Port Royal Sound Watershed Analysis

A conservation prioritization tool for protecting water quality and preserving habitat

Introduction

The Port Royal Sound (Figure 1) is a unique ecosystem on the Atlantic Coast. Unlike many of the estuaries in South Carolina, the Port Royal Sound (PRS) receives limited freshwater and sediment inputs from large rivers. The relatively small Coosawhatchie River is the primary source of freshwater as well as stormwater runoff from adjacent properties.

The location of the Port Royal Sound is near the apex of the South Atlantic Bight. This geographic position produces high tidal amplitudes, which creates large expanses of salt marsh. Beaufort and Jasper Counties have over 2,000 miles of shoreline and a substantial portion of South Carolina's salt marsh.

Development pressure is high in the lower watershed; however, large recreational hunting plantations and forested properties persist as well as agricultural areas, such as St. Helena Island. There is a risk that these rural properties may be sold and developed in the future, especially in the lower watershed south of I-95.

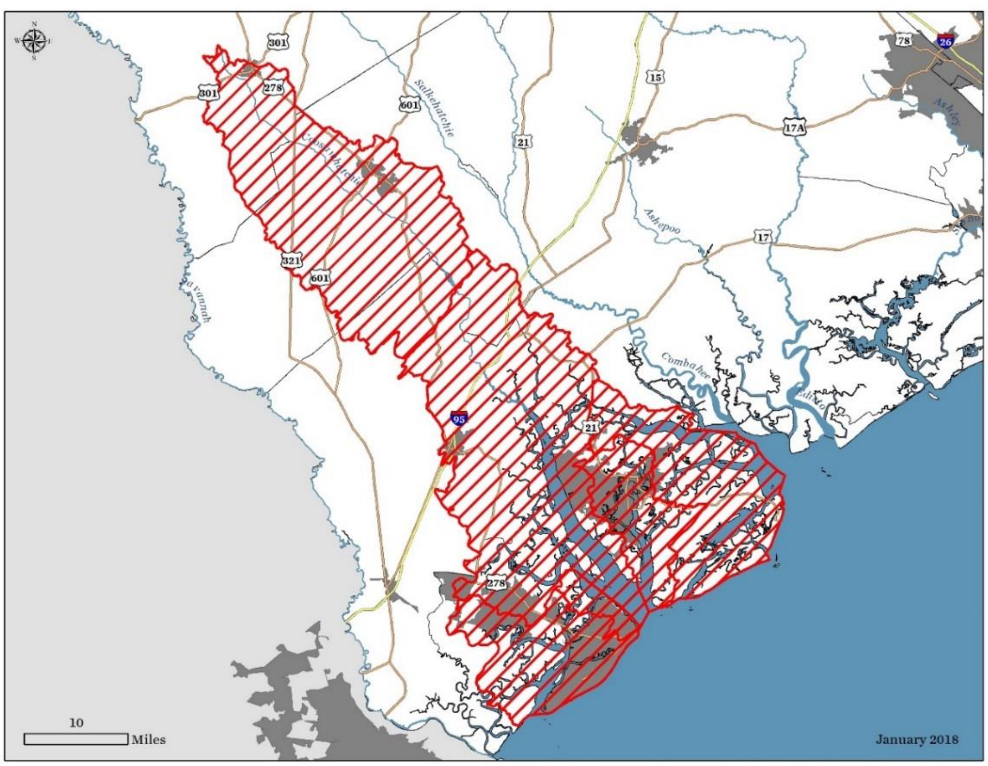


Figure 1. Map of the Port Royal Sound watershed. Portions of Hydrologic Units (HUC) 8 and 11 were selected by stakeholders for use in this analysis.

There is a solid foundation of research that demonstrates the connection between landcover and water quality[1,2,3]. Forests act as a natural filter, trapping sediment and contaminants before runoff enters adjacent water bodies. Forests also slow the rate at which water from rain events (i.e. stormwater) enters rivers, creeks, lakes, and estuaries. In the adjacent Savannah River drainage, water utilities have recognized this connection between forests and water quality and intend to fund conservation easements on forested parcels within the watershed to ensure the long-term protection of drinking water[4].

We must be strategic on where we invest limited conservation dollars in easements and acquisitions. To help with this strategy, we developed a GIS model to identify and prioritize tracts that are important for protecting water quality in the Port Royal Sound. This model also identifies tracts that are likely to flood in storms and eventually transition to wetlands with rising ocean levels. These transition areas are important to allow for inland marsh migration.

The shorelines of South Carolina have always moved as the Earth has warmed and cooled, but ocean levels are rising rapidly with climate change. Intermediate estimates for the Port Royal Sound region predict water levels to be 2-4 feet higher by 2100[5] (Figure 2).

