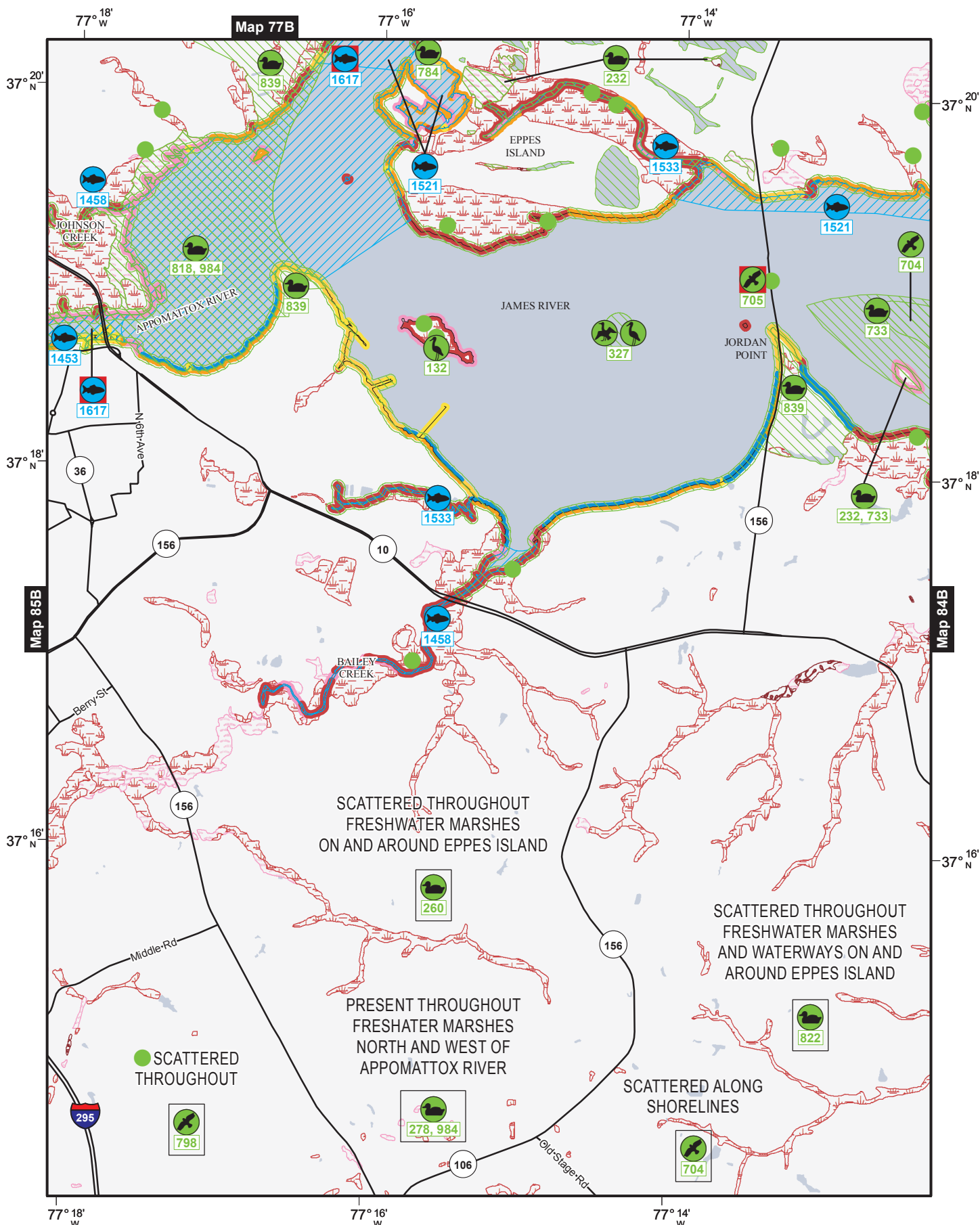


Total ESI Shoreline: 226,031.92 Total ESI Shoreline: 140.45
 Total Shoreline: 197,476.80 Total Shoreline: 122.71

