

A Green Infrastructure Plan

to Restore, Connect, and Protect South Carolina's Habitats

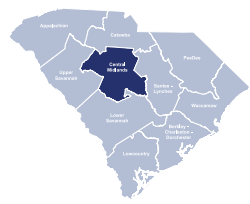


Planning for Green Infrastructure involves protecting and connecting the natural and cultural assets of the Lowcountry region.



March 2023

Prepared for the state of South Carolina by the Green Infrastructure Center
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Executive Summary

The Lowcountry Council of Governments (COG) region contains a rich and ecologically diverse landscape that supports many cultural assets, such as historic plantations and Native American sites, including prehistoric shell rings. Growth in the region continues with new residents and tourists drawn to the Lowcountry's beautiful beaches and vibrant towns. Collaboration between the counties and municipalities on strategies for managing growth and development, adapting to sea level rise, and mitigating storm surge are of vital importance for the region's resilience. Continuation of local efforts to conserve land, create regional partnerships, and establish both ordinances and planning guidance for growth that protects green infrastructure will ensure the beauty and culture of the Lowcountry landscape can continue for future generations.

The Lowcountry COG region is in the southernmost corner of the state, located between Savannah, GA, and Charleston, SC. It is bounded on the west by the Savannah River and on the east by the Edisto River. It encompasses the counties of Jasper, Beaufort, Hampton, and Colleton. The landscape includes beaches, dunes, sea islands, salt marsh, wetlands, forests, blackwater rivers, farms, and historic plantations with their iconic

moss-draped live oaks. Beaufort and Jasper County's natural beauty and vibrant coastal towns attract tourists and new residents, while Hampton and Colleton, predominantly rural counties, support agriculture and timber economies. Historic churches, historic African American/Gullah Geechee sites, and prehistoric shell rings, along with the present-day Gullah Geechee culture contribute to a unique sense of place. Approximately 21% of the land in the Lowcountry COG region is protected in several state parks, national wildlife refuges, wildlife management areas, military land, including the Marine Corps Air Station and the Marine Corps Recruit Depot in Beaufort County, and other open spaces.

This region is the ancestral home of the Yamasee, Muscogee, Westo, and Kusso Native Peoples.* The Muscogee Nation, a federally recognized tribe, was relocated to Oklahoma as a result of the 19th century Indian Removal Act, where they remain to this day. Additional native people likely include the Ashepoo, Combahee, Edisto, Escamacu, Hoya, Mayon, Stalame, Stono, Touppa, Wando, Wimbee, and Witcheaugh peoples.**



Widgeon Point Preserve is a 162 acre park co-owned by Beaufort County and the Beaufort County Open Land Trust with mixed pine-hardwood forest, maritime forest, and salt marsh.

Green Infrastructure Planning Process

This Green Infrastructure Plan comprises a set of maps and strategies for conserving and restoring a connected landscape in the state. GIC led the Lowcountry COG and local stakeholders through GIC's Six-Step Green Infrastructure Planning Process with a series of four workshops from 2021-22. This process involved mapping habitats cores and corridors, as well as existing natural and cultural assets, followed by risk analysis to inform strategies for action. With these data, local stakeholders determined priority areas for conservation in the region, as well as strategies to ensure a connected landscape into the future. GIC followed regional COG workshops with state agency engagement. The resulting statewide plan is informed by and includes the COG's regional priorities.

This COG chapter will appear as a separate document, distinct from the full report, since it is one of ten COG chapters that have been included in the statewide assessment. The full report can be found here: <https://scgiplan-gicinc.hub.arcgis.com/> or at www.gicinc.org or <https://www.scfc.gov/management/urban-forestry/>

The statewide scale of this project did not allow GIC to drill down to the level of county and city green infrastructure plans, but did establish important priorities for each region.

1. In the first workshop, GIC presented an overview of the project and shared a map of the region's ranked habitat cores. Feedback on the accuracy of the map and areas of development were noted and incorporated.
2. In the second workshop, GIC presented themed overlay maps that showed the region's agricultural soils, water resources, recreation, and cultural assets and asked workshop attendees to add their local input on additional assets, such as shell rings or cultural corridors. The final Lowcountry asset maps and dataset included new data recommended by participants.