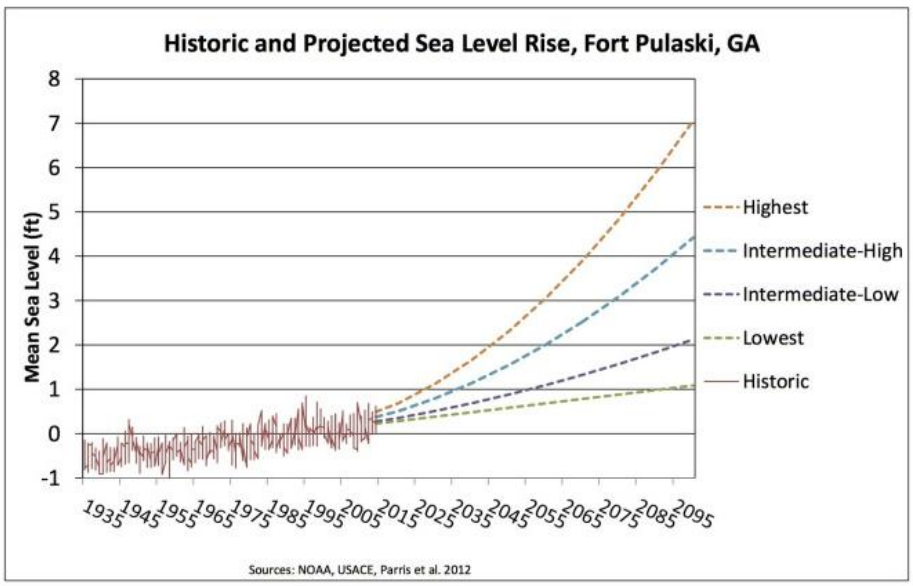


Figure 2. Historic data and sea level rise predictions for the Port Royal Sound area.

[1] Baker, Andy. (2006). Land Use and Water Quality. Hydrological Processes - HYDROL PROCESS. 17. 10.1002/0470848944.hsa195.

[2] Landers, M.N., P.D. Ankcorn, K.W. McFadden, and M.B. Gregory. 2002. Does land use affect our streams? U.S. Geological Survey Water-Resources Investigations Report 02-4281.

[3] Sedell, J., M. Sharpe, D.D. Apple, M. Copenhagen, and M. Furniss. 2000. Water and the Forest Service. FS-660. Washington, DC. USDA-Forest Service, Washington Office. 40p.

[4] https://www.awwa.org/publications/connections/connections-story/articleid/4865/game-changer-utilities-in-two-states-united-to-protect-source-water.aspx

[5] Sweet, M.V., R.E. Kopp, C.P. Weaver, J. Obeysekera, R.M. Horton, E.R. Thieler, and C. Zervas. 2017. Global and Regional Sea Level Rise Scenarios for the United States. NOAA Technical Report NOS CO-OPS 083.

In coastal areas, maritime forests in low-elevation areas are dying from saltwater intrusion and will transition to marsh if allowed[6]. In locations where we have developed, however, infrastructure will be defended (e.g. bulkheads) from rising ocean levels, creating dead-end pathways for inland marsh migration. These areas adjacent to development are likely to become marsh-loss locations. To counteract the loss in these areas, we need to allow for inland movement of salt marshes in other locations, which means protecting critical uplands in migration pathways.

Coastal wetlands provide numerous ecological and economic benefits to South Carolina. Research has demonstrated that salt marshes provide hurricane protection worth thousands of dollars a year per acre in reduced damages and insurance claims[7]. They also serve as nurseries for recreational and commercial fishery stocks[8], as well as provide aesthetics and a cultural sense of place of the Lowcountry[9].

Methods

A scoping meeting among stakeholders was held at the Port Royal Sound Maritime Center in September 2017. The purpose of the meeting was to identify criteria that could be used to develop a prioritization model, which could help guide local land conservation efforts. Follow up meetings were held in February and April of 2018 to refine the model. Stakeholders have included representatives from Beaufort County, Beaufort Open Land Trust, Carolinas Integrated Sciences & Assessments, Coastal Conservation League, Lowcountry Land Trust, DNR, Spring Island Trust, NOAA, Port Royal Sound Foundation, The Nature Conservancy, University of South Carolina, and USFWS.

Our goal was to create a prioritization model that would help us identify areas that are important for preserving water quality in the Port Royal Sound and allow for inland marsh migration. To do this, we created a 30 m^2 grid of the watershed. Within each 30 m^2 cell, we scored and summed numerous factors related to water quality and flooding to create a relative ranking of each cell.

The GIS model is composed of two sub-modules:

1. **Water Quality Prioritization Index (WQPI**) – Focused on preserving water quality
2. **Flooding Prioritization Index (FPI)** – Focused on identifying areas that flood and allow for marsh migration.

---

[6] Drouin, R. 2016. How rising seas are killing southern U.S. woodlands. YaleEnvironment360. https://e360.yale.edu/features/ghost_forest_rising_sea_levels_killing_coastal_woodlands
[7] Schuster, E. 2014. Lower Cape May Meadows Ecological Restoration: Analysis of Economics and Social Benefits. The Nature Conservancy.
[8] South Carolina Department of Natural Resources. 2012. Marine – Salt Marsh Habitat. http://www.dnr.sc.gov/marine/habitat/saltmarsh.html
[9] Willis, DB and TJ Straka. 2016. The Economic Contribution of Natural Resources to South Carolina's Economy. Clemson University.

The sub-modules can be used independently of one another or viewed together in a composite ranking (**Composite Prioritization Index**), which is merely a sum of the two indices.

The factors used in each index are shown in Table 1. Each factor was ranked on a scale from 0-3, with 3 being the highest priority. For datasets that did not cover the entirety of the PRS study area, such as flood zones, a constant raster with a value of 0 was mosaiced to the dataset to supplement the remaining areas.

The following sections describe the details of how each factor was treated in the development of the indices, including the source of the dataset and any assumptions made for this analysis.

Water Quality Prioritization Index

The Water Quality Prioritization sub-module identifies the areas of highest priority for protection of water quality in the Port Royal Sound.