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 85A
Chesapeake South



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

0 1 Miles
Not for Navigation
0 1 Kilometers

1:50,000



Map 85A
Chesapeake South

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	MD/VA	S	F	Concentration	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt
								J	F	M	A	M	J	J	A	S	O	N	D				
132	Wading	Great blue heron	Nesting				52 Nests													Feb-Jun	-	-	-
232	Waterfowl	Canada goose	Nesting				Present													Mar-Aug	-	-	Jun-Jul
	Waterfowl	Mallard	Nesting				Present													Mar-Aug	-	-	Jul-Aug
260	Waterfowl	American black duck	Wintering				10S													-	-	-	-
	Waterfowl	Bufflehead	Wintering				10S													-	-	-	-
	Waterfowl	Canada goose	Nesting				Present													Mar-Aug	-	-	Jun-Jul
	Waterfowl	Mallard	Nesting				Present													Mar-Aug	-	-	Jul-Aug
	Waterfowl	Mallard	Wintering				10S													-	-	-	-
	Waterfowl	Ring-necked duck	Wintering				100S													-	-	-	-
278	Waterfowl	Canada goose	Nesting				Present													Mar-Aug	-	-	Jun-Jul
	Waterfowl	Mallard	Nesting				Present													Mar-Aug	-	-	Jul-Aug
	Waterfowl	Mallard	Wintering				Present													-	-	-	-
327	Diving	D. crested cormorant	Nesting				257 Pairs													May-Aug	-	-	-
	Wading	Green heron	Nesting				6 Pairs													Apr-Aug	-	-	-
704	Raptor	Bald eagle	Concentration Area				Moderate-High													-	-	-	-
705	Raptor	Peregrine falcon	Nesting				-													Feb-Jun	-	-	-
733	Waterfowl	American black duck	Wintering				100S													-	-	-	-
	Waterfowl	Blue-winged teal	Migration				10S													-	Feb-Apr	Aug-Oct	-
	Waterfowl	Bufflehead	Wintering				10S													-	-	-	-
	Waterfowl	Green-winged teal	Wintering				10S													-	-	-	-
	Waterfowl	Mallard	Wintering				100S													-	-	-	-
	Waterfowl	Mergansers	Wintering				10S													-	-	-	-
784	Waterfowl	American black duck	Wintering				1,000S													-	-	-	-
	Waterfowl	Blue-winged teal	Migration				100S													-	Feb-Apr	Aug-Oct	-
	Waterfowl	Bufflehead	Wintering				10S													-	-	-	-
	Waterfowl	Gadwall	Wintering				100S													-	-	-	-
	Waterfowl	Green-winged teal	Wintering				100S													-	-	-	-
	Waterfowl	Mallard	Wintering				1,000S													-	-	-	-
	Waterfowl	Mergansers	Wintering				10S													-	-	-	-
	Waterfowl	Ring-necked duck	Wintering				10S													-	-	-	-
798	Raptor	Bald eagle	Nesting				1 Nest													Dec-Jun	-	-	-
818	Waterfowl	Bufflehead	Wintering				10S													-	-	-	-
	Waterfowl	Mallard	Wintering				10S													-	-	-	-
	Waterfowl	Mergansers	Wintering				10S													-	-	-	-
822	Waterfowl	American black duck	Wintering				10S													-	-	-	-
	Waterfowl	Bufflehead	Wintering				10S													-	-	-	-
	Waterfowl	Mallard	Wintering				10S													-	-	-	-

BIRDS (continued)

Map ID	Subelement	Species	Mapping Qualifier	MD/VA		Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt
				S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N				
839	Waterfowl	Ring-necked duck	Wintering			100S												-	-	-	
	Waterfowl	Canada goose	Wintering			100S												-	-	-	
984	Waterfowl	American black duck	Wintering			10S												-	-	-	
	Waterfowl	Gadwall	Wintering			10S												-	-	-	

