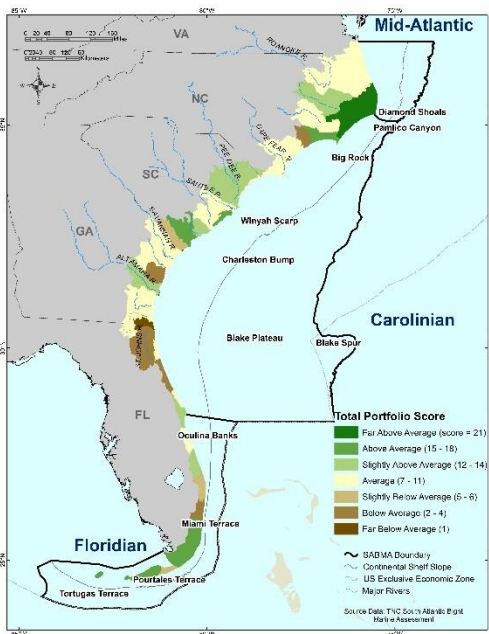


South Atlantic Bight Marine Assessment (SABMA)

Coastal Portfolio Data Summary

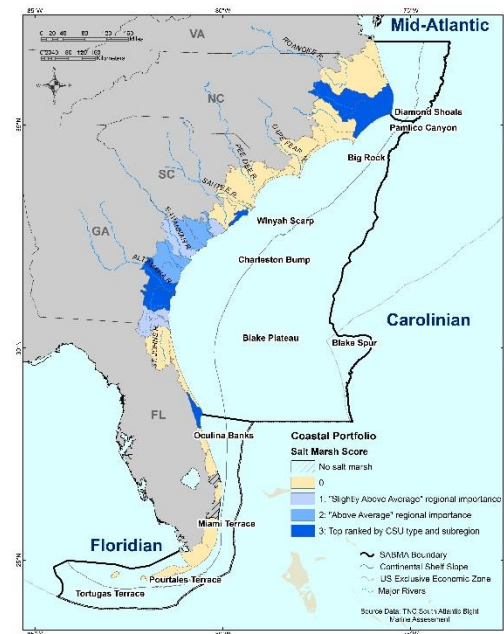


Project Webpage:
<http://nature.ly/marineSAtlanticBightERA>

Coastal Portfolio Data and Full Metadata:
<http://easterndivision.s3.amazonaws.com/Marine/SABMA/SABMAIdentifyingConservationAreas.zip>

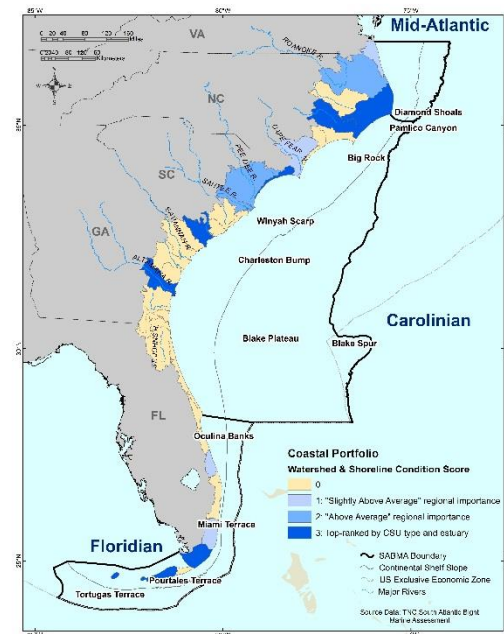
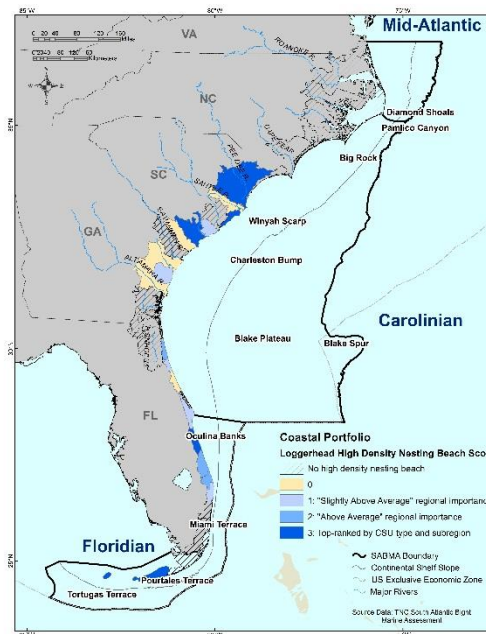
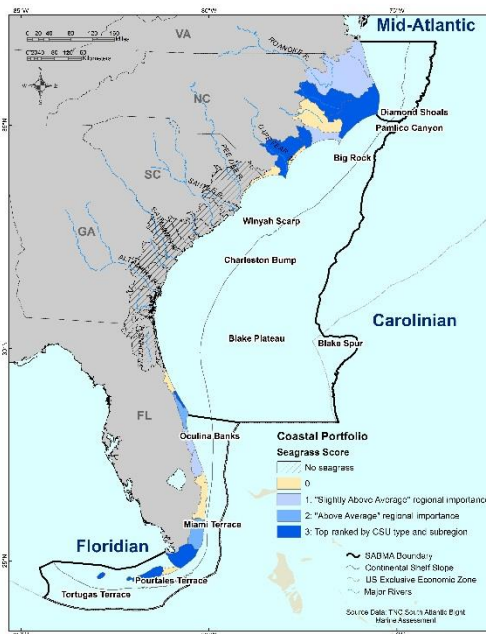
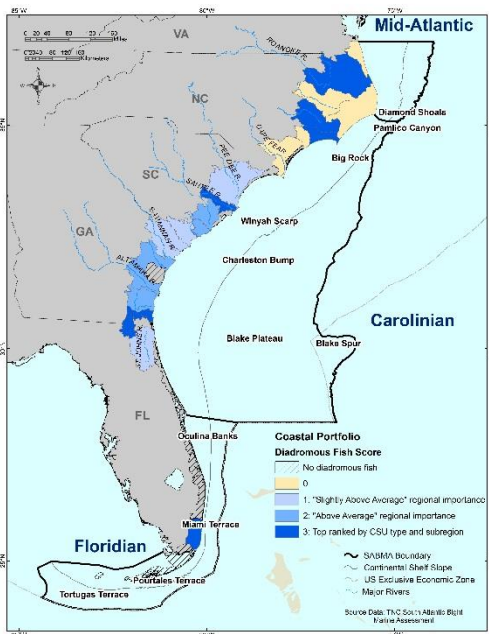
Coastal Portfolio Chapter:
http://easterndivision.s3.amazonaws.com/Marine/SABMA/SABMA_Chapter05_IdentifyingConservationAreas.pdf

For Questions Please Contact:
eScience@tnc.org



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Coastal Portfolio: Ocean Beach Score

Data Sources: USFWS National Wetlands Inventory (NWI 2013), NOAA C-CAP Southeast Region 2010-Era Land Cover, USGS and NC State University SEGAP Land Cover (2010), NOAA Environmental Sensitivity Index (ESI, 2013), FNAI Florida Cooperative Land Cover Map (v 2.3, 2012), FL FWRI Mangroves (2011), FL FWRI Tidal Flats (2009), GA DNR Coastal Land Cover (2009), and NC DENR DCM Wetland Mapping (1999).

Years: 1999-2013

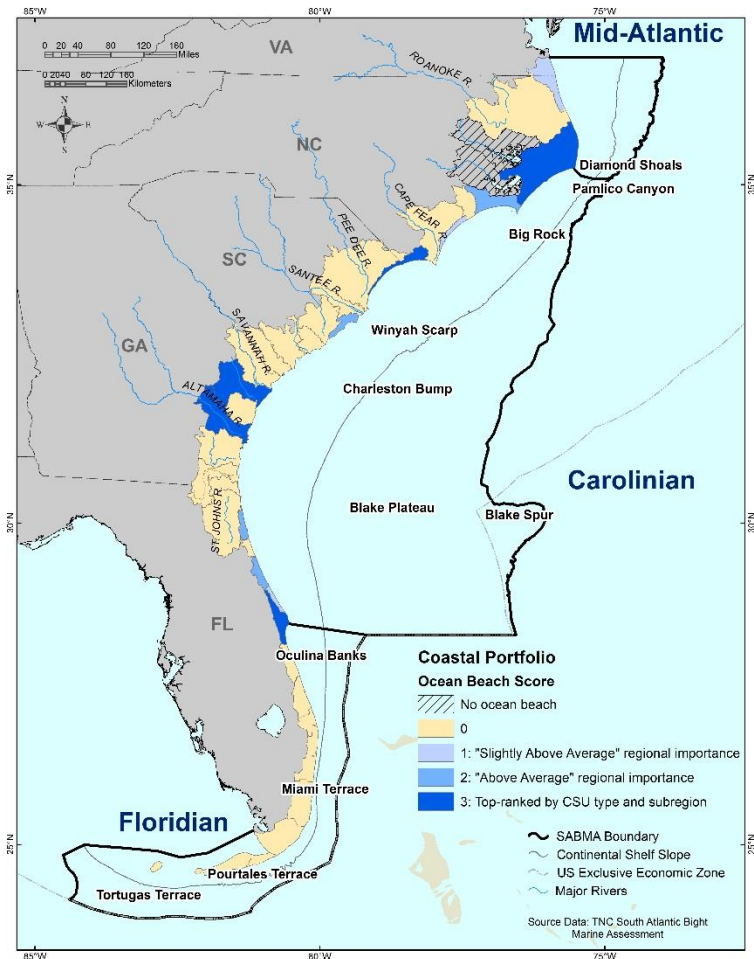
Dataset Description & Methods Overview: The tidal wetlands dataset was created to characterize the extent of tidal wetland habitats within the South Atlantic Bight Marine Assessment project area. SABMA focused on coastal tidal wetlands which were defined to include Salt Marsh, Tidal Freshwater Marsh, Tidal Forest (e.g. Cypress-Tupelo Swamps, Mangroves and Exposed Tidal Barren Limestone), Tidal Flats, Estuarine Beaches and Ocean Beaches. The National Wetlands Inventory (NWI) is the base data for this dataset. NWI codes were grouped into different habitat types using the Sea Level Affecting Marshes Model, version 6 (SLAMM) classification system. The age of the NWI data varies across the region and efforts were made to fill data gaps by cross-referencing with newer national and regional data sources (e.g. SE- GAP) and incorporating state-based datasets. In some cases, state-based resource data was substituted for the NWI (e.g. Mangroves and ocean beaches in Florida). The various datasets were processed and merged into a single dataset.

For each CSU, the total area (ha) of ocean beach was calculated using the spatially explicit tidal wetland data described above and in the SABMA coastal chapter (Conley et al. 2017). The following process was used to score the CSUs for ocean beach habitat.