- **Land Use:** Land use is based on the USGS GAP Land Cover Database, which includes detailed vegetation and land use patterns for the continental United States. National GAP Land Cover Data provide information on the distribution of native vegetation types, modified and introduced vegetation, developed areas, and agricultural areas of the United States. All forested associations in the GAP land cover data were extracted as they are assumed to perform water quality maintenance functions. We also included scrub-shrub and herbaceous utility swaths as natural cover. The USGS National Land Cover Database (NLCD) has greater detail in developed areas. All developed land classes were extracted and subtracted from the derived GAP natural land cover layer to develop a more stringent definition of the existence of natural forest land cover in the PRS. Natural cover areas were classified into one group and ranked as a 3 in a continuous scored 30x30m raster surface. Agricultural row crop areas were scored a 1. Details on Land cover assignments can be found in the Appendix.

- **Proximity to Ponds / Wetlands:** All vegetation associations that function as temporary, intermittent or permanent fresh water wetlands were extracted from the GAP land cover dataset. This included both isolated and flowing wetland types. A multiple ring buffer was used to determine which areas were within 30 meters, 60 meters, and 90 meters of the wetland features. The buffered polygon was converted to a 30x30m raster surface and reclassified. Areas closer to wetland features were considered higher priority; areas within 30 meters were ranked as a 3, 60 meters as a 2, and 90 meters as 1.

- **Proximity to Streams:** The National Hydrography Dataset (NHD) is a digital geospatial dataset that maps the surface water of the United States. The NHD represents the nation's drainage networks and related features, including rivers, streams, canals, lakes, ponds, glaciers, coastlines, dams, and stream gages. Streams are defined as all flowlines in the NHD. A multiple ring buffer was used to develop a distance-to-streams polygon, with areas buffered at 30 meters, 60 meters, and 90 meters. The polygon was converted to a 30x30m raster surface and the buffered areas reclassified using the 30m = 3, 60m = 2, and 90m = 1 prioritization scheme.

- **Soils:** The Soil Survey Geographic (SSURGO) database contains information about soil as collected by the National Cooperative Soil Survey.
    - **Soil Hydrologic Group**: Soil hydrologic group describes water infiltration performance of unvegetated soils subject to long-duration rainfall. Soil hydrologic group were extracted from the SSURGO. Soils with hybrid assignments were grouped according to the most restrictive element (ie., an A/D soil was treated as Group D). Soils were then scored with lower infiltration being ranked higher and higher infiltration being ranked lower and converted to a continuous 30x30m raster.

    - **Soil Erodibility Factor (K):** Soil erodibility is the likelihood of a soil to erode when exposed to rainfall. Soil erodibility was extracted from the SSURGO. The full range of soil erodibility was split into three equal groups and assigned scores 1, 2, or 3 respectively, and converted to a continuous 30x30m raster.

- **Climate change and development impacts on stormwater runoff:** SWARM (Stormwater Runoff in Watersheds[10]) is a method developed to quantify run-off on study sites, taking into consideration climate impacts. It accounts for area, soils, land use, and rain to calculate the volume of runoff, rate and time, and runoff potential, generating a flow curve number (CN). The curve number was used to create a ranked raster surface, with lower runoff potential being ranked lower (1) compared to a higher runoff potential (3).

Flooding Prioritization Index

The Flooding Prioritization sub-module identifies the areas likely to be affected by sea level rise, flooding, and hurricane storm surge inundation. It also identifies areas was salt marsh is likely to persist in the future.

- **FEMA 100-Year Floodplain:** Areas in a floodplain are high-risk (1% annual chance, or 100-year floodplain) flood zones designated by the Federal Emergency Management Agency (FEMA). We identified which areas are in a floodplain, and score those areas as 3. Other areas outside of the floodplain were scored a null value of 0.

- **Sea Level Rise:** NOAA has modeled sea level rise (SLR) scenarios using a modified bathtub approach that attempts to account for local and regional tidal variability and hydrological connectivity[11]. Sea level rise was mapped on top of mean higher high water (MHHW). Scenarios up to 6' of SLR were chosen for this analysis based on the likelihood of affecting the PRS in the

---

[10] Blair, A., and D. Sanger. 2016. Climate change and watershed hydrology – heavier precipitation influence on stormwater runoff. Geosciences 6:34, 12pp. doi:10.3390/geosciences6030034
[11] Sweet, M.V., R.E. Kopp, C.P. Weaver, J. Obeysekera, R.M. Horton, E.R. Thieler, and C. Zervas. 2017. Global and Regional Sea Level Rise Scenarios for the United States. NOAA Technical Report NOS CO-OPS 083.

near term (see Figure 2). SLR scenario feature classes were converted to raster and mosaiced together. That file was reclassified to rank each scenario from 1-3, with 1-2' SLR scenarios ranked the highest at a 3 as it represents the most immediate concern. The mapping does not incorporate future changes in coastal geomorphology and assumes present conditions will persist.

- **Marsh migration:** As sea level rises, higher elevations will become more frequently inundated. In the absence of barriers, marshes will migrate landward. Lower elevation areas may transition to open water. NOAA modeled areas where marsh will exist in various SLR scenarios up to 6', then used that information to create a derived file highlighting the number of times a given area would have salt marsh (i.e., marsh persistence) under each of the future SLR scenarios[12]. The data do not consider many natural processes, such as freshwater influences on salinity, subsidence, sediment erosion dynamics, or coastal storm impacts. Additionally, this method assumes that specific wetland types exist within an established tidal elevation range.