FISH



Map ID	Subelement	Species	Mapping Qualifier	MD/VA		Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
				S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N	D				
1453	Diadromous	Striped bass	Spawning Area			-												Apr-Jun	Apr-Jun	-	-	Mar-Jun
	Freshwater	Yellow perch	Spawning Area			-												Feb-Mar	Feb-Mar	Mar-Apr	-	Feb-Mar
1458	Diadromous	American shad	Nursery Area			-												-	-	Mar-Jul	Mar-Oct	Feb-Jun
	Diadromous	Striped bass	Spawning Area			-												Apr-Jun	Apr-Jun	-	-	Mar-Jun
	Freshwater	Yellow perch	Spawning Area			-												Feb-Mar	Feb-Mar	Mar-Apr	-	Feb-Mar
1521	Freshwater	Yellow perch	Spawning Area			-												Feb-Mar	Feb-Mar	Mar-Apr	-	Feb-Mar
1533	Diadromous	American shad	Nursery Area			-												-	-	Mar-Jul	Mar-Oct	Feb-Jun
	Freshwater	Yellow perch	Spawning Area			-												Feb-Mar	Feb-Mar	Mar-Apr	-	Feb-Mar
1617	Diadromous	Atlantic sturgeon	Spawning Area	-/E	E	-												Sep-Oct	Sep-Oct	-	-	Aug-Oct

WIDESPREAD IN MAPPED AREA (> 10 SQUARE KILOMETERS)

BIRDS

Subelement	Species	Mapping Qualifier	MD/VA		Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt
			S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N	D			
 Waterfowl	Canada goose	Wintering			1,000S													-	-	-




FISH

Subelement	Species	Mapping Qualifier	MD/VA		Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
			S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N	D				
 Diadromous	Alewife	Nursery Area			-												-	-	Feb-Apr	Apr-Oct	-
	Alewife	Spawning Area			-												Feb-Apr	Feb-Apr	-	-	Feb-Apr
	American shad	Nursery Area			-												-	-	Mar-Jul	Mar-Oct	-
	American shad	Spawning Area			-												Feb-Jun	Feb-Jun	-	-	Feb-Jun
	Atlantic sturgeon	General Distribution	-/E	E	-												-	-	Jan-Dec	Jan-Dec	Jan-Dec
	Atlantic sturgeon	Migration	-/E	E	Fall Run Migration												-	-	-	-	Jun-Nov
	Atlantic sturgeon	Spawning Area	-/E	E	Potential Spawning												Apr-May	Apr-May	-	-	Apr-May
	Blueback herring	Nursery Area			-												Mar-Jun	Mar-Jun	-	-	Mar-Jun
	Blueback herring	Spawning Area			-												-	-	Apr-Jun	Apr-Oct	-
	Hickory shad	Nursery Area			-												Feb-May	Feb-May	-	-	Feb-May
	Hickory shad	Spawning Area			-												-	-	Mar-May	Jan-Dec	-
	Striped bass	Nursery Area			-												Mar-May	Mar-May	-	-	Feb-Jun
 Estuarine Nursery	Striped bass	Spawning Area			-												Mar-May	Mar-May	-	-	Mar-May
	White perch	Spawning Area			-												Mar-May	Mar-May	Apr-Jun	-	Mar-May

BIRDS

Subelement	Species	Monthly Presence												Nest	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
 Raptor	Osprey													-				-
 Waterfowl	Wood duck													Apr-Jul				Jul-Aug

FISH

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
 Diadromous	Alewife													Feb-Apr	Feb-Apr	Feb-Apr	Apr-Oct	Feb-Apr
	American eel													-	-	-	Jan-May	Jan-Dec
	Blueback herring													Mar-Jun	Mar-Jun	Apr-Jun	May-Oct	Mar-Jun
	Gizzard shad													Mar-Jun	-	-	Jan-Dec	Jan-Dec
	Striped bass													-	-	-	Jan-Dec	Jan-Dec
 Estuarine Nursery	White perch													-	-	-	Jan-Dec	Jan-Dec
 Freshwater	Black crappie													Mar-Jul	-	-	Jan-Dec	Jan-Dec
	Blue catfish													May-Jun	May-Jun	May-Jun	Jan-Dec	-
	Bullhead catfish													Apr-Jun	-	-	-	Jan-Dec
	Chain pickerel													Feb-Apr	-	-	-	Jan-Dec
	Channel catfish													May-Jun	-	-	Jan-Dec	Jan-Dec
	Common carp													May-Jun	-	-	-	Jan-Dec
	Golden shiner													Apr-Aug	-	-	Jan-Dec	Jan-Dec
	Largemouth bass													Mar-May	-	-	-	Jan-Dec
	Longnose gar													May-Jun	-	-	Jan-Dec	Jan-Dec
	Redfin pickerel													Feb-Mar	-	-	Jan-Dec	Jan-Dec
	Spotfin shiner													Jun-Aug	-	-	-	Jan-Dec
	Spottail shiner													May-Aug	-	-	-	Jan-Dec
	Sunfish													Mar-Jul	-	-	-	Jan-Dec
	Tessellated darter													Apr-Jun	-	-	-	Jan-Dec
	Yellow perch													-	-	-	Jan-Dec	Jan-Dec