Lowcountry FAST FACTS

- 1,847,040 acres**– total COG area (2,886 mi²)
- 1,048,320 acres**– of habitat cores (1,638 mi²)
- 57%** of COG land area is habitat cores
- 184,960 acres**– of protected cores (289 mi²)
- 18%** of habitat cores are protected
- 210,560 acres**– area of protected land (cores and other) (329 mi²)
- 11%** of total area are protected land
- 103,040 acres**– area of public parkland (161 mi²)
- 6%** of total land is public parkland
- 648,960 acres**– area of habitat cores with known cultural/archaeological resources (1,014 mi²)
- 321,920 acres**– area of habitat cores with highest value ranking (top 5th) (503 mi²)
- 376,960 acres**– area of habitat cores that intersect a groundwater protection zone (4589 mi²)
- 275,200 acres**– area of prime agricultural soils on open land (430 mi²)
- 7,680 acres** of wetlands (12 mi²)
- 906 mi of 1,265 mi (72%)**– miles of streams that flow within a habitat core
- 322 of 869 (37%)**– of habitat cores support cultural or recreational assets
- 49 of 869 (6%)**– habitat cores that support known rare, threatened, or endangered species



Lowcountry COG

3. In the third workshop, GIC presented draft maps of risks to habitat cores in the region, including development, utility-scale solar development, and impaired waters. Stakeholder feedback about these risks was used to update and finalize the risk maps.
4. In the fourth and final workshop, GIC shared a strategy map that showed ranked habitat cores, protected lands, and regional corridors. The stakeholders then considered priority habitats and risks to those assets and recommended strategies to reduce or prevent impacts to high-value resources.

6-Step Green Infrastructure Planning Process

- 1. Set Your Goals** What does your community value?
- 2. Review Data** What do we know or need to know, to map identified values? Combine the state modeled data with local data.
- 3. Map Your Community's Ecological and Cultural Assets** Based on the goals established in Step 1 and data from Step 2.
- 4. Assess Risk** What assets are most at risk and what could be lost, if no action was taken?
- 5. Rank Assets and Determine Opportunities** Based on those assets and risks you have identified, which ones should be restored or improved?
- 6. Implement Opportunities** Include natural asset maps in both daily and long-range planning (park planning, comp plans, zoning, tourism and economic development, seeking easements etc.)

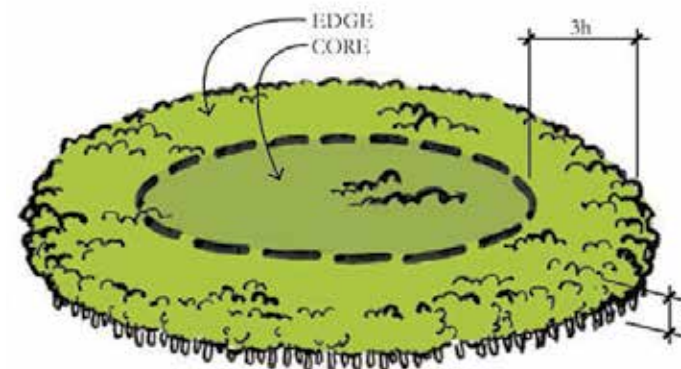
Habitat Cores

Habitat cores are intact areas of the landscape that provide adequate habitat to support native species and were modeled using source data from the 2019 National Land Cover Dataset. Habitat cores are forests, forested wetlands, and marshes at least 100 acres or more in size and are ranked using additional attributes such as water richness, topography, and the presence of rare, endangered, or threatened species. This size is large enough to provide adequate foraging and nesting habitat for interior forest dwelling birds and to support a range of other wildlife species.

Habitat cores encompass 57% of Lowcountry COG land area.