1. Top Ranked (highest value) by CSU type and subregion = 3 points
 - Required a minimum rank-based z-score of "average"
2. Regionally Important
 - "Above average" regional rank-based z-score = 2 points
 - "Slightly above average" regional rank-based z-score = 1 point

*See final report and metadata for detailed methods and more information.

For Questions Please Contact: eScience@tnc.org



Coastal Portfolio: Salt Marsh Score

Data Sources: USFWS National Wetlands Inventory (NWI 2013), NOAA C-CAP Southeast Region 2010-Era Land Cover, USGS and NC State University SEGAP Land Cover (2010), NOAA Environmental Sensitivity Index (ESI, 2013), FNAI Florida Cooperative Land Cover Map (v 2.3, 2012), FL FWRI Mangroves (2011), FL FWRI Tidal Flats (2009), GA DNR Coastal Land Cover (2009), and NC DENR DCM Wetland Mapping (1999).

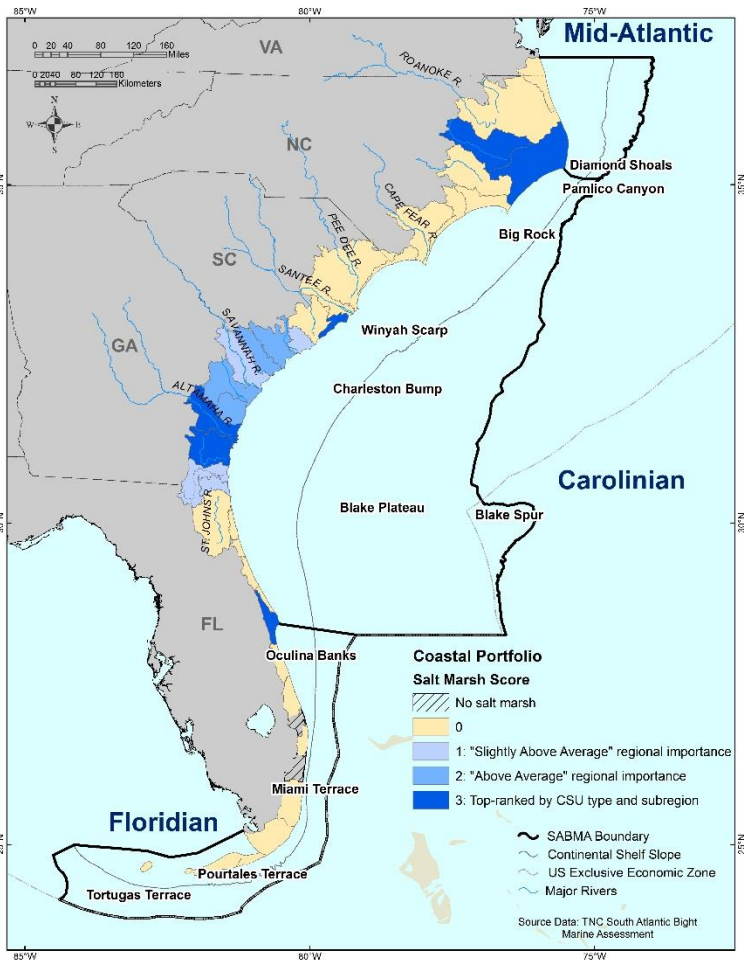
Years: 1999-2013

Dataset Description & Methods Overview: The tidal wetlands dataset was created to characterize the extent of tidal wetland habitats within the South Atlantic Bight Marine Assessment project area. SABMA focused on coastal tidal wetlands which were defined to include Salt Marsh, Tidal Freshwater Marsh, Tidal Forest (e.g. Cypress-Tupelo Swamps, Mangroves and Exposed Tidal Barren Limestone), Tidal Flats, Estuarine Beaches and Ocean Beaches. The National Wetlands Inventory (NWI) is the base data for this dataset. NWI codes were grouped into different habitat types using the Sea Level Affecting Marshes Model, version 6 (SLAMM) classification system. The age of the NWI data varies across the region and efforts were made to fill data gaps by cross-referencing with newer national and regional data sources (e.g. SE- GAP) and incorporating state-based datasets. In some cases, state-based resource data was substituted for the NWI (e.g. Mangroves and ocean beaches in Florida). The various datasets were processed and merged into a single dataset.

For each CSU, the total area (ha) of salt marsh was calculated using the spatially explicit tidal wetland data described above and in the SABMA coastal chapter (Conley et al. 2017). The following process was used to score the CSUs for salt marsh habitat.

1. Top Ranked (highest value) by CSU type and subregion = 3 points
 - Required a minimum rank-based z-score of "average"
2. Regionally Important
 - "Above average" regional rank-based z-score = 2 points
 - "Slightly above average" regional rank-based z-score = 1 point

*See final report and metadata for detailed methods and more information.



Coastal Portfolio: Freshwater Tidal Marsh Score

Data Sources: USFWS National Wetlands Inventory (NWI 2013), NOAA C-CAP Southeast Region 2010-Era Land Cover, USGS and NC State University SEGAP Land Cover (2010), NOAA Environmental Sensitivity Index (ESI, 2013), FNAI Florida Cooperative Land Cover Map (v 2.3, 2012), FL FWRI Mangroves (2011), FL FWRI Tidal Flats (2009), GA DNR Coastal Land Cover (2009), and NC DENR DCM Wetland Mapping (1999).

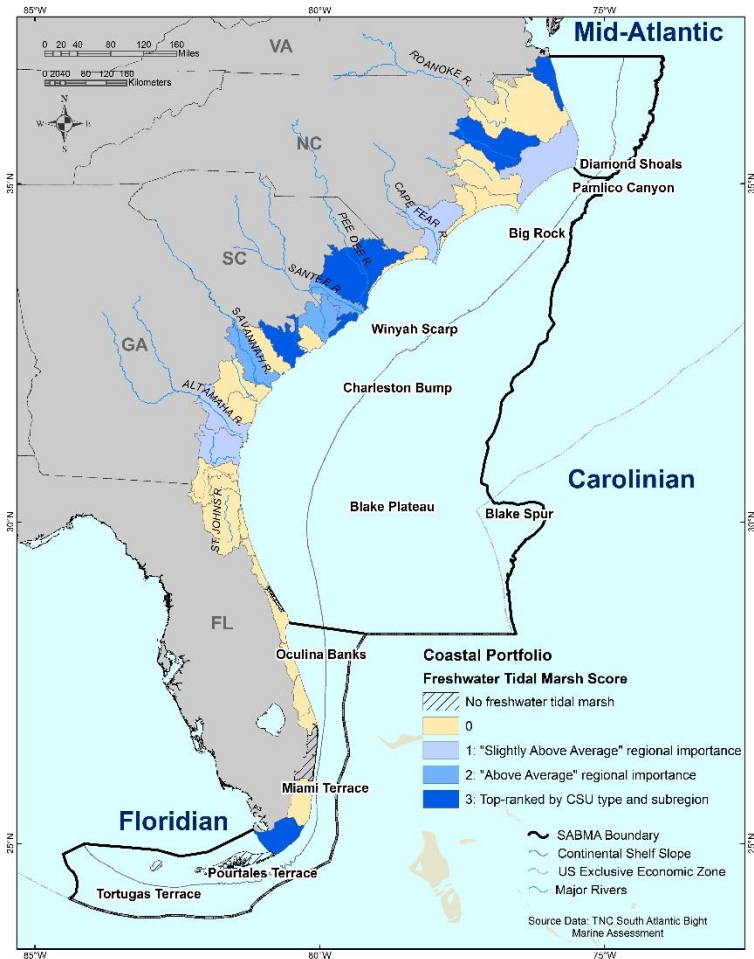
Years: 1999-2013

Dataset Description & Methods Overview: The tidal wetlands dataset was created to characterize the extent of tidal wetland habitats within the South Atlantic Bight Marine Assessment project area. SABMA focused on coastal tidal wetlands which were defined to include Salt Marsh, Tidal Freshwater Marsh, Tidal Forest (e.g. Cypress-Tupelo Swamps, Mangroves and Exposed Tidal Barren Limestone), Tidal Flats, Estuarine Beaches and Ocean Beaches. The National Wetlands Inventory (NWI) is the base data for this dataset. NWI codes were grouped into different habitat types using the Sea Level Affecting Marshes Model, version 6 (SLAMM) classification system. The age of the NWI data varies across the region and efforts were made to fill data gaps by cross-referencing with newer national and regional data sources (e.g. SE- GAP) and incorporating state-based datasets. In some cases, state-based resource data was substituted for the NWI (e.g. Mangroves and ocean beaches in Florida). The various datasets were processed and merged into a single dataset.

For each CSU, the total area (ha) of freshwater tidal marsh was calculated using the spatially explicit tidal wetland data described above and in the SABMA coastal chapter (Conley et al. 2017). The following process was used to score the CSUs for freshwater tidal marsh habitat.

1. Top Ranked (highest value) by CSU type and subregion = 3 points
 - Required a minimum rank-based z-score of "average"
2. Regionally Important
 - "Above average" regional rank-based z-score = 2 points
 - "Slightly above average" regional rank-based z-score = 1 point

*See final report and metadata for detailed methods and more information.



Coastal Portfolio: Tidal Forest Score

Data Sources: USFWS National Wetlands Inventory (NWI 2013), NOAA C-CAP Southeast Region 2010-Era Land Cover, USGS and NC State University SEGAP Land Cover (2010), NOAA Environmental Sensitivity Index (ESI, 2013), FNAI Florida Cooperative Land Cover Map (v 2.3, 2012), FL FWRI Mangroves (2011), FL FWRI Tidal Flats (2009), GA DNR Coastal Land Cover (2009), and NC DENR DCM Wetland Mapping (1999).