INVERTEBRATES

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

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	349.75	0.55
10C	Swamps	1,757.70	2.75
10D	Scrub and Shrub Wetlands	20.63	0.03



ESI SHORELINE HABITAT TYPES

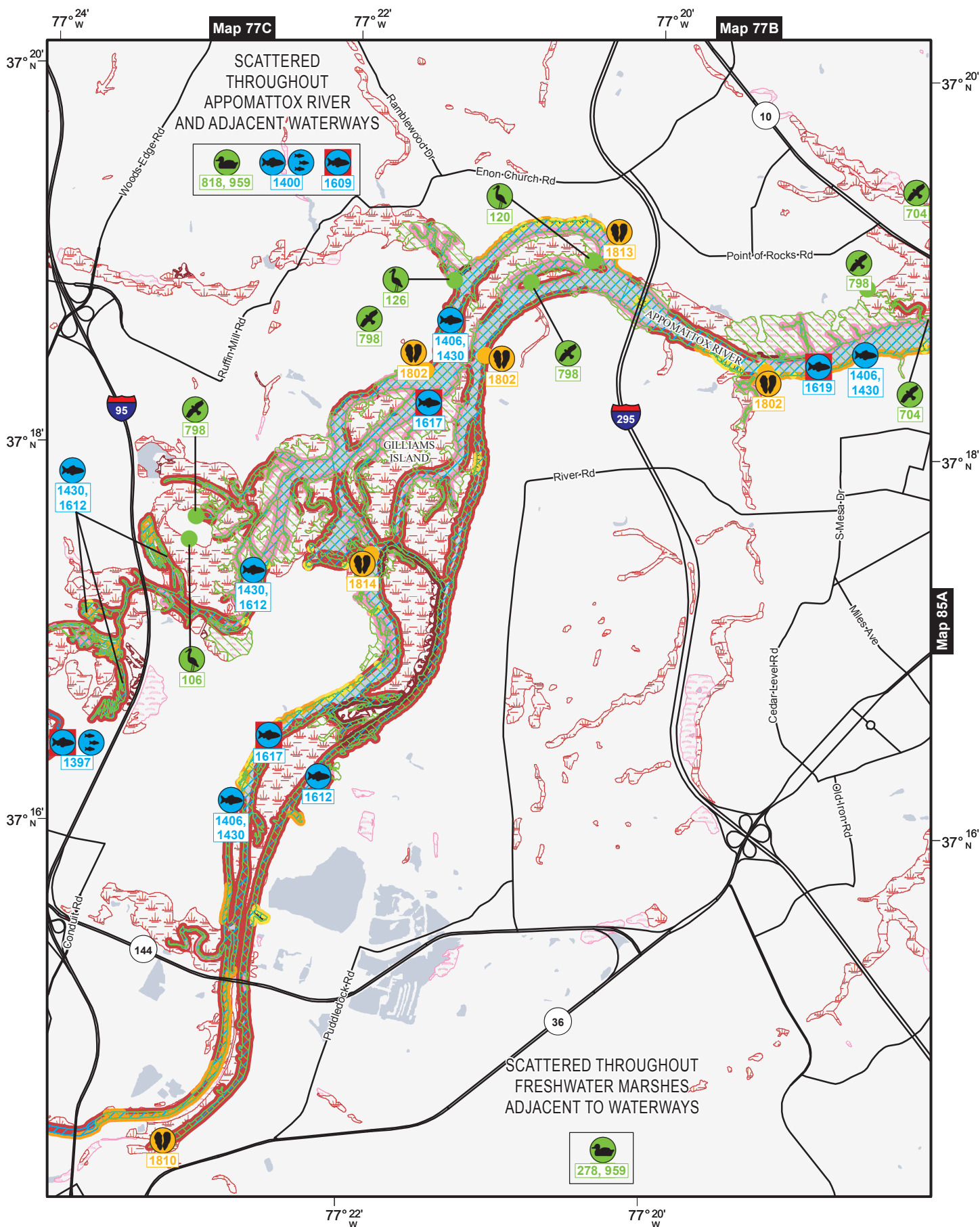
<i>ESI Rank</i>	<i>Shoreline Habitat Classification</i>	<i>Length (Meters)</i>	<i>Length (Miles)</i>	<i>% of ESI Shoreline</i>
10B	Freshwater Marshes	14,909.15	9.26	21%
10C	Swamps	26,842.77	16.68	37%
9A	Sheltered Tidal Flats	1,233.57	0.77	2%
9B	Vegetated Low Banks	14,455.35	8.98	20%
8B	Sheltered, Solid Man-Made Structures	3,084.79	1.92	4%
8C	Sheltered Riprap	4,602.60	2.86	6%
4	Coarse Grained Sand Beaches	7,346.18	4.56	10%