- **Storm surge**: The National Hurricane Center's (NHC) SLOSH model was used to calculate storm surge heights and the extents of inundation for different category storms. Hurricane storm surge heights are influenced by many factors, including hurricane intensity (categorized by the Saffir-Simpson hurricane wind scale, ranging from 1 to 5), size (radius of maximum winds), forward speed, the angle of approach to the shoreline, and the characteristics of the coastline. Since many factors influence storm surge heights, the maximum inundation from multiple storm surge scenarios are composited into one data layer. This data emphasizes areas with the highest degree of exposure. Therefore, areas in the Saffir-Simpson Category 1 storm surge zones were ranked highest priority at a 3. Areas that are flooded only under higher category storms were ranked lower.

[12] NOAA Office for Coastal Management. 2017. Detailed Method for Mapping Sea Level Rise Marsh Migration. https://coast.noaa.gov/data/digitalcoast/pdf/slr-marsh-migration-methods.pdf

Table 1. Factors and scores used in calculating the Port Royal Sound water quality prioritization index (WQPI) and flooding prioritization index (FPI). Indices were calculated for each 30 m^2 cell by summing the scores (0-3). The highest score indicated the highest conservation priority. Details on each factor are found in the GIS methods.

	Factor	**Scores**			
		3	**2**	**1**	**0**
WQPI	Land Use	Natural land cover	N/A	Agricultural land cover	All other
	Proximity to streams	0-30 m	30-60 m	60-90 m	All other
	Proximity to wetlands	0-30 m	30-60 m	60-90 m	All other
	Soil Hydrologic Group	C/D: Low infiltration	B: Moderate Infiltration	A: High Infiltration	N/A
	Soil erodibility	High	Moderate	Low	N/A
	SWARM curve number	High	Moderate	Low	N/A
FPI	FEMA 100-year floodplain	In floodplain	N/A	N/A	Not in floodplain
	Sea level rise	Impacted at 2’ SLR	Impacted at 4’ SLR	Impacted at 6’ SLR	Not impacted
	Marsh migration	Marsh addition at 2’ SLR	Marsh addition at 4’ SLR	Marsh addition at 6’ SLR	No marsh addition
	Storm surge	Inundation at Cat 1 or 2	Inundation at Cat 3 or 4	Inundation at Cat 5	No inundation

Weighted Sum

The component layers were overlaid using the Weighted Sum function in Spatial Analyst 10.5. To transform these indices to a useful tool for targeted conservation actions, 30 m^2 pixel scores were accumulated inside of legal tract boundaries. Digital tract boundary data was acquired through CoreLogic (San Jose, CA).

The Zonal Statistics function was used to generate average scores inside of tract boundaries. This includes a WQPI tract score (water quality), a FPI tract score (flooding), and a composite tract score. The final scores were divided into three ranges based on the Jenks optimization method, which seeks to reduce the variance within classes and maximize the variance among classes. These three ranges resulted in the three prioritization classes – priority 1, 2, and 3, with 1 being the highest priority.

Parcels less than 10 acres were excluded from the analysis. Parcels under this threshold tend to be in developed areas, have less conservation value, and are likely to be defended from sea level rise because of existing infrastructure.

Results

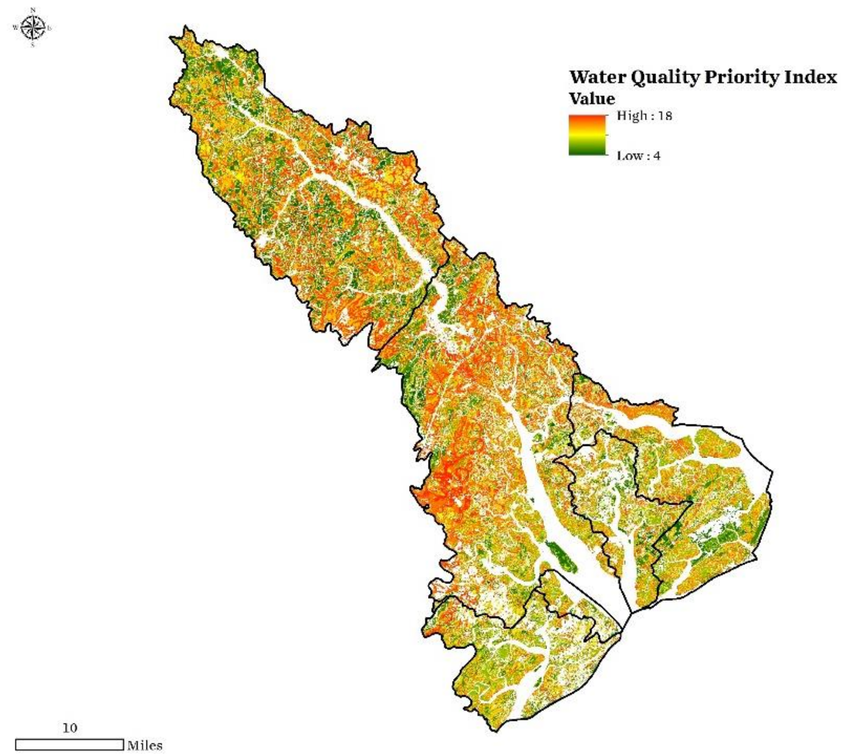
Basic landcover statistics were calculated for the PRS study area from the USGS GAP Land Cover Database(Table 2). Land cover associations were grouped into general cover classifications. Shoreline data was derived from the South Atlantic Bight Marine Assessment[13] (SABMA).