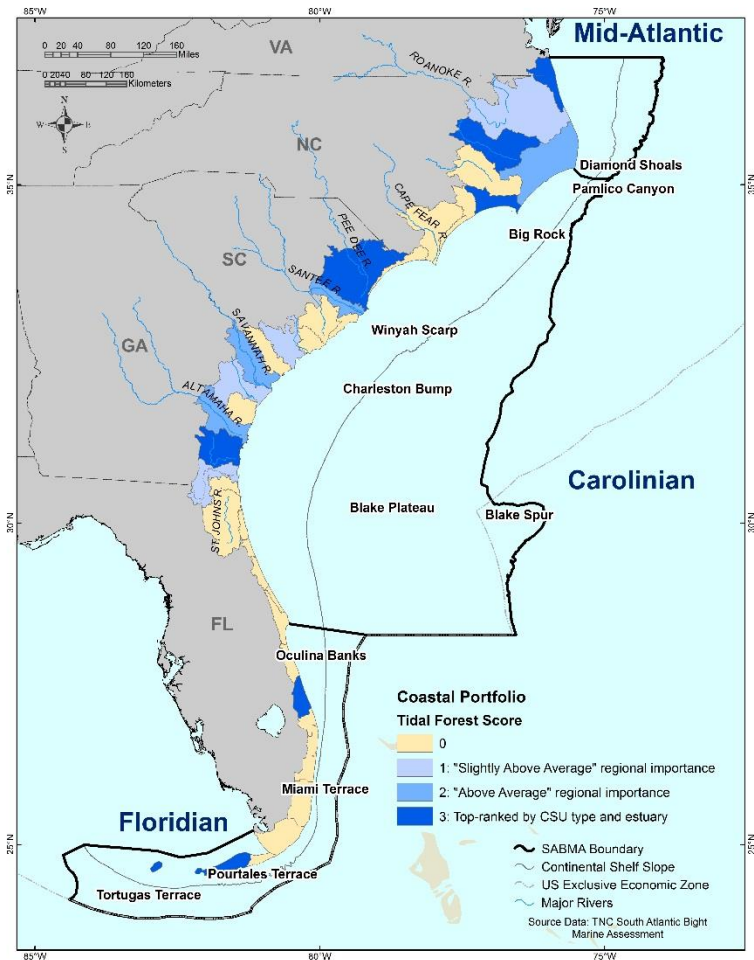
Years: 1999-2013

Dataset Description & Methods Overview: The tidal wetlands dataset was created to characterize the extent of tidal wetland habitats within the South Atlantic Bight Marine Assessment project area. SABMA focused on coastal tidal wetlands which were defined to include Salt Marsh, Tidal Freshwater Marsh, Tidal Forest (e.g. Cypress-Tupelo Swamps, Mangroves and Exposed Tidal Barren Limestone), Tidal Flats, Estuarine Beaches and Ocean Beaches. The National Wetlands Inventory (NWI) is the base data for this dataset. NWI codes were grouped into different habitat types using the Sea Level Affecting Marshes Model, version 6 (SLAMM) classification system. The age of the NWI data varies across the region and efforts were made to fill data gaps by cross-referencing with newer national and regional data sources (e.g. SE- GAP) and incorporating state-based datasets. In some cases, state-based resource data was substituted for the NWI (e.g. Mangroves and ocean beaches in Florida). The various datasets were processed and merged into a single dataset.

For each CSU, the total area (ha) of tidal forest was calculated using the spatially explicit tidal wetland data described above and in the SABMA coastal chapter (Conley et al. 2017). The following process was used to score the CSUs for tidal forest habitat.

1. Top Ranked (highest value) by CSU type and subregion = 3 points
 - Required a minimum rank-based z-score of "average"
2. Regionally Important
 - "Above average" regional rank-based z-score = 2 points
 - "Slightly above average" regional rank-based z-score = 1 point

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Coastal Portfolio: Mangrove Forest Score

Data Sources: USFWS National Wetlands Inventory (NWI 2013), NOAA C-CAP Southeast Region 2010-Era Land Cover, USGS and NC State University SEGAP Land Cover (2010), NOAA Environmental Sensitivity Index (ESI, 2013), FNAI Florida Cooperative Land Cover Map (v 2.3, 2012), FL FWRI Mangroves (2011), FL FWRI Tidal Flats (2009), GA DNR Coastal Land Cover (2009), and NC DENR DCM Wetland Mapping (1999).

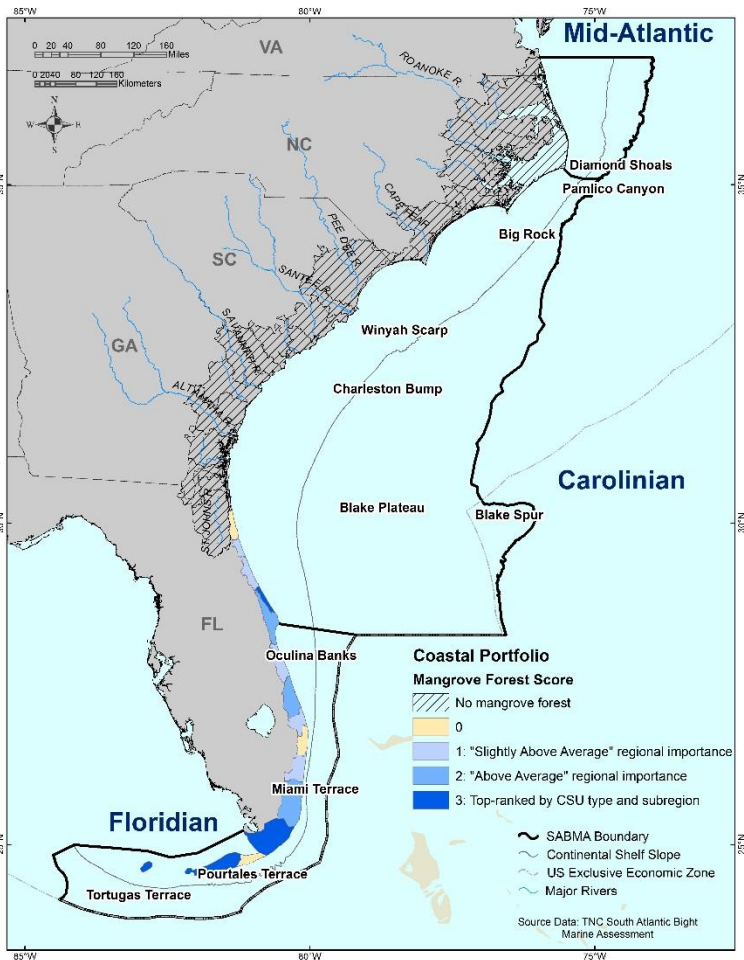
Years: 1999-2013

Dataset Description & Methods Overview: The tidal wetlands dataset was created to characterize the extent of tidal wetland habitats within the South Atlantic Bight Marine Assessment project area. SABMA focused on coastal tidal wetlands which were defined to include Salt Marsh, Tidal Freshwater Marsh, Tidal Forest (e.g. Cypress-Tupelo Swamps, Mangroves and Exposed Tidal Barren Limestone), Tidal Flats, Estuarine Beaches and Ocean Beaches. The National Wetlands Inventory (NWI) is the base data for this dataset. NWI codes were grouped into different habitat types using the Sea Level Affecting Marshes Model, version 6 (SLAMM) classification system. The age of the NWI data varies across the region and efforts were made to fill data gaps by cross-referencing with newer national and regional data sources (e.g. SE- GAP) and incorporating state-based datasets. In some cases, state-based resource data was substituted for the NWI (e.g. Mangroves and ocean beaches in Florida). The various datasets were processed and merged into a single dataset.

For each CSU, the total area (ha) of mangrove forest was calculated using the spatially explicit tidal wetland data described above and in the SABMA coastal chapter (Conley et al. 2017). The following process was used to score the CSUs for mangrove forest habitat.

1. Top Ranked (highest value) by CSU type and subregion = 3 points
 - Required a minimum rank-based z-score of "average"
2. Regionally Important
 - "Above average" regional rank-based z-score = 2 points
 - "Slightly above average" regional rank-based z-score = 1 point

*See final report and metadata for detailed methods and more information.



Coastal Portfolio: Tidal Flat Score

Data Sources: USFWS National Wetlands Inventory (NWI 2013), NOAA C-CAP Southeast Region 2010-Era Land Cover, USGS and NC State University SEGAP Land Cover (2010), NOAA Environmental Sensitivity Index (ESI, 2013), FNAI Florida Cooperative Land Cover Map (v 2.3, 2012), FL FWRI Mangroves (2011), FL FWRI Tidal Flats (2009), GA DNR Coastal Land Cover (2009), and NC DENR DCM Wetland Mapping (1999).

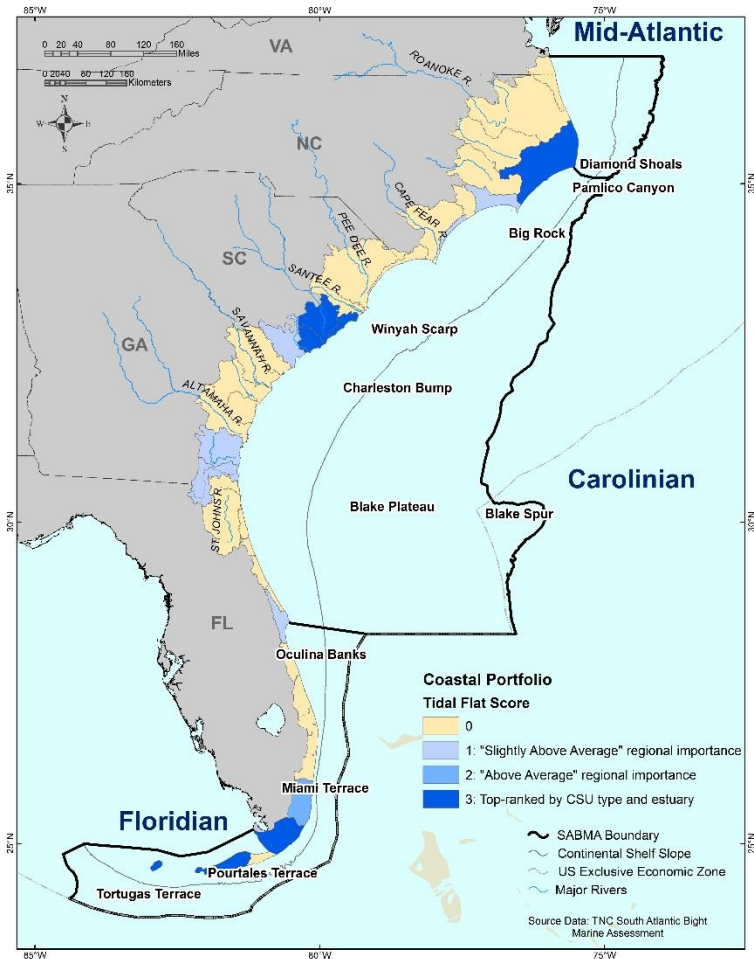
Years: 1999-2013

Dataset Description & Methods Overview: The tidal wetlands dataset was created to characterize the extent of tidal wetland habitats within the South Atlantic Bight Marine Assessment project area. SABMA focused on coastal tidal wetlands which were defined to include Salt Marsh, Tidal Freshwater Marsh, Tidal Forest (e.g. Cypress-Tupelo Swamps, Mangroves and Exposed Tidal Barren Limestone), Tidal Flats, Estuarine Beaches and Ocean Beaches. The National Wetlands Inventory (NWI) is the base data for this dataset. NWI codes were grouped into different habitat types using the Sea Level Affecting Marshes Model, version 6 (SLAMM) classification system. The age of the NWI data varies across the region and efforts were made to fill data gaps by cross-referencing with newer national and regional data sources (e.g. SE- GAP) and incorporating state-based datasets. In some cases, state-based resource data was substituted for the NWI (e.g. Mangroves and ocean beaches in Florida). The various datasets were processed and merged into a single dataset.