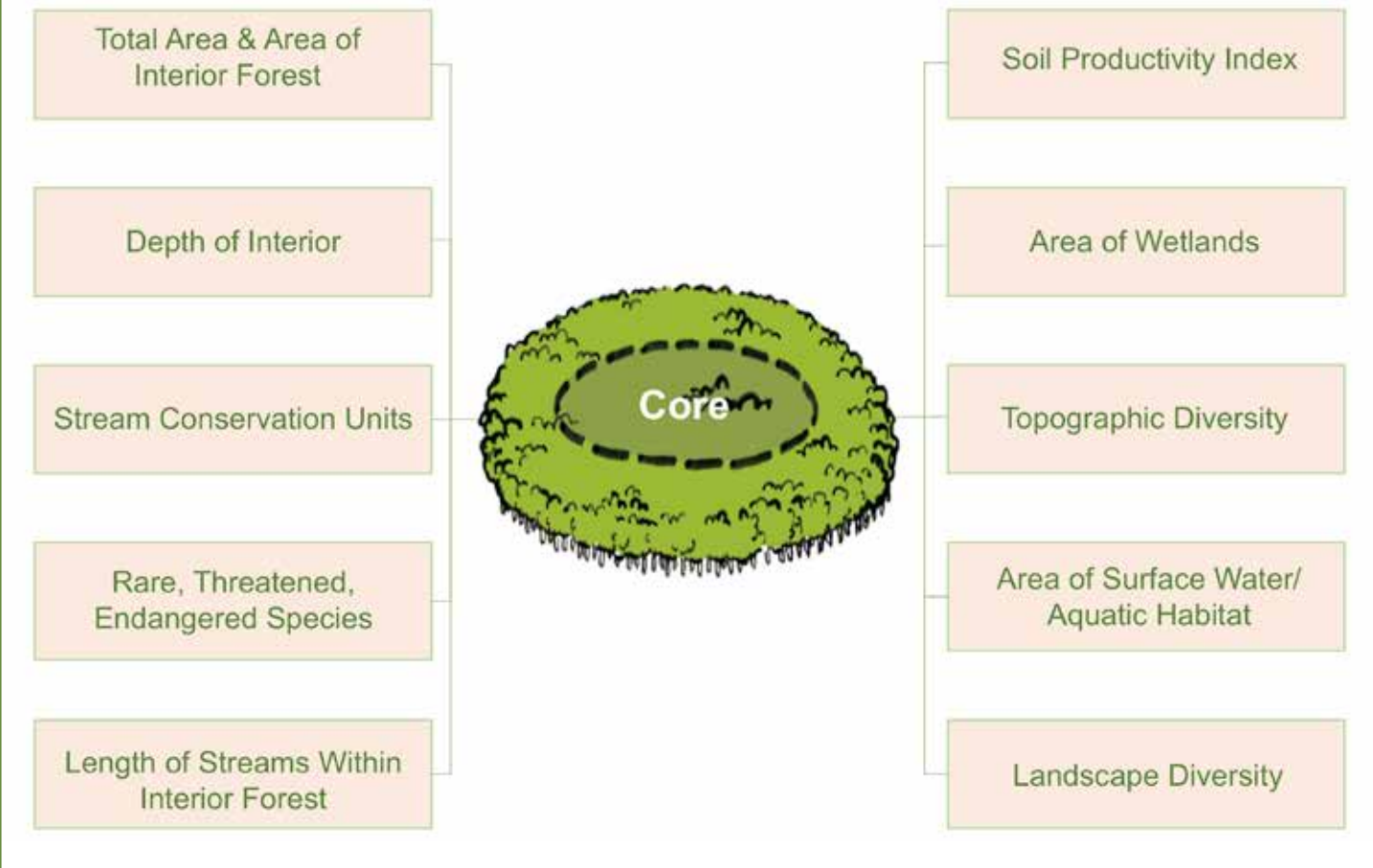
For more on how habitat cores are created, see the Methods and Maps section (page 7) and the Technical Appendix of the full report.

Ranking cores for the values they provide allows land-use planners, agency officials, and site managers to prioritize those specific habitat cores that best meet management goals and objectives, while providing the highest value for species.



Habitat cores consist of an area of intact interior wildlife habitat of 100 acres or more and an edge area that serves as a buffer absorbing impacts from outside the core.

Habitat cores are ranked based on these ecological metrics.