Total ESI Shoreline: 72,474.41 Total ESI Shoreline: 45.03
 Total Shoreline: 60,338.06 Total Shoreline: 37.49

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 85B

Chesapeake South



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

0 Not for Navigation 1 Miles
0 1 Kilometers

1:50,000



Map 85B
Chesapeake South

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	MD/VFA S F	Concentration	Monthly Presence												Nest	Mig.(S)	Mig.(F)	Molt
						J	F	M	A	M	J	J	A	S	O	N	D				
106	Wading	Great blue heron	Nesting		34 Nests													Feb-Jun	-	-	-
120	Wading	Great blue heron	Nesting		5 Nests													Feb-Jun	-	-	-
126	Wading	Great blue heron	Nesting		3 Nests													Feb-Jun	-	-	-
278	Waterfowl	Canada goose	Nesting		Present													Mar-Aug	-	-	Jun-Jul
	Waterfowl	Mallard	Nesting		Present													Mar-Aug	-	-	Jul-Aug
	Waterfowl	Mallard	Wintering		Present													-	-	-	-
704	Raptor	Bald eagle	Concentration Area		Moderate-High													-	-	-	-
798	Raptor	Bald eagle	Nesting		1 Nest													Dec-Jun	-	-	-
818	Waterfowl	Bufflehead	Wintering		10S													-	-	-	-
	Waterfowl	Mallard	Wintering		10S													-	-	-	-
	Waterfowl	Mergansers	Wintering		10S													-	-	-	-
959	Waterfowl	American black duck	Wintering		10S													-	-	-	-
	Waterfowl	Canada goose	Wintering		1,000S													-	-	-	-
	Waterfowl	Gadwall	Wintering		10S													-	-	-	-

FISH

Map ID	Subelement	Species	Mapping Qualifier	MD/VFA S F	Concentration	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
						J	F	M	A	M	J	J	A	S	O	N	D					
1397	Diadromous	Alewife	Nursery Area		-													Feb-Apr	-	Feb-Apr	Apr-Oct	-
	Diadromous	Alewife	Spawning Area		-													-	-	Mar-Jul	Mar-Oct	Feb-Apr
	Diadromous	American shad	Nursery Area		-													-	-	Jan-Dec	Jan-Dec	Feb-Jun
	Diadromous	Atlantic sturgeon	General Distribution	-/E E	-													Sep-Oct	Sep-Oct	-	-	Aug-Oct
	Diadromous	Atlantic sturgeon	Spawning Area	-/E E	-													-	-	Apr-Jun	May-Oct	-
	Diadromous	Blueback herring	Nursery Area		-													Mar-Jun	Mar-Jun	-	-	Mar-Jun
	Diadromous	Blueback herring	Spawning Area		-													-	-	Mar-May	Jan-Dec	-
	Diadromous	Striped bass	Nursery Area		-													Apr-Jun	Apr-Jun	-	-	Mar-Jun
	Diadromous	Striped bass	Spawning Area		-													-	-	Mar-May	-	-
	Estuarine Nursery	White perch	Spawning Area		-													Mar-May	Mar-May	Apr-Jun	-	Mar-Jun
	Freshwater	Yellow perch	Spawning Area		-													Feb-Mar	Feb-Mar	Mar-Apr	-	Mar-May
1400	Diadromous	Alewife	Nursery Area		-													-	-	Feb-Apr	Apr-Oct	-
	Diadromous	Alewife	Spawning Area		-													Feb-Apr	Feb-Apr	-	-	Feb-Apr
	Diadromous	Blueback herring	Nursery Area		-													-	-	Apr-Jun	May-Oct	-
	Diadromous	Blueback herring	Spawning Area		-													Mar-Jun	Mar-Jun	-	-	Mar-Jun
	Estuarine Nursery	White perch	Spawning Area		-													Mar-May	Mar-May	Apr-Jun	-	Mar-May
	Freshwater	Yellow perch	Spawning Area		-													Feb-Mar	Feb-Mar	Mar-Apr	-	Feb-Mar
1406	Diadromous	American shad	Nursery Area		-													-	-	Mar-Jul	Mar-Oct	-
	Diadromous	American shad	Spawning Area		-													Feb-Jun	Feb-Jun	-	-	Feb-Jun