For each CSU, the total area (ha) of tidal flat was calculated using the spatially explicit tidal wetland data described above and in the SABMA coastal chapter (Conley et al. 2017). The following process was used to score the CSUs for tidal flat habitat.

1. Top Ranked (highest value) by CSU type and subregion = 3 points
 - Required a minimum rank-based z-score of "average"
2. Regionally Important
 - "Above average" regional rank-based z-score = 2 points
 - "Slightly above average" regional rank-based z-score = 1 point

*See final report and metadata for detailed methods and more information.



Coastal Portfolio: Seagrass Score

Data Sources: Elizabeth City State University, Submerged Aquatic Vegetation (SAV, 2003), NC DENR Albemarle-Pamlico National Estuary Partnership (APNEP, 2008) SAV Mapping. NC DENR DWR Neuse and Pamlico SAV Surveys (2008), FL FWRI Seagrass (2011), and FL FWRI Unified Florida Coral Reef Tract Map (2014).

Years: 2003-2014

Dataset Description & Methods Overview: The seagrass dataset was created to characterize the extent of seagrass habitat within the South Atlantic Marine Assessment (SABMA) project area. In the southeastern estuaries, seagrasses are naturally present in the North Carolina and the Florida where they serve as fish nursery and foraging areas. In addition, seagrass beds trap nutrients and sediments, protect shorelines from erosion, and filter pollution. When combined with other coastal habitat, species and use information, this spatial data can benefit coastal decision-making, siting of activities, and planning.

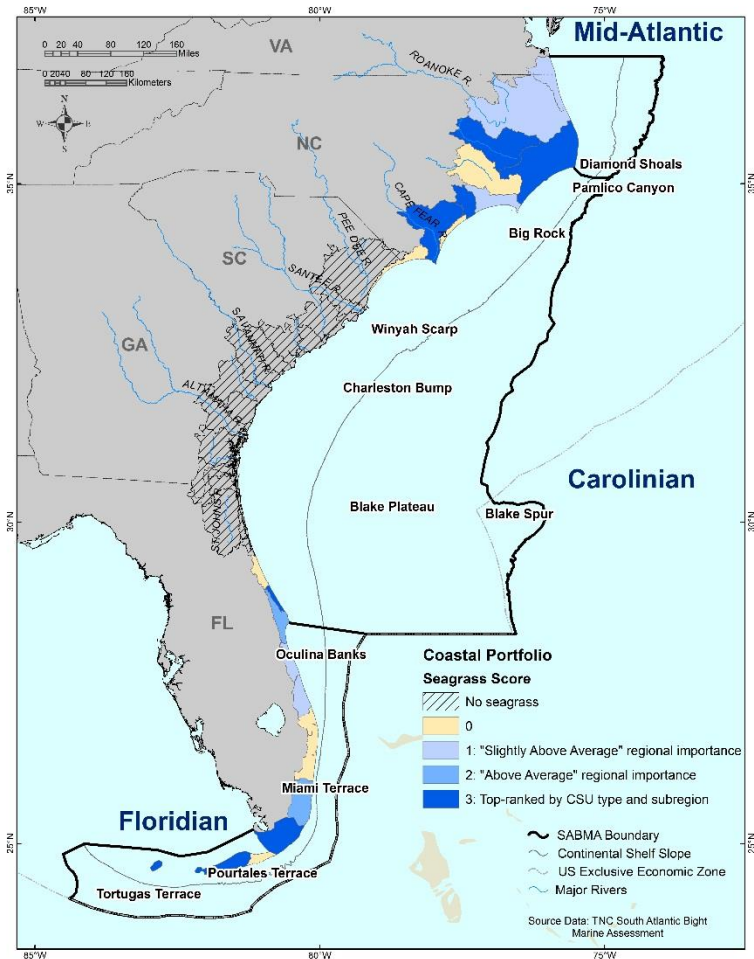
The seagrass dataset was developed by combining state-specific submerged aquatic vegetation data from Florida's Fish and Wildlife Conservation Commission (FL FWC) and North Carolina's Department of Environment and Natural Resources (NC DENR). Each state varied in how they classified the difference in density across seagrass beds. Because the location and density of seagrass beds varies annually, total extent was included in the final dataset as an initial representation of habitat area. The resulting merged dataset represents the combined extent of seagrass habitat based what is currently available across the project area.

For each CSU, the total area (ha) of seagrass was calculated using the spatially explicit seagrass data described above and in the SABMA coastal chapter (Conley et al. 2017). The following process was used to score the CSUs for seagrass habitat.

1. Top Ranked (highest value) by CSU type and subregion = 3 points
 - Required a minimum rank-based z-score of "average"
2. Regionally Important
 - "Above average" regional rank-based z-score = 2 points
 - "Slightly above average" regional rank-based z-score = 1 point

*See final report and metadata for detailed methods and more information.

For Questions Please Contact: eScience@tnc.org



Coastal Portfolio: High Density Oyster Reef Areas Score

Data Sources: NC DENR DMF Estuarine Benthic Habitat Mapping (2010), SC DENR Intertidal Oyster Reef Mapping (2010), GA DENR CRD Mapped Oyster Harvest Areas (2013), University of Georgia Marine Extension Coastal Georgia Shellfish Inventory (2011), FL FWRI Oyster Habitat (2011), and Avineon, Inc., & NOAA/NMFS/Southeast Regional Office Palm Beach County Essential Fish Habitat Mapping of Seagrass, Mangroves, Oysters, and Spartina in estuarine waters (2007).

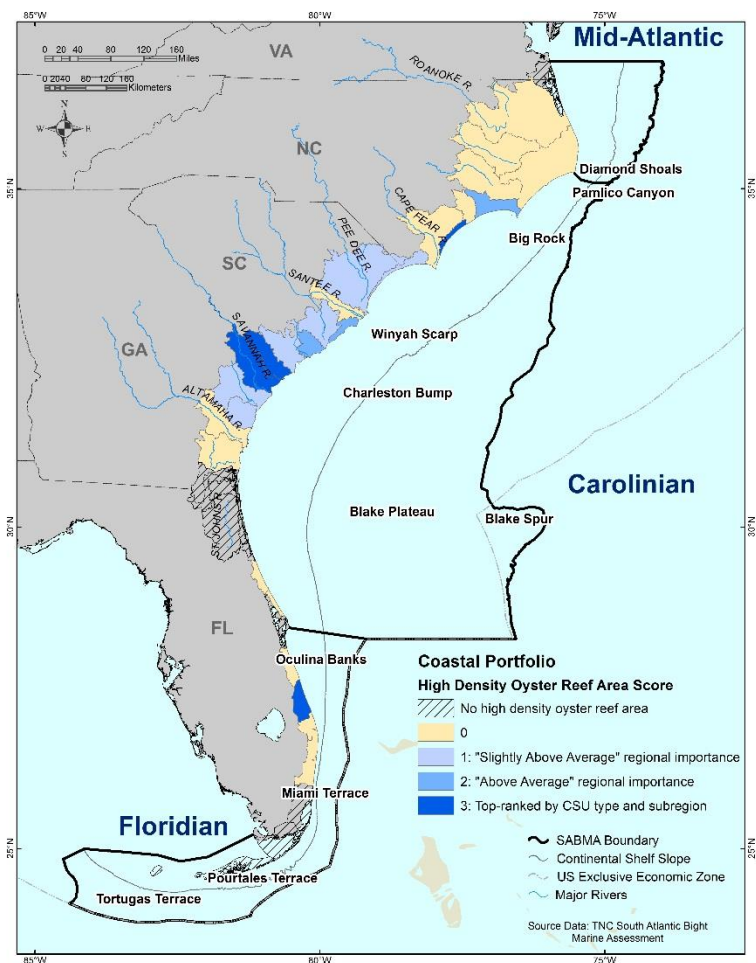
Years: 2007-2013

Dataset Description & Methods Overview: The oyster areas dataset was created to characterize the extent of mapped oyster reef habitat located within surveyed areas in the SABMA project area. The entire extent of the potential oyster reef habitat has not been surveyed, and the completeness of current oyster reef datasets varies significantly across states. This dataset was created by combining the most recent oyster reef datasets for NC, SC, GA and FL. Due to data limitations, this dataset does not represent total oyster reef habitat in the project area, but represents habitat area in mapped estuarine systems. For the portfolio analysis, we created a grid of 100-acre cells across the project area to identify locations with many intertidal oyster polygons clustered together. All 100-acre grid cells that intersected intertidal oyster polygons were selected and the percentage of each grid cell comprised of intertidal oyster habitat was calculated. A Box-Cox transformation was used to transform the percent values to an approximate normal distribution and z-scores were calculated from the transformed values. For each state, the number of grid cells with an above "average" percent of oyster habitat (>1 SD above the mean) was tallied. For each CSU, the number of high-density intertidal oyster areas was calculated. The following process was then used to score the CSUs for oyster habitat:

1. Top Ranked (highest value) by CSU type and subregion = 3 points
 - Required a minimum rank-based z-score of "average"
2. Regionally Important
 - "Above average" regional rank-based z-score = 2 points
 - "Slightly above average" regional rank-based z-score = 1 point

*See final report and metadata for detailed methods and more information.