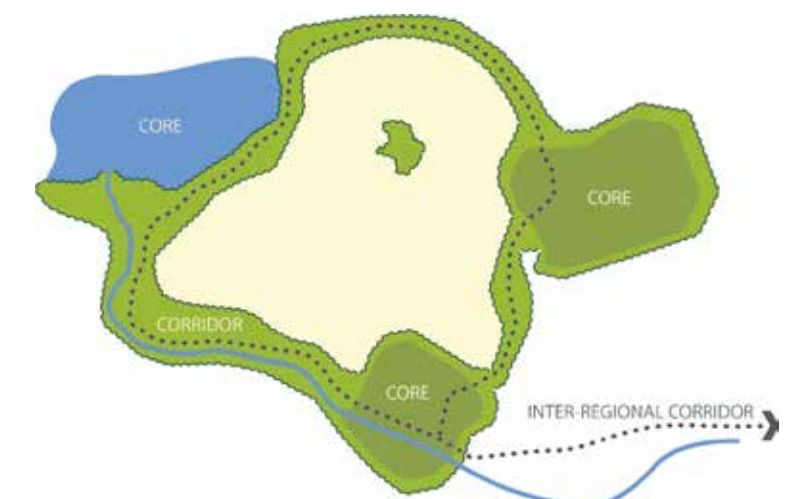


GIC modeled and mapped ranked habitat cores across both the region and state, based on ecological metrics, *see chart above*.

For more on corridor modeling see the Introduction section (pages 10 and 11) and the Technical Appendix of the full report.

Corridors

Wildlife moves between habitat cores along corridors that support biodiversity by allowing species to move across the landscape and repopulate areas following such disturbances as hurricanes or fires. Restoration or preservation of corridors may also present opportunities to incorporate trails for human recreation. In addition to regional corridors, GIC modeled corridors that are of statewide importance. A graphic representation of this connectivity is displayed on the maps as state and local corridor lines. As the region continues to grow, every effort should be made to continue to maintain these corridors for a more connected and resilient landscape.



Green Infrastructure planning is about connecting the landscape. Corridors provide connections between core habitats. A well-connected landscape is more resilient.



Lowcountry COG

Assets

Natural Assets are the environmental elements that provide healthy surroundings, recreational opportunities, and clean water and food for both people and wildlife. These natural assets include forests, waterways, wetlands, bays, agricultural soils, and other natural resources. *Cultural Assets* are the landscape elements or uses that people value, such as parks, boat landings, trails, historic or archaeological sites, or scenic vistas and roads that add to the beauty of the area. Natural assets support cultural assets by providing scenic backdrops to historic sites, buffering them from storms and providing settings in which to enjoy them, such as the trails through historic sites that engage visitors in history while they enjoy the natural surroundings. GIC mapped these assets using existing state and national datasets, as well as data from stakeholders. The asset maps include water, agriculture, recreation, and cultural assets. Locating these assets is the first step in protecting them and allows decision-makers and planners to make more informed decisions about growth and conservation.

Risks

Mapping important habitats, agricultural soils, and cultural sites is only a first step towards planning to conserve important assets into the future. Mapping risks, in order to understand which assets are most vulnerable is the next step. GIC analyzed the following risks across the state: sea level rise, storm surge, impaired waters, development, and solar development. These risk maps can be used to determine most critical regional risks and priority areas for conservation. Sea level rise maps can be used to determine areas to protect for marsh migration. Storm surge maps and impaired waters maps can be used to determine areas to target for riparian plantings. Development and solar development maps can guide conservation efforts, as well as planning policy. Tools to mitigate risk can also include planning for marsh migration, establishing solar ordinances, or drawing urban growth boundaries to avoid high-value habitat cores.