A story map was created to allow for further exploration of the model results (https://arcg.is/0n8aiC). The story map does not have parcel-level data but allows users to explore each index as well as underlying datasets.

[13] Conley, M.F., M.G. Anderson, N. Steinberg, and A. Barnett, eds. 2017. The South Atlantic Bight Marine Assessment: Species, Habitats and Ecosystems. The Nature Conservancy, Eastern Conservation Science.

Table 2. Landcover statistics for Port Royal Sound watershed. All statistics are calculated for only those areas within the PRS watershed shown in Figure 1.

	Allendale County	Beaufort County	Hampton County	Jasper County	Total
Acres in watershed	53,866	303,830	179,365	158,736	792,202
Number of tracts over 10 acres	581	2,059	1,991	1,023	5,654
Shoreline Miles	0	1,436	0	131	2,162
Open freshwater	309	451	658	425	1,843
Saltmarsh acres	0	96,590	0	16,195	112,785
Woody wetlands	10,150	82,749	40,388	44,325	177,612
Developed acres	3,718	29,438	10,833	8,173	52,162
Forested acres	23,926	43,052	84,792	57,186	208,956
Cultivated cropland	8,593	8,375	21,161	8,126	46,255
Pasture/hay	6,095	6,099	11,343	4,495	28,032
Disturbed/successional	1,074	10,020	10,189	7,317	28,600
Quarries, mines/barren land	0	1,502	0	269	1,771



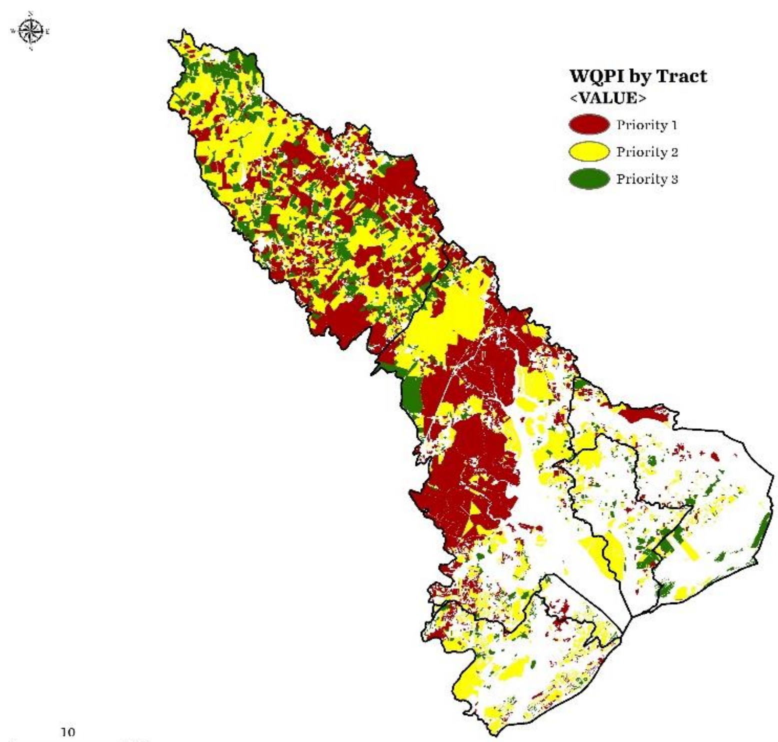


Figure 3. *Water quality prioritization index* results shown for watershed (top) and averaged for parcels greater than 10 acres (bottom).