FISH (continued)

Map ID	Subelement	Species	Mapping Qualifier	MD/VA		Concentration	Monthly Presence												Eggs	Larvae	Juveniles	Adults
				S	F		J	F	M	A	M	J	J	A	S	O	N	D				
	Diadromous	Hickory shad	Nursery Area	-		-											-	Apr-Jun	Apr-Oct	-		
	Diadromous	Hickory shad	Spawning Area	-		-											Feb-May	-	-	Feb-May		
1430	Diadromous	Striped bass	Spawning Area			-											Apr-Jun	-	-	Mar-Jun		
1609	Diadromous	Atlantic sturgeon	General Distribution	-/E	E	-											-	Jan-Dec	Jan-Dec	Jan-Dec		
	Diadromous	Striped bass	Nursery Area	-		-											-	Mar-May	Jan-Dec	-		
1612	Diadromous	American shad	Nursery Area	-		-											-	Mar-Jul	Mar-Oct	Feb-Jun		
1617	Diadromous	Atlantic sturgeon	Spawning Area	-/E	E	-											Sep-Oct	-	-	Aug-Oct		
1619	Diadromous	Atlantic sturgeon	Spawning Area	-/E	E	Potential Spawning											Apr-May	-	-	Apr-May		

INVERTEBRATES

Map ID	Subelement	Species	Mapping Qualifier	MD/VA		Concentration	Monthly Presence												Eggs	Larvae	Juveniles	Adults
				S	F		J	F	M	A	M	J	J	A	S	O	N	D				
1802	Bivalve	Alewife floater	Vulnerable Occurrence	-		-													-	-	Jan-Dec	Jan-Dec
	Bivalve	Eastern elliptio	Vulnerable Occurrence	-		-													-	-	Jan-Dec	Jan-Dec
	Bivalve	Tidewater mucket	Vulnerable Occurrence	-		-													-	-	Jan-Dec	Jan-Dec
1810	Bivalve	Eastern floater	Vulnerable Occurrence	-		-													-	-	Jan-Dec	Jan-Dec
1813	Bivalve	Eastern elliptio	Vulnerable Occurrence	-		-													-	-	Jan-Dec	Jan-Dec
	Bivalve	Eastern floater	Vulnerable Occurrence	-		-													-	-	Jan-Dec	Jan-Dec
1814	Bivalve	Eastern elliptio	Vulnerable Occurrence	-		-													-	-	Jan-Dec	Jan-Dec

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				
Raptor	Osprey													-	-	-	-
Waterfowl	Wood duck													Apr-Jul	-	-	Jul-Aug