For Questions Please Contact: eScience@tnc.org



Coastal Portfolio: Diadromous Fish Score (avg. # of spp/stream km)

Data Sources: TNC and SARP SEACAP: Southeast Aquatic Connectivity Assessment Project (2014)

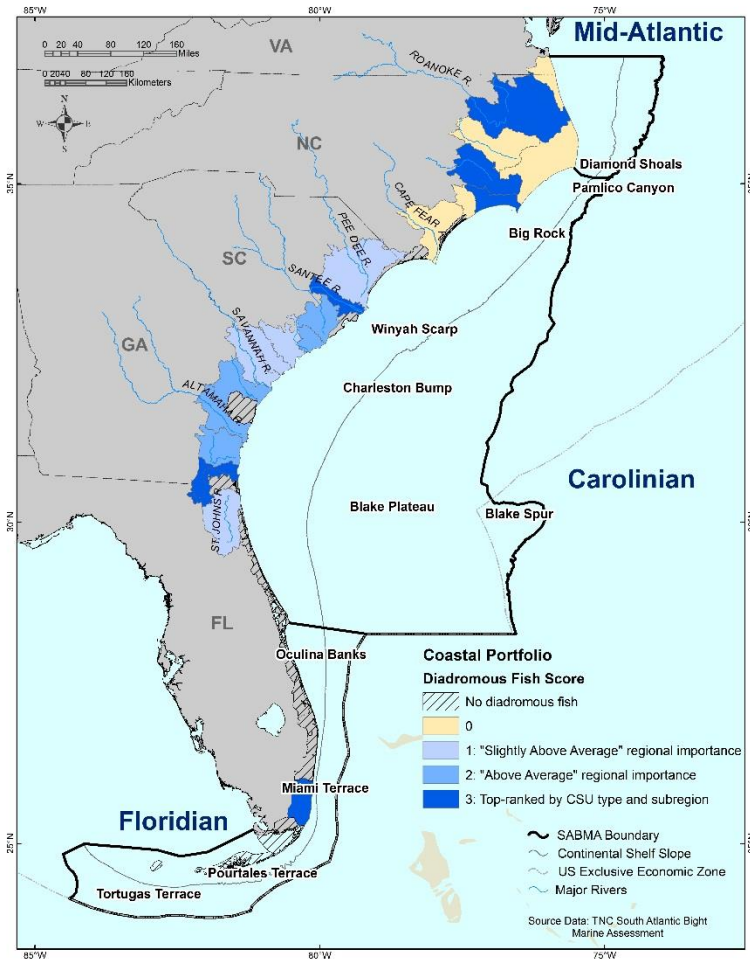
Years: 2004-2014

Dataset Description & Methods Overview: The diadromous fish dataset was created to characterize the use of southeastern river systems by six species of diadromous fish found along the Atlantic Coast: blueback herring, American Shad, Hickory Shad, Alewife, Shortnose Sturgeon, and Atlantic Sturgeon. The diadromous fish dataset was developed as part of the Southeast Aquatic Connectivity Assessment Project (SEACAP). Diadromous fish data was collected from the Atlantic States Marine Fisheries Commission (ASMFC 2004), as well as from the National Fish Habitat Partnership (NFHAP) database (Esselman et al 2013), the Multistate Aquatic Resources Information System (MARIS- <http://www.marisdata.org/>), and the North Carolina Museum Collection data (<http://collections.naturalsciences.org/>). Data was extensively reviewed and edited by fisheries biologists in the spring of 2014 at the Southern Division American Fisheries Society meeting in Charleston, SC, as well as in a series of web meetings. The SEACAP dataset provides presence/absence and species population information by river stretch. For SABMA, we selected only river stretches that fell within the project area, providing presence/absence of individual species and a total number of species present. We calculated the average number of diadromous fish species per kilometer of streams and rivers in each CSU. As a handful of CSUs had the same average number of species, we used the CSU's average length of connected stream networks (i.e., stream reaches that are not fragmented by a dam or other barrier) as a tie-breaker. This value reflects, on average, how accessible the streams and rivers are to a hypothetical fish moving within a CSU. The following process was then used to score the CSUs:

1. Top Ranked (highest value) by CSU type and subregion = 3 points
 - Required a minimum rank-based z-score of "average"
2. Regionally Important
 - "Above average" regional rank-based z-score = 2 points
 - "Slightly above average" regional rank-based z-score = 1 point

*See final report and metadata for detailed methods and more information.

For Questions Please Contact: eScience@tnc.org



Coastal Portfolio: Estuarine Fish Score

Data Sources: SEAMAP-SA Data Management Work Group. 2014, April, 15.

SEAMAP-SA online database. Retrieved from:

<http://www.dnr.sc.gov/SEAMAP/data.html>

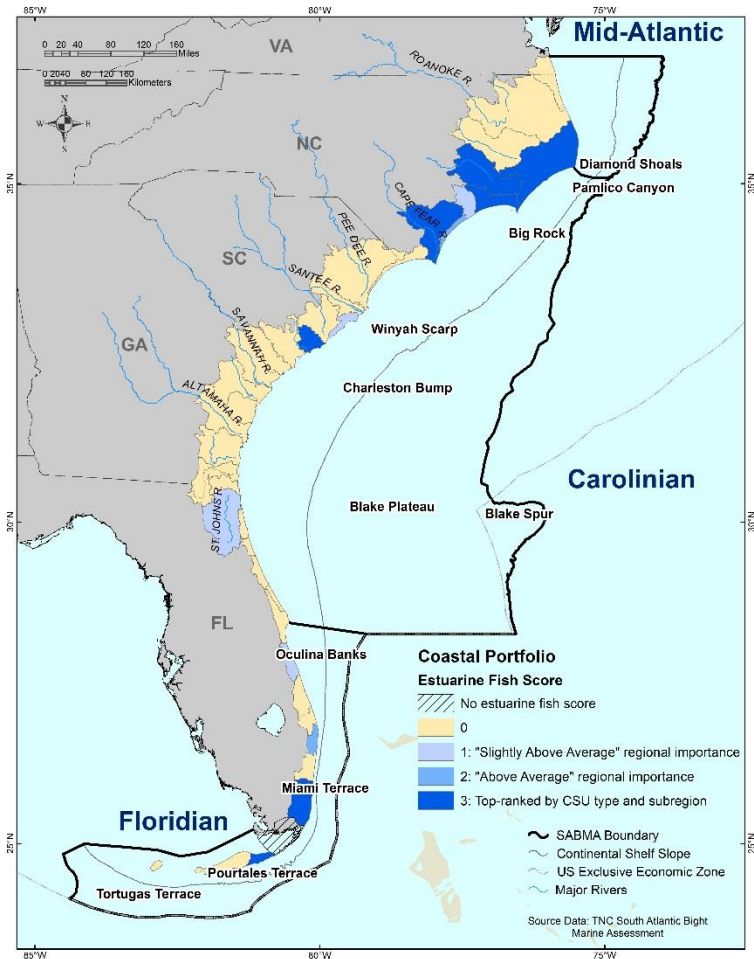
Years: 1989-2012

Dataset Description & Methods Overview: To understand the relative value of a particular CSU to estuary-dependent fish species, we associated nearshore fishery-independent trawl survey data with the nearest CSU and then evaluated the abundance and diversity of select species related to habitat characteristics. Twenty-three years (1989-2012) of independent trawl survey data from the Southeast Area Monitoring and Assessment Program-South Atlantic (SEAMAP-SA 2014) were used to estimate abundance and diversity of estuary-dependent fish on the inner Continental Shelf. Each trawl sample was assigned to the closest CSU, and then we ran an OLS regression with the number of times a species was detected in a CSU as the dependent variable and the number of times the CSU was sampled as the independent variable. This allowed us to determine if estuary-dependent fish species were found more often than expected given the number of times sampled. We characterized the relationship between the regression-based fish detection scores and CSU habitat using 19 spatially-explicit habitat and biophysical variables hypothesized to be important for estuarine fish and for which data were available. We then used the best habitat characterization model to predict fish detection scores for all 39 CSUs. As we did not have fish survey data for the Floridian subregion, the results of the analysis using the SEAMAP-SA trawl data for this area should be interpreted with caution as there are ecological communities, such as mangrove forests, that are largely unique to the Floridian subregion and were not included in the habitat characterization model. The following process was then used to score the CSUs:

1. Top Ranked (highest value) by CSU type and subregion = 3 points
 - Required a minimum rank-based z-score of "average"
2. Regionally Important
 - "Above average" regional rank-based z-score = 2 points
 - "Slightly above average" regional rank-based z-score = 1 point

*See final report and metadata for detailed methods and more information.

For Questions Please Contact: eScience@tnc.org



Coastal Portfolio: Loggerhead Sea Turtle High Density Nesting Beaches Score

Data Sources: SC DENR, MRRI Sea Turtle Nesting Locations (2013), FL FWRI FWC Statewide Nesting Beach Survey program Dry Tortugas Sea Turtle Nesting Beaches (2013), VA DGIF Virginia Sea Turtle Nesting Locations (2008 -2013).

Years: 2008-2013

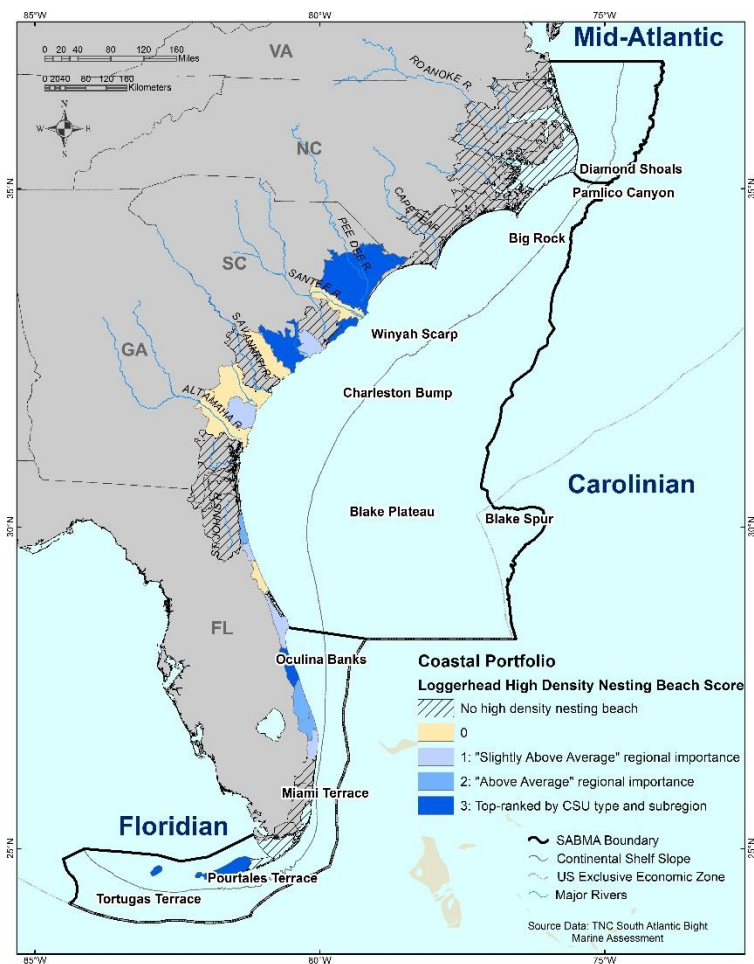
Dataset Description & Methods Overview: The loggerhead sea turtle dataset was created to characterize the high density nesting beaches for five subpopulations of loggerhead sea turtles within the SABMA project area. Loggerhead sea turtles are listed as threatened by the USFWS. Their dependence on sandy beaches for nesting makes protection of these habitats a priority. As the South Atlantic Bight is a primary nesting area for the loggerhead turtle, efforts were made to link nesting population information with the habitat data evaluated within the coastal ecosystems section of the Assessment. The loggerhead sea turtle dataset is built upon six years of state-based turtle nesting information from VA, NC, SC, GA and FL. The original data was analyzed within the Marine Mammal and Sea Turtle Chapter of the SABMA to understand the relative value of beach stretches across the project area for five recognized subpopulations of loggerhead sea turtles. That dataset was clipped to focus on priority beach stretches for loggerhead turtles based upon the highest mean nest density beaches for each subpopulation. This data enables us to link sea turtles to the SABMA CSUs through identification of high density nesting beaches for loggerhead sea turtles. To highlight the most critical beaches for each subpopulation, surveyed shorelines ranked in the top 25% for loggerhead nesting density for each subpopulation were selected and associated with their respective CSU. For each CSU, total shoreline length (km) of high density nesting beaches was calculated.