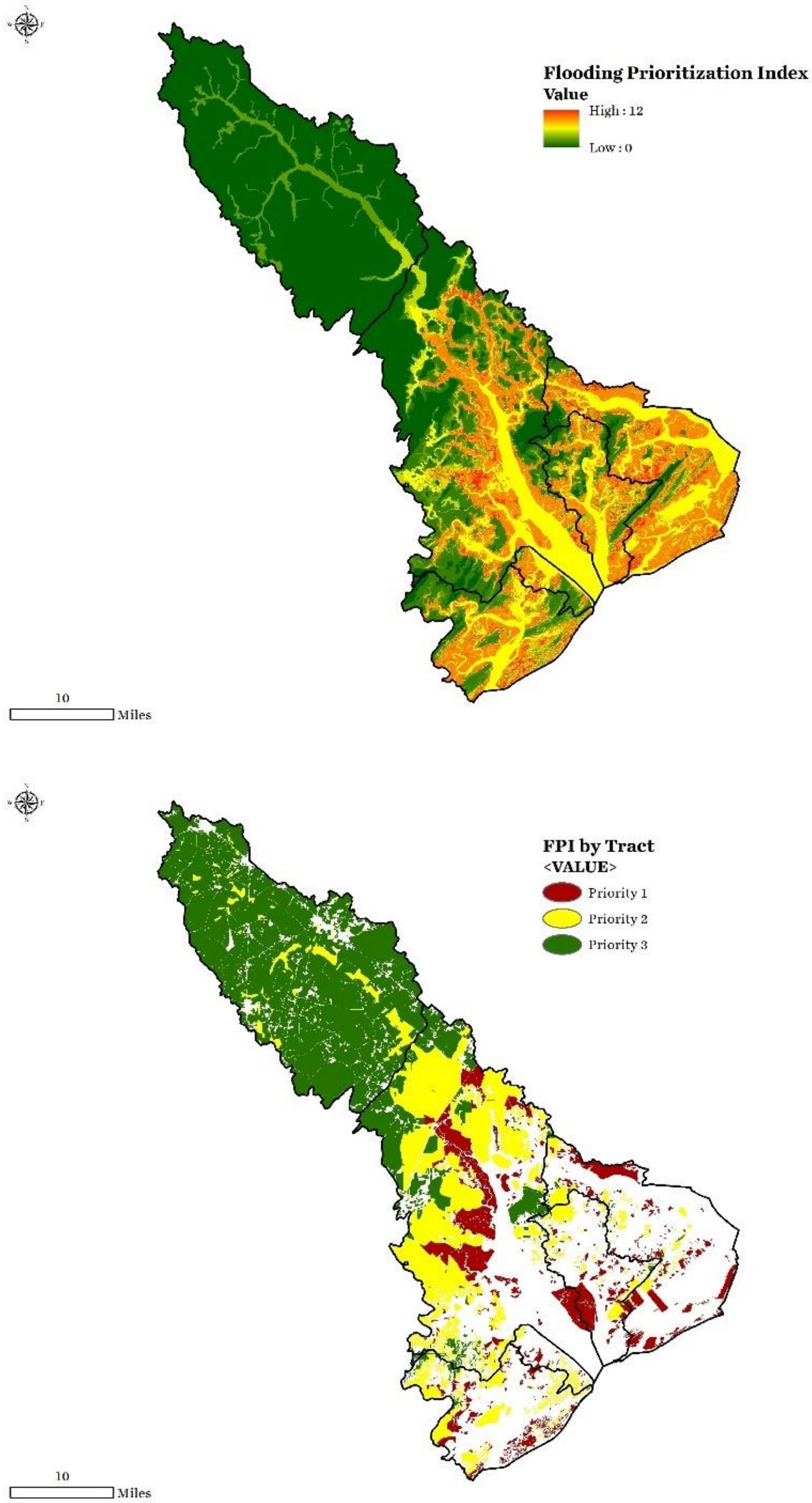
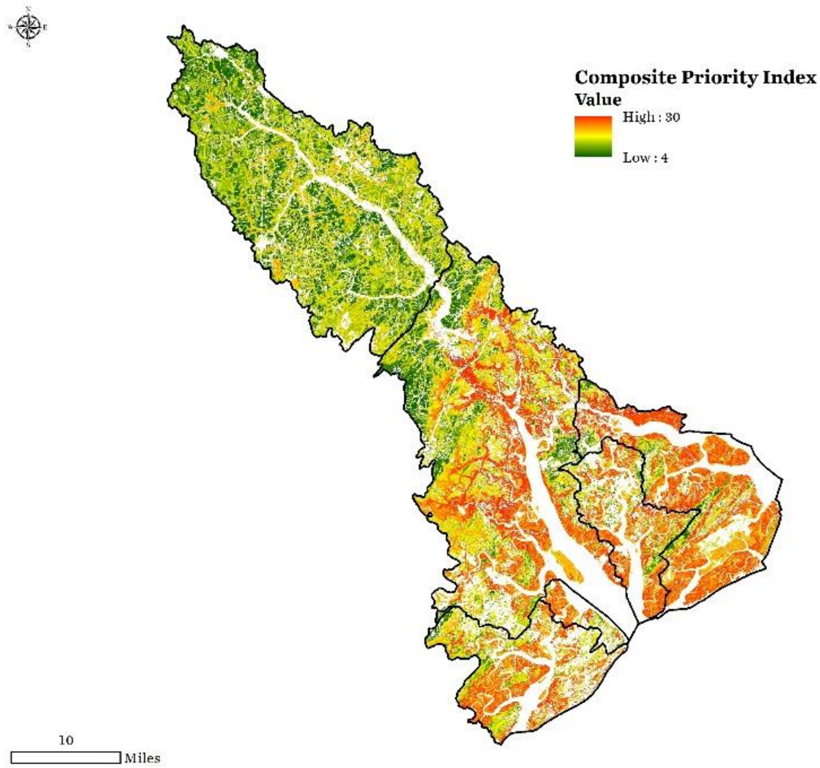


Figure 4. Flooding prioritization index results shown for watershed (top) and averaged for parcels greater than 10 acres (bottom).