Lowcountry Risks



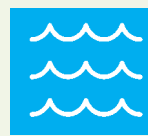
36 of 718 (5%) habitat cores with **impaired streams**



199 of 718 (28%) habitat cores at risk of **development**



141 of 718 (20%) habitat cores at risk of **solar development**



665 of 718 (93%) habitat cores at risk of **sea level rise**



223 of 718 (31%) habitat cores at risk of **storm surge**



707 of 718 (98%) habitat cores at **cumulative risk**



Sheldon Church Ruins

Regional Observations

The Lowcountry region's highest quality habitat cores include large swaths of coastal marshland. Additional high-quality cores are found along river corridors: the Savannah, Coosawatchie, Combahee, and Edisto rivers. The larger wildlife corridors in the region also follow these river corridors, so connectivity can be ensured by maintaining riparian buffers and seeking conservation easements along these rivers. Prime agricultural soils in the region are found in Hampton and Colleton counties.

The region supports cultural assets, such as historic churches and battlefields, as well as historic fishing sites, with a higher concentrations found in the coastal counties of Beaufort and Jasper. Additionally, recreation opportunities, such as hiking in a state park, paddling a blueway trail, or biking along the Spanish Moss Trail, abound in Jasper and Beaufort counties. The number of assets highlighted in the maps are the result of participation by stakeholders, so those counties that participated in the process are likely to see more assets represented on the maps.

Protected land makes up 21% of the total area in the Lowcountry COG, one of the highest percentages in the state and above the statewide rate of 14%. The Governor has adopted the 30 by 30 goal to preserve 30% of the state by 2030. The region is well on its way to achieving this goal and should continue to work with the Open Land Trust, Lowcountry Land Trust, and other organizations to protect high-value habitat cores and corridors in the region. Currently, 26% of regional habitat cores are protected and the habitat cores and corridors map shows the most important lands that still need protection. Public park land in the region is only 1% of the total area, below the 5% statewide rate, and one of the lowest percentages across the state. PRT and local governments should prioritize more high-quality public park space in the region and habitat cores should be a key consideration for locating future parkland.

Marshes and floodplains are extensive in the region and sea level rise and storm surge are risks likely to impact habitats and human use of the land in the coastal counties of Jasper, Beaufort, and Colleton, as well as sections of Hampton County over the next 40 years. Another risk for the region is urban development, especially suburban sprawl-patterned growth.

Regional Stakeholders

Participants in the Lowcountry stakeholder workshops include representatives from:

- Lowcountry Council of Governments
- Beaufort County
- Colleton County
- City of Beaufort
- Town of Hilton Head
- Town of Bluffton
- Town of Hardeeville
- Lowcountry Land Trust
- Beaufort Conservation District
- Port Royal Sound Foundation
- Gullah Geechee Island Coalition
- SC Coastal Conservation League
- SC Department of Natural Resources
- SC Forestry Commission
- SC Department of Health and Environmental Control

Development risks are greatest along the I-95 corridor, in the Hardeeville area, and in coastal population centers. Solar development risk is highest in Hampton and Colleton counties where much of the region's prime agricultural soils are also located. Data-driven planning used to guide smart growth, new ordinances, and land protection will be critical to maintain habitat connectivity, food production capability, and resiliency in the face of the many risks facing this region.