The following process was then used to score the CSUs:

1. Top Ranked (highest value) by CSU type and subregion = 3 points
 - Required a minimum rank-based z-score of "average"
2. Regionally Important
 - "Above average" regional rank-based z-score = 2 points
 - "Slightly above average" regional rank-based z-score = 1 point

*See final report and metadata for detailed methods and more information.

For Questions Please Contact: eScience@tnc.org



Coastal Portfolio: Manatee Wintering Habitat Score

Data Sources: Florida Fish and Wildlife Conservation Commission-Fish and Wildlife Research Institute.

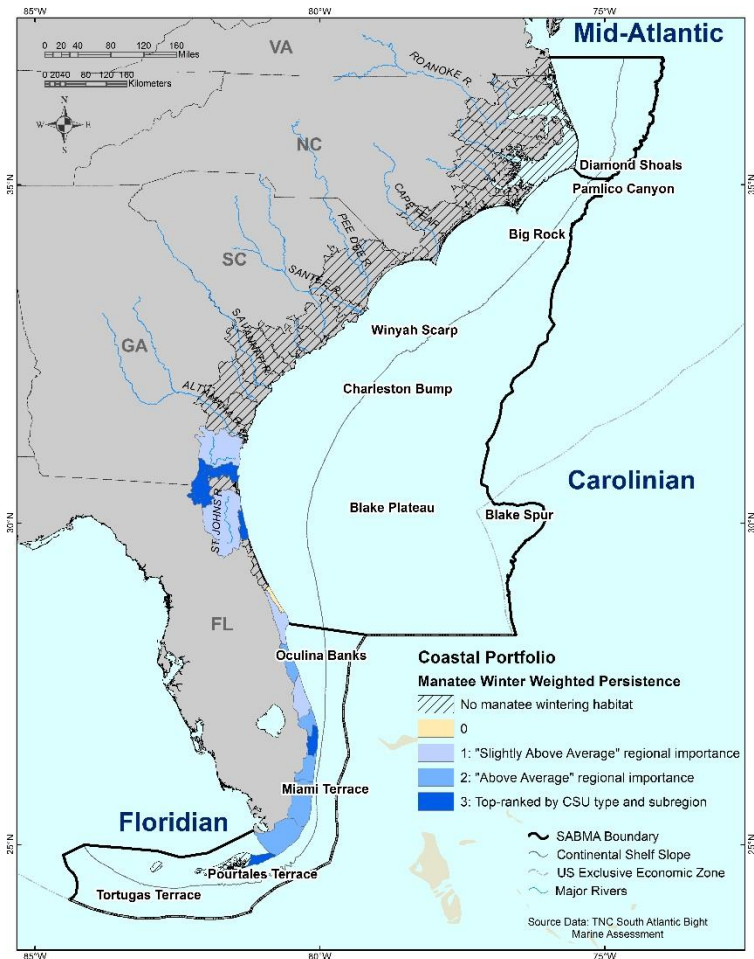
Years: 1991-2011

Dataset Description & Methods Overview: The FL Fish and Wildlife Conservation Commission (FWC) coordinates an interagency team that conducts aerial manatee synoptic surveys. These statewide surveys take place during the winter months after cold fronts pass through FL when manatees gather at warm springs and thermal discharges. Winter synoptic survey data was obtained from FWC for 1991 – 2011 and placed into a 1-minute grid surface. Abundance was calculated for each 1-minute square as the number of individuals sighted in any given 1-minute square over 1991-2011. Persistence is the consistency with which a species was observed in the same 1-minute square over time. The weighted persistence score is a variation of the persistence score in which each 5-year period (i.e., 1991 – 1995, 1996 – 2001, etc.) is weighted by the average abundance of the species over the 5-year period it was present. To be included, a 1-minute square had to have data from at least one survey point from each of three or four 5-year periods. Abundance values were log-transformed and mean log abundances were calculated for each 5-year period within each 1-minute square. These 5-year mean scores were averaged across all decades to obtain a grand average for each one minute square. The grand average was then normalized across all 1-minute squares to create a metric of abundance ranging between 0.0 and 1.00, with low abundance defined as 0-0.49 and high abundance defined as 0.50-0.99. The weighted persistence score was calculated by adding the persistence and relative average abundance. The integer part of the score is the persistence score while the decimal part of the score is the relative grand average abundance value. The average of the weighted persistence scores for all the 1-minute squares within a CSU was calculated as the final metric of manatee wintering habitat importance. The following process was then used to score the CSUs:

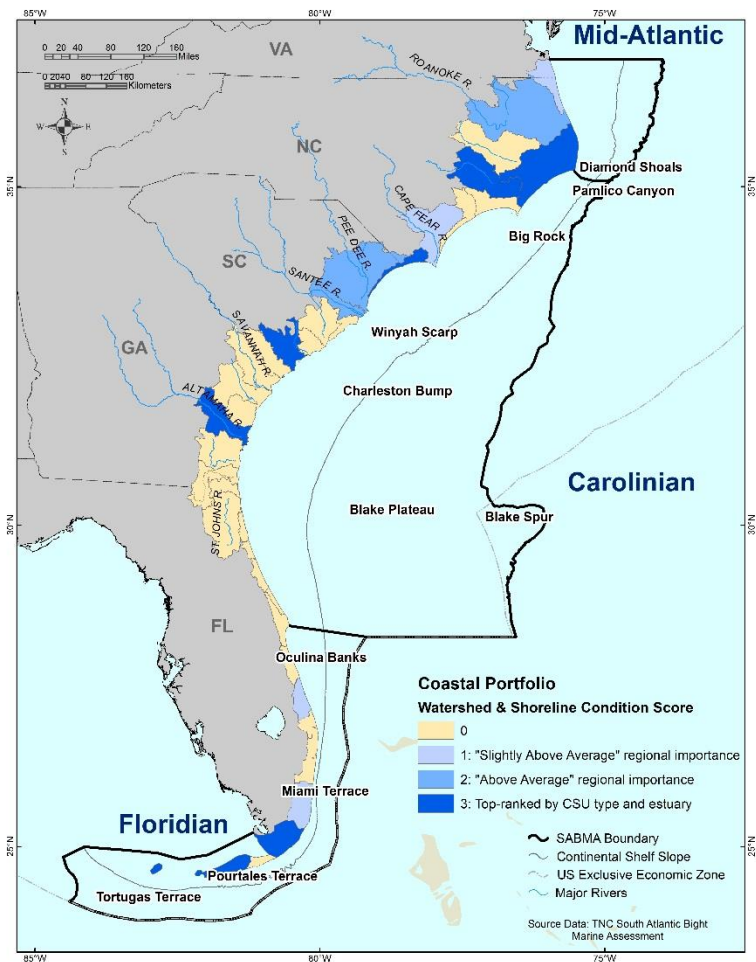
1. Top Ranked (highest value) by CSU type and subregion = 3 points
 - Required a minimum rank-based z-score of "average"
2. Regionally Important
 - "Above average" regional rank-based z-score = 2 points
 - "Slightly above average" regional rank-based z-score = 1 point

*See final report & metadata for detailed methods.

Contact: eScience@tnc.org



Coastal Portfolio: Watershed and Shoreline Condition Score



Data Sources: Hardened Shoreline: City of Virginia Beach - Shoreline Inventory Report (2012), NC DENR DCM Estuarine Shoreline Mapping Project (ESMP, 2013), Applied Coastal Research Laboratory Georgia Southern University SC Silver Jackets Phase I estuarine shoreline structure (2013), GA DENR Armored Estuarine Shorelines in Georgia (2010), NOAA Environmental Sensitivity Index (ESI) shoreline (1996 - South Carolina, 1997- Georgia, 2003 - Peninsular Florida, 2005 - Virginia, 2011- North Carolina and 2013 - South Florida). Land Cover: 2011 National Land Cover Dataset (NLCD; Jin, S., Yang, L., Danielson, P., Homer, C., Fry, J., & Xian, G. 2013. A comprehensive change detection method for updating the National Land Cover Database to circa 2011. Remote Sensing of Environment, 132, 159-175.) Roads: US Census Bureau (2014). 2014 TIGER/Line Shapefiles (machine-readable data files). <http://www.census.gov/geo/maps-data/data/tiger.html>

Years: Hardened Shoreline: 1996-2013; Land Cover: 2011; Roads: 2014

Dataset Description & Methods Overview: Current condition was calculated by tabulating the area of development (NLCD 2011), agriculture (NLCD 2011) and roads (US Census 2014) at three geographic scales: a 2-m vertical elevation zone along the shoreline, a 300-m horizontal buffer zone along the shoreline, and the entire upstream watershed of each CSU. PCA was used to reduce the correlated values to a single axis. This single axis score was normalized to a scale of 0-100, with 100 representing the least developed and, presumably, the best water quality. The final condition score incorporated information on hardened shorelines through subtraction of the percent of manmade shoreline in the CSU from the normalized condition score. For example, Pamlico Sound in NC had a current condition score of 97 based on a normalized condition score of 100 and 3% hardened shoreline. The following process was then used to score the CSUs:

1. Top Ranked (highest value) by CSU type and subregion = 3 points
 - Required a minimum rank-based z-score of "average"
2. Regionally Important
 - "Above average" regional rank-based z-score = 2 points
 - "Slightly above average" regional rank-based z-score = 1 point

*See final report and metadata for detailed methods and more information.