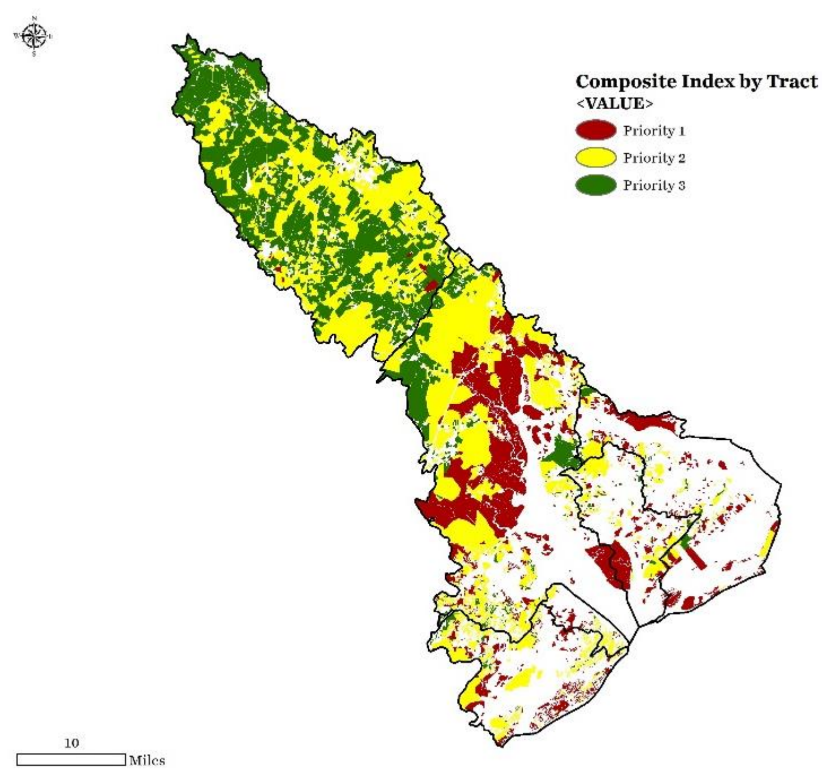


Figure 5. Composite prioritization index results shown for watershed (top) and averaged for parcels greater than 10 acres (bottom).

Authors and contact information:

David Bishop, PhD
Coastal and Midlands Conservation Director
The Nature Conservancy
dbishop@tnc.org

Liz Fly, PhD
Marine Conservation Director
The Nature Conservancy
elizabeth.fly@tnc.org

Melissa Strickland*
SC GIS Manager
The Nature Conservancy
843-937-8807 x 22
mstrickland@tnc.org

*Please direct requests for data and questions about the GIS analysis to Melissa.

This research was funded by a grant from the Judith Haskell Brewer Foundation.

Report completed May 18, 2018

References

Blair, A., D. Sanger, D. White, A.F. Holland, L. Vandiver, C. Bowker, S. White. 2014. Quantifying and Simulating Stormwater Runoff in Watersheds. Hydrological Processes, 28(3): 559-569.

Department of Commerce (DOC), National Oceanic and Atmospheric Administration (NOAA), National Ocean Service (NOS), Coastal Services Center (CSC). 2012. NOAA Coastal Services Center Sea Level Rise Data: 1-6 ft Sea Level Rise Inundation Extent. NOAA's Ocean Service, Coastal Services Center (CSC), Charleston, SC.

Department of Commerce (DOC), National Oceanic and Atmospheric Administration (NOAA), National Ocean Service (NOS), Coastal Services Center (CSC). 2012. NOAA Coastal Services Center Sea Level Rise Data: Potential Marsh Distribution for 1-6ft of Future Net Sea Level Rise. NOAA's Ocean Service, Coastal Services Center (CSC), Charleston, SC.

Federal Emergency Management Agency. 20180422. National Flood Hazard Layer (NFHL), Version 1.1.1.0, FEMA-NFHL. Available online at https://msc.fema.gov. Federal Emergency Management Agency, Washington, DC.

Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture. Web Soil Survey. Available online at https://websoilsurvey.nrcs.usda.gov/. Accessed September 2017.

U.S. Geological Survey, 2007-2014, National Hydrography Dataset available on the World Wide Web (https://nhd.usgs.gov), accessed September 2017.

U.S. Geological Survey, 20141010, NLCD 2011 Land Cover (2011 Edition, amended 2014) - National Geospatial Data Asset (NGDA) Land Use Land Cover: U.S. Geological Survey, Sioux Falls, SD.

U.S. Geological Survey, Gap Analysis Program (GAP). May 2011. National Land Cover, Version 2.

Zachry, B. C., W. J. Booth, J. R. Rhome, and T. M. Sharon, 2015: A National View of Storm Surge Risk and Inundation. Weather, Climate, and Society, 7(2), 109–117.

APPENDIX: Southeast GAP Land Cover Assignments

	Application of Southeast GAP Land Cover Assignments	Used In?		
VALUE	NAME	Nat. LC	Wet	Ag. LC
1	Open Water (Fresh)	No	Yes	No
2	Open Water (Brackish/Salt)	No	No	No
4	Developed Open Space	No	No	No
5	Low Intensity Developed	No	No	No
6	Medium Intensity Developed	No	No	No
7	High Intensity Developed	No	No	No
16	Bare Sand	No	No	No
17	Bare Soil	No	No	No
18	Quarry/Strip Mine/Gravel Pit	No	No	No
33	Southern Piedmont Granite Flatrock	Yes	No	No
35	Unconsolidated Shore (Lake/River/Pond)	Yes	Yes	No
36	Unconsolidated Shore (Beach/Dune)	Yes	Yes	No
37	Deciduous Plantations	Yes	No	No
39	Atlantic Coastal Plain Dry and Dry-Mesic Oak Forest	Yes	No	No
40	Atlantic Coastal Plain Mesic Hardwood and Mixed Forest	Yes	No	No
57	Southern Coastal Plain Dry Upland Hardwood Forest	Yes	No	No
61	Atlantic Coastal Plain Fall-line Sandhills Longleaf Pine Woodland - Offsite Hardwood Modifier	Yes	No	No
64	Atlantic Coastal Plain Xeric River Dune	Yes	No	No
66	Southern Piedmont Dry Oak-(Pine) Forest - Hardwood Modifier	Yes	No	No
68	Southern Piedmont Mesic Forest	Yes	No	No
70	Northern Atlantic Coastal Plain Dry Hardwood Forest	Yes	No	No
71	Evergreen Plantations or Managed Pine (can include dense successional regrowth)	Yes	No	No
72	Atlantic Coastal Plain Central Maritime Forest	Yes	No	No
73	Atlantic Coastal Plain Northern Maritime Forest	Yes	No	No
74	Atlantic Coastal Plain Southern Maritime Forest	Yes	No	No
86	Southern Piedmont Dry Oak-(Pine) Forest - Loblolly Pine Modifier	Yes	No	No
87	Southern Piedmont Dry Oak-Heath Forest - Virginia/Pitch Pine Modifier	Yes	No	No
90	Atlantic Coastal Plain Fall-Line Sandhills Longleaf Pine Woodland - Loblolly Modifier	Yes	No	No
91	Atlantic Coastal Plain Fall-line Sandhills Longleaf Pine Woodland - Open Understory Modifier	Yes	No	No
92	Atlantic Coastal Plain Fall-line Sandhills Longleaf Pine Woodland - Shrub Understory Modifier	Yes	No	No
93	Atlantic Coastal Plain Upland Longleaf Pine Woodland	Yes	No	No
99	Southern Coastal Plain Oak Dome and Hammock	Yes	No	No
100	Southeastern Interior Longleaf Pine Woodland	Yes	No	No
108	Southern Piedmont Dry Oak-(Pine) Forest - Mixed Modifier	Yes	No	No
109	Southern Piedmont Dry Oak-Heath Forest - Mixed Modifier	Yes	No	No
119	Southern Piedmont Glade and Barrens	Yes	No	No