FISH

Subelement	Species	Monthly Presence												Spawn	Eggs	Larvae	Juveniles	Adults
		J	F	M	A	M	J	J	A	S	O	N	D					
Diadromous	Alewife													Feb-Apr	Feb-Apr	Feb-Apr	Apr-Oct	Feb-Apr
	American eel													-	-	-	Jan-May	Jan-Dec
	Blueback herring													Mar-Jun	Mar-Jun	Apr-Jun	May-Oct	Mar-Jun
	Gizzard shad													Mar-Jun	-	-	Jan-Dec	Jan-Dec
	Striped bass													-	-	-	Jan-Dec	Jan-Dec
Estuarine Nursery	White perch													-	-	-	Jan-Dec	Jan-Dec
Freshwater	Black crappie													Mar-Jul	-	-	Jan-Dec	-
	Blue catfish													May-Jun	May-Jun	May-Jun	Jan-Dec	Jan-Dec
	Bullhead catfish													Apr-Jun	-	-	-	Jan-Dec
	Chain pickerel													Feb-Apr	-	-	-	Jan-Dec
	Channel catfish													May-Jun	-	-	Jan-Dec	Jan-Dec
	Common carp													May-Jun	-	-	-	Jan-Dec
	Golden shiner													Apr-Aug	-	-	Jan-Dec	Jan-Dec

FISH (continued)

Map ID	Subelement	Species	Mapping Qualifier	MD/VA		Monthly Presence												Eggs	Larvae	Juveniles	Adults
				S	F	Concentration	J	F	M	A	M	J	J	A	S	O	N	D			
		Largemouth bass																Mar-May	-	-	Jan-Dec
		Longnose gar																May-Jun	-	Jan-Dec	Jan-Dec
		Redfin pickerel																Feb-Mar	-	Jan-Dec	Jan-Dec
		Spotfin shiner																Jun-Aug	-	-	Jan-Dec
		Spottail shiner																May-Aug	-	-	Jan-Dec
		Sunfish																Mar-Jul	-	-	Jan-Dec
		Tessellated darter																Apr-Jun	-	-	Jan-Dec
		Yellow perch																-	-	Jan-Dec	Jan-Dec

INVERTEBRATES

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

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	717.97
10C	Swamps	1,959.70
10D	Scrub and Shrub Wetlands	79.74

ESI SHORELINE HABITAT TYPES		
ESI Rank	Shoreline Habitat Classification	% of ESI Shoreline
10B	Freshwater Marshes	32%
10C	Swamps	52%
10D	Scrub and Shrub Wetlands	4%
9A	Sheltered Tidal Flats	4%
9B	Vegetated Low Banks	7%
8B	Sheltered, Solid Man-Made Structures	1%
8C	Sheltered Riprap	1%

Total ESI Shoreline: 153,557.51
Total Shoreline: 137,138.74
































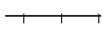



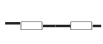




Total ESI Shoreline: 95.42
Total Shoreline: 85.21

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

































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



Human-Use Features

	Aquaculture		Park
	Airport		Port
	Anchorage		Recreational Fishing
	Artificial Reef		Repeated Measurement Site
	Abandoned Vessel		State Protected
	Beach		Tribal Land
	Boat Ramp		Water Intake
	Commercial Fishing		Wildlife Refuge
	Critical Habitat		US Highway
	EPA Facility		State Highway or Route
	Ferry		Interstate
	Heliport		Road
	Historical Site		Shipping Lane
	Lock and Dam		Rail Route
	Marina		Pipeline
	Military		Ferry Route
	Mooring Site		Management Area
	Management Area		Management Area
	National Estuarine Research Reserve		Map ID
	National Park		
	Nature Conservancy		

ESI Shoreline and Habitat Ranking

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








































Examples of Double and Triple Shoreline Rankings:

 10D & 2A

 10C & 10A & 4

Shorelines often contain varied geomorphology, and therefore may require two or three ESI types to describe. These symbols will look similar to the examples above. The first shoreline type listed is the most landward shore type.

Sensitive Biological Resources

	Birds		Invertebrates		Terrestrial Mammals
	Birds		Invertebrates		Small Mammal
	Alcid/Pelagic		Crab/Invertebrate/Shellfish		Ungulate
	Diving		Bivalve/Barnacle/Chordate		Bat
	Gull/Tern/Bird		Cephalopod		Habitats
	Passerine		Insect		Upland/Wetland/Plant
	Raptor		Gastropod		Reptiles &
	Shorebird		Lobster		Amphibian
	Wading		Shrimp		Turtle
	Waterfowl		Marine Mammals		Threatened or Endangered Species
	Fish		Dolphin	 Map ID	
	Fish		Pinniped		
	Nursery		Whale		
	Fish		Manatee		

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.