For Questions Please Contact: eScience@tnc.org

Cumulative Portfolio Score

Data Sources: See all 13 coastal portfolio attributes previously described

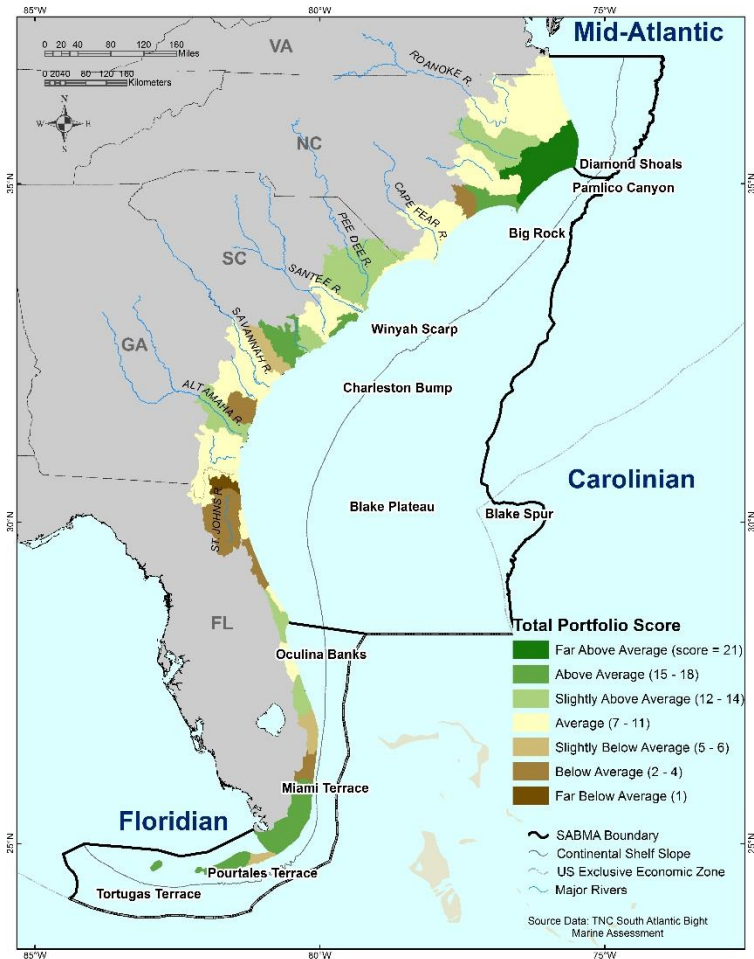
Years: See all 13 coastal portfolio attributes previously described

Dataset Description & Methods Overview:

We determined the relative importance of individual CSUs for each of the thirteen attributes (e.g., habitats, species, and condition) previously described. Most metrics were calculated for each of the 39 CSUs. In some cases (e.g., seagrass beds and manatees), the natural extent of the conservation target limited the association to CSUs where the resource is present. In addition, we calculated the cumulative value of attributes associated with each CSU. This provides users with a broad picture of the relative value of CSUs across the suite of habitat, species and condition attributes. However, it is not meant to be interpreted as a CSU prioritization. Depending on the management question or conservation goal, the CSU's importance for a singular attribute may outweigh the cumulative total. For each CSU, the score for each of the 13 attributes was summed and translated to the following rank-based z-score classes:

- Far Above Average (FAA): > 2 Standard Deviations (SD) above the mean
- Above Average (AA): > 1 SD
- Slightly Above Average (SAA): 1 to 0.5 SD
- Average (A): 0.5 to -0.5 SD
- Slightly Below Average (SBA): -0.5 to -1 SD
- Below Average (BA): < -1 SD
- Far Below Average (FBA): < 2 SD

*See final report and metadata for detailed methods and more information.



Small Florida Lagoons: Cumulative Portfolio Score Rank

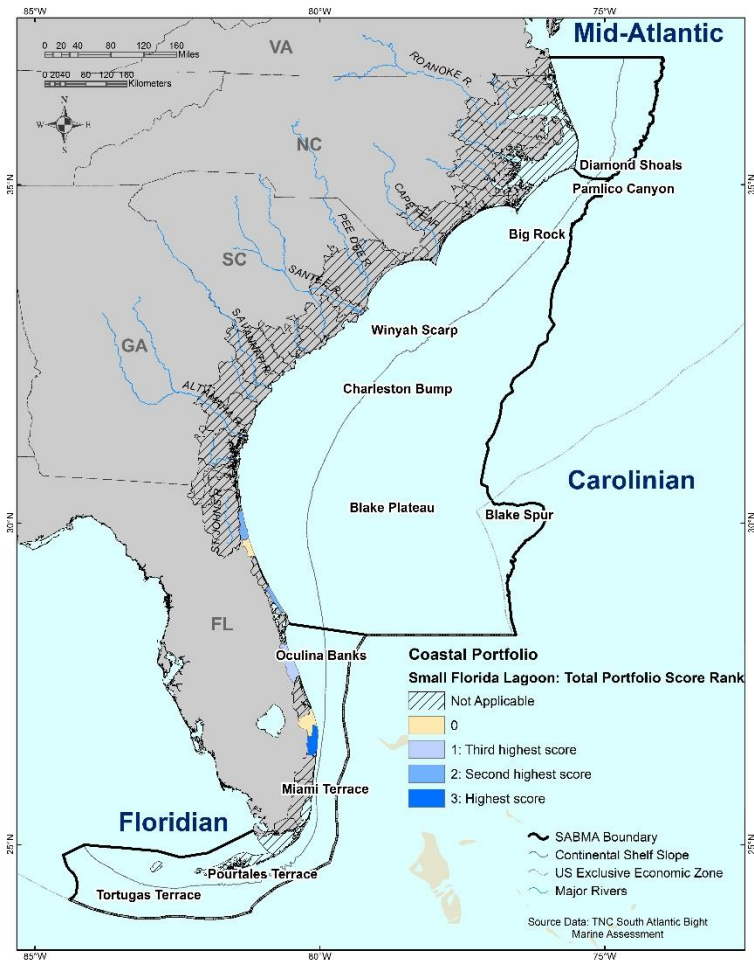
Data Sources: See all 13 coastal portfolio attributes previously described

Years: See all 13 coastal portfolio attributes previously described

Dataset Description & Methods Overview: The lagoonal CSUs in Florida are small relative to other lagoonal systems in the project area. We recognized that their smaller size limited classification as regionally important. To highlight those small systems that had relatively high attribute metric scores, we completed an additional ranking of the small lagoonal CSUs within the state of Florida based on their total portfolio score. The following process was used to score the small Florida lagoon CSUs based on their cumulative portfolio score:

1. Highest score = 3 points
2. Second highest = 2 points
3. Third highest = 1 point

*See final report and metadata for detailed methods and more information.



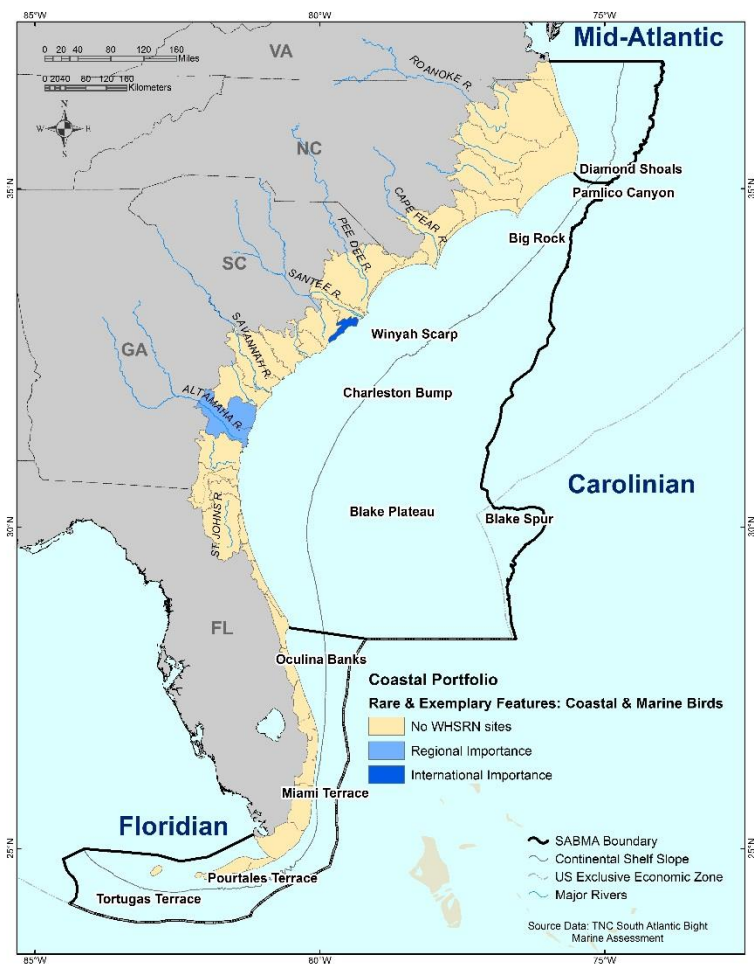
Rare & Exemplary Features: Coastal & Marine Birds

Data Sources: WHSRN (Western Hemisphere Shorebird Reserve Network). 2010. Important Shorebird Reserve Sites. <http://www.whsrn.org/>. Accessed March 1, 2010.

Year: 2010

Dataset Description & Methods Overview: The challenge for marine and coastal birds was identifying data sources that focused on population counts and that could be evaluated at a regional level (Conley et al. 2017). This challenge led to a focus on the Western Hemisphere Shorebird Reserve Network (WHSRN). Two WHSRN sites are located in the SABMA project area: Cape Romain National Wildlife Refuge and Altamaha River Delta. The three CSUs which overlap with the two WHSRN sites, Cape Romain, Altamaha River, and St. Catherines/Sapelo Sounds, are recognized for their unique bird status.

*See final report and metadata for detailed methods and more information.



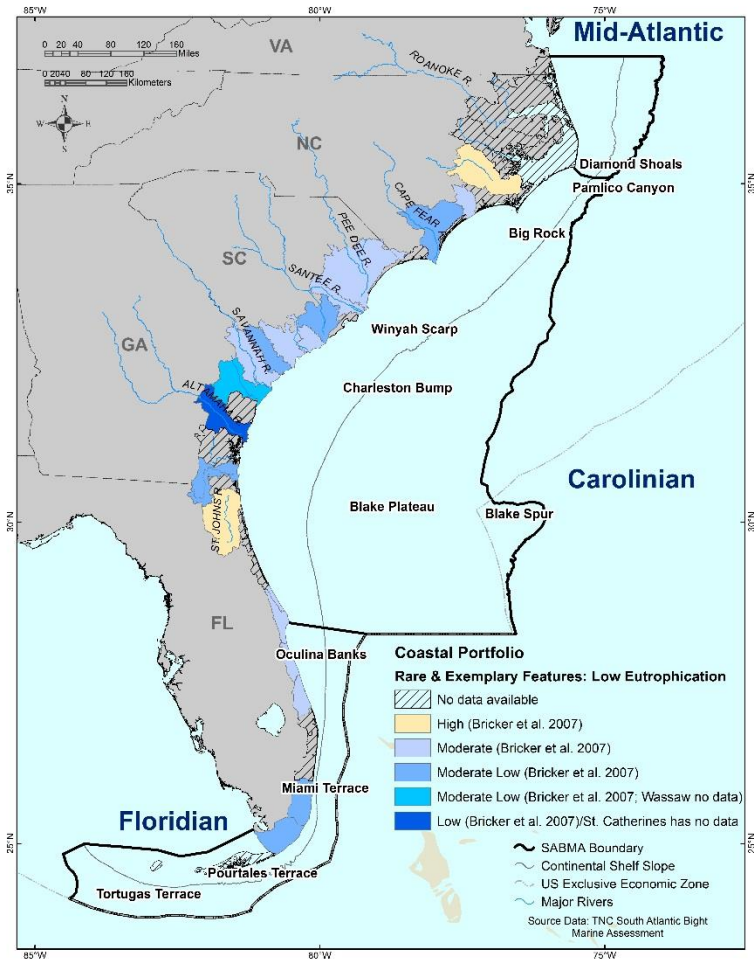
Rare & Exemplary Features: Low Eutrophication