125	Successional Shrub/Scrub (Clear Cut)	Yes	No	No
126	Successional Shrub/Scrub (Utility Swath)	Yes	No	No
127	Successional Shrub/Scrub (Other)	Yes	No	No
141	Atlantic Coastal Plain Northern Dune and Maritime Grassland	Yes	No	No
142	Atlantic Coastal Plain Southern Dune and Maritime Grassland	Yes	No	No
145	Clearcut - Grassland/Herbaceous	Yes	No	No
146	Other - Herbaceous	Yes	No	No
147	Utility Swath - Herbaceous	Yes	No	No
148	Pasture/Hay	No	No	Yes
149	Row Crop	Yes	No	Yes
151	Atlantic Coastal Plain Blackwater Stream Floodplain Forest - Forest Modifier	Yes	Yes	No
152	Atlantic Coastal Plain Brownwater Stream Floodplain Forest	Yes	Yes	No
153	Atlantic Coastal Plain Small Blackwater River Floodplain Forest	Yes	Yes	No
154	Atlantic Coastal Plain Small Brownwater River Floodplain Forest	Yes	Yes	No
164	Southern Piedmont Large Floodplain Forest - Forest Modifier	Yes	Yes	No
165	Southern Piedmont Small Floodplain and Riparian Forest	Yes	Yes	No
167	Atlantic Coastal Plain Nonriverine Swamp and Wet Hardwood Forest - Taxodium/Nyssa Modifier	Yes	Yes	No
168	Atlantic Coastal Plain Nonriverine Swamp and Wet Hardwood Forest - Oak Dominated Modifier	Yes	Yes	No
173	Atlantic Coastal Plain Clay-Based Carolina Bay Forested Wetland	Yes	Yes	No
174	Atlantic Coastal Plain Northern Basin Swamp and Wet Hardwood Forest	Yes	Yes	No
175	Atlantic Coastal Plain Peatland Pocosin	Yes	Yes	No
176	Atlantic Coastal Plain Streamhead Seepage Swamp, Pocosin, and Baygall	Yes	Yes	No
179	Southern Coastal Plain Nonriverine Basin Swamp	Yes	Yes	No
180	Southern Coastal Plain Seepage Swamp and Baygall	Yes	Yes	No
182	Southern Piedmont/Ridge and Valley Upland Depression Swamp	Yes	Yes	No
184	Atlantic Coastal Plain Southern Wet Pine Savanna and Flatwoods	Yes	Yes	No
194	Southern Coastal Plain Hydric Hammock	Yes	Yes	No
195	Southern Coastal Plain Nonriverine Cypress Dome	Yes	Yes	No
204	Atlantic Coastal Plain Northern Tidal Wooded Swamp	Yes	Yes	No
205	Atlantic Coastal Plain Southern Tidal Wooded Swamp	Yes	Yes	No
213	Atlantic Coastal Plain Central Fresh-Oligohaline Tidal Marsh	Yes	Yes	No
215	Atlantic Coastal Plain Northern Fresh and Oligohaline Tidal Marsh	Yes	Yes	No
217	Atlantic and Gulf Coastal Plain Interdunal Wetland	Yes	Yes	No
218	Atlantic Coastal Plain Depression Pondshore	Yes	Yes	No
225	Atlantic Coastal Plain Clay-Based Carolina Bay Herbaceous Wetland	Yes	Yes	No
231	Southern Coastal Plain Herbaceous Seepage Bog	Yes	Yes	No
245	Atlantic Coastal Plain Central Salt and Brackish Tidal Marsh	Yes	No	No
248	Atlantic Coastal Plain Northern Tidal Salt Marsh	Yes	No	No

VALUE: A numerical value assigned to the habitat type by SE GAP
NAME: The name of the habitat type

Nat LC: Habitat was used ("yes") in Forested Natural Land Cover factor of the Water Quality Priority Index (WQPI)
Wet: Habitat was used ("yes") in creation of wetland distance-to layer of the Water Quality Priority Index
Ag LC: Habitat was used ("yes") in Agriculture Land Cover factor of the Water Quality Priority Index (WQPI)