Data Sources: National Estuarine Eutrophication Assessment (Bricker, S.B. Longstaff, W. Dennison, A. Jones, K. Boicourt, C. Wicks, and J. Woerner. 2007. Effects of nutrient enrichment in the nation's estuaries: A decade of change. NOAA Coastal Ocean Program Decision Analysis Series No. 26. National Centers for Coastal Ocean Science, Silver Spring, MD. 328 p. <http://ccma.nos.noaa.gov/publications/eutrouupdate/>)

Years: 2000-2007

Dataset Description & Methods Overview: To identify CSUs with low eutrophication, we used the Overall Eutrophic Condition (OEC) index from the National Estuarine Eutrophication Assessment (NEEA; Bricker et al. 2007). The OEC overall rating is based on the assessment of quantitative and qualitative data for three categories: 1) influencing factors; 2) overall eutrophic condition; and 3) future outlook. Nitrogen loads and the ability of an estuary to respond to nitrogen (i.e., via dilution and flushing) are used to assess influencing factors. Overall eutrophic condition is based on the occurrence, spatial coverage and frequency of the following five symptoms: 1) chlorophyll a; 2) macroalgae; 3) dissolved oxygen; 4) nuisance/toxic blooms; and 5) submerged aquatic vegetation (SAV) impacts. Future outlook is based on both the sensitivity of an estuarine system to nutrients and future nutrient load levels expected in 2020. Information from the above three categories was synthesized to arrive at an overall qualitative rating for estuaries. Refer to Bricker et al. (2007) for more information on the OEC index. The OEC rating was available and applicable for 18 of the 39 CSUs. For the other 21 CSUs, an OEC rating was either unavailable due to lack of information or the spatial extent of the OEC estuaries and the CSUs did not align (e.g., an OEC rating was only available for the Ossabaw portion of the Ossabaw Wassaw Sounds CSU).

*See final report and metadata for detailed methods and more information.



Rare & Exemplary Features: Low Point Source Pollution

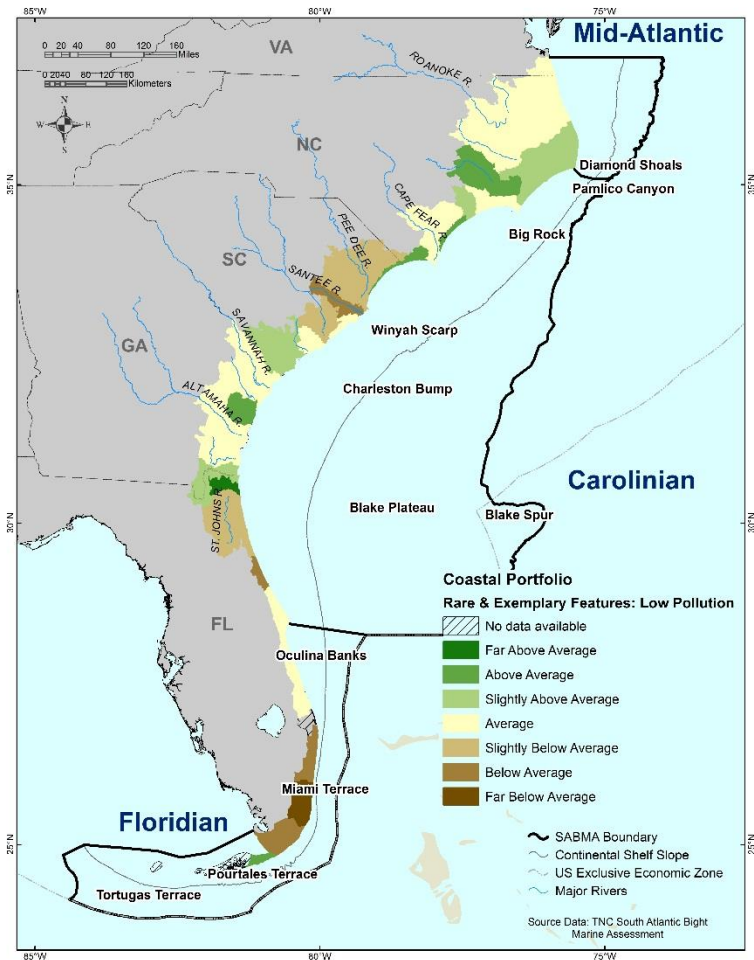
Data Sources: Greene, C.M., Blackhart, K., Nohner, J., Candelmo, A., and Nelson, D.M. A National Assessment of Stressors to Estuarine Fish Habitats in the Contiguous USA. 2015. *Estuaries and Coasts* 38 (3): 782-799.

Years: mine data: 2003; EPA TRI, NPDES, and Superfund data: 2007

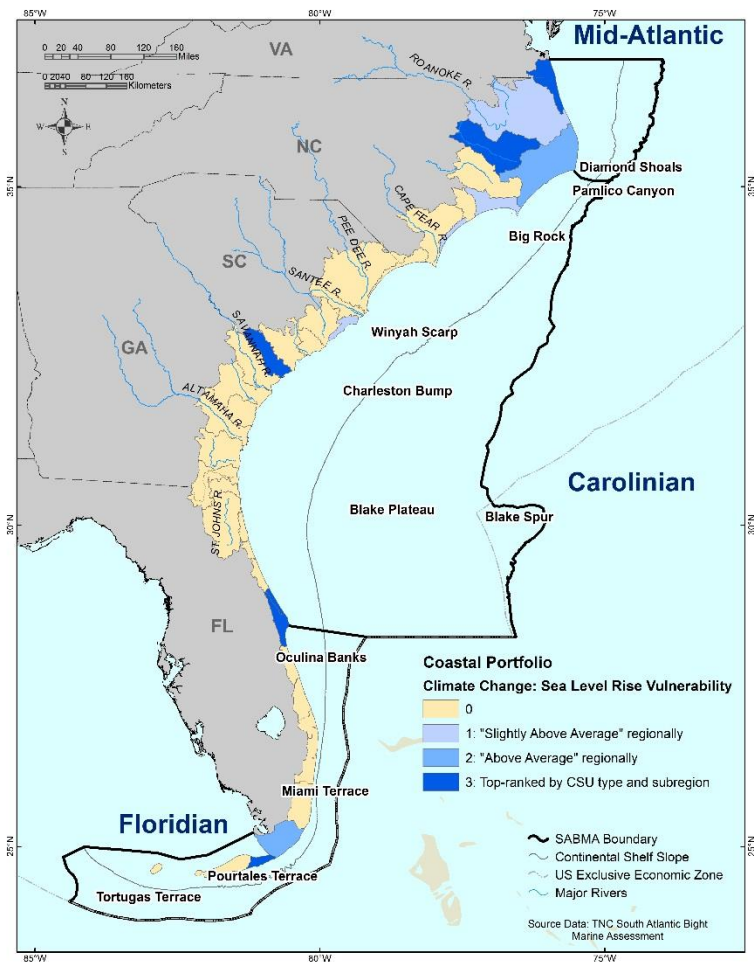
Dataset Description & Methods Overview: We used data developed for the National Fish Habitat Action Plan (NFHAP) Assessment of Stressors to Estuarine Fish Habitats (Greene et al. 2015) to characterize the impact of point source pollution on CSUs. Greene et al. (2015) compiled publicly-available point source locations from the Toxic Release Inventory (TRI), National Pollution Discharge Elimination System (NPDES), Superfund, and mine sites. For each estuary, the total number of point source sites within 500 m of an estuary was tabulated and then normalized by total watershed area (km²). We used the NFHAP pollutant densities to calculate rank-based z-scores for each CSU type by subregion to identify those CSUs with a low density of point source sites relative to other CSUs of the same type and within the same subregion. The rank-based z-score classes are as follows:

- Far Above Average (FAA): > 2 Standard Deviations (SD) above the mean
- Above Average (AA): > 1 SD
- Slightly Above Average (SAA): 1 to 0.5 SD
- Average (A): 0.5 to -0.5 SD
- Slightly Below Average (SBA): -0.5 to -1 SD
- Below Average (BA): < -1 SD
- Far Below Average (FBA): < 2 SD

*See final report and metadata for detailed methods and more information.



Climate Change: Sea Level Rise Vulnerability



Data Sources: Elevation data: Gesch, D.B.2007, The National Elevation Dataset, in Maune, D., ed., Digital Elevation Model Technologies and Applications: The DEM Users Manual, 2nd Edition: Bethesda, Maryland, American Society for Photogrammetry and Remote Sensing, p. 99-118.; Gesch, D., Oimoen, M., Greenlee, S., Nelson, C., Steuck, M., and Tyler, D., 2002, The National Elevation Dataset: Photogrammetric Engineering and Remote Sensing, v. 68, no. 1, p. 5-11.
Thresholds: Parris, A., P. Bromirski, V. Burkett, D. Cayan, M. Culver, J. Hall, R. Horton, K. Knuuti, R. Moss, J. Obeysekera, A. Sallenger, and J. Weiss. 2012. Global Sea Level Rise Scenarios for the US National Climate Assessment. NOAA Tech Memo OAR CPO-1. 37 pp.

Years: elevation: 2014; thresholds: 2012

Dataset Description & Methods Overview: To provide a relative and coarse estimate of CSU vulnerability to sea level rise (SLR) by 2100, we assessed the amount of land in each CSU with an elevation less than 0.5 m. The elevation threshold was based on a recent report by NOAA (Parris et al. 2012) that synthesizes the wide range of mean global SLR estimates in the scientific literature and provides four different SLR scenarios for planning, policy, and management. We selected the conservative "intermediate-low scenario," which projects a SLR of 0.5 m by 2100. We used a 30-m Digital Elevation Model (DEM) from the National Elevation Dataset (NED; Gesch et al. 2002, Gesch 2007) to calculate the percentage of the CSU comprised of 30-m grid cells less than 0.5 m. This simplistic approach has several caveats. First, finer-scale elevation data (i.e., LiDAR) is preferred for SLR inundation analyses but was not readily available for the entire project area. Also, connectivity of the land areas, coastal flooding, tidal variability, marsh migration, and erosion/deposition processes were not considered.

Nevertheless, the approach does provide a quick snapshot of the relative SLR vulnerability of each CSU. The following process was then used to score the CSUs:

1. Top Ranked (lowest % of vulnerable land) by CSU type and subregion = 3 points
 - Required a minimum rank-based z-score of "average"
2. Regional
 - "Above average" regional rank-based z-score = 2 points
 - "Slightly above average" regional rank-based z-score = 1 point

*See final report and metadata for detailed methods.

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