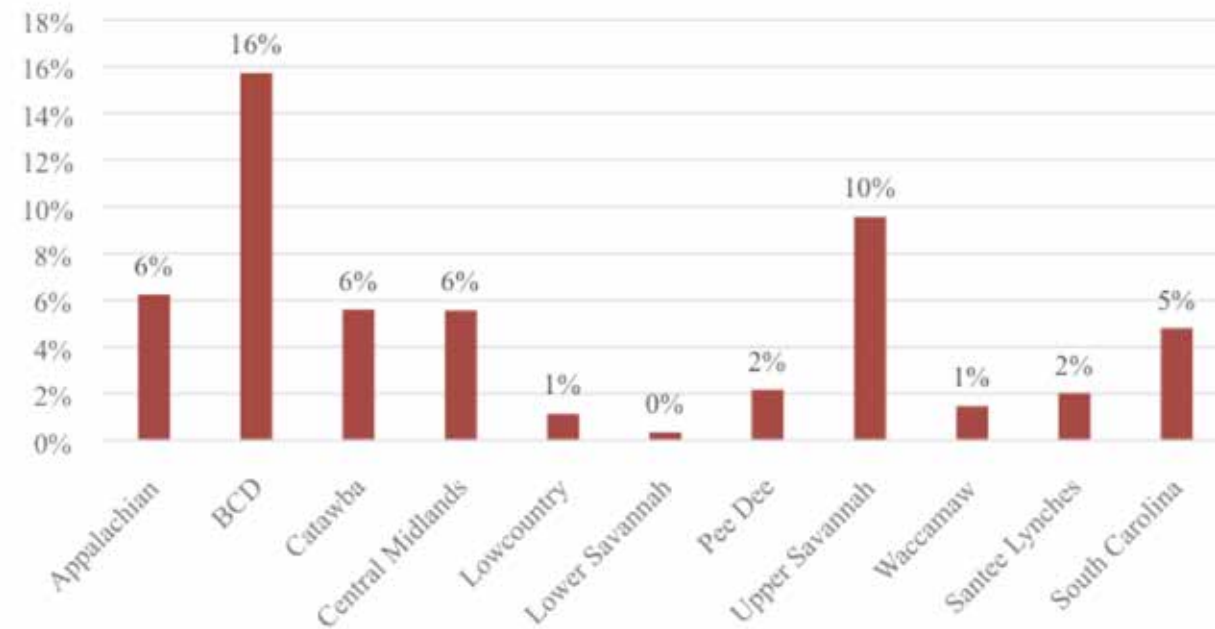


Port Royal Sound



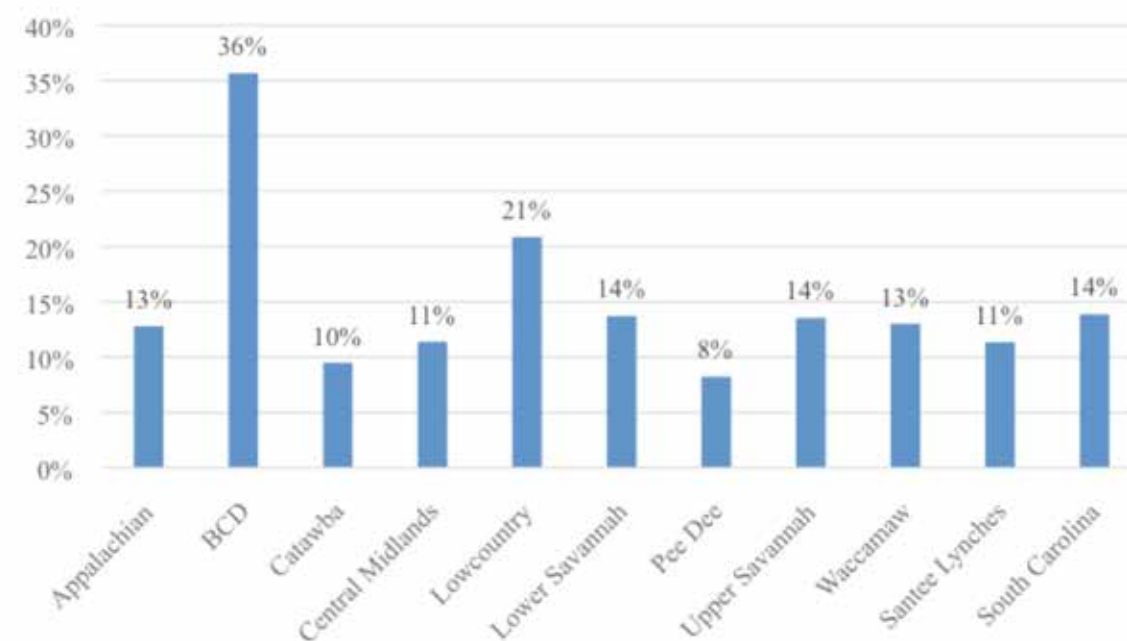
Lowcountry COG

Percentage of Total Area that is Public Park Land



The percentage of public park land in the Lowcountry region is only 1%, one of the lowest rates in the state and well below the 5% statewide rate.

Percentage of Total Area that is Protected Land



The percentage of protected land in the Lowcountry region is one of the highest in the state at 21% and is above the 14% statewide rate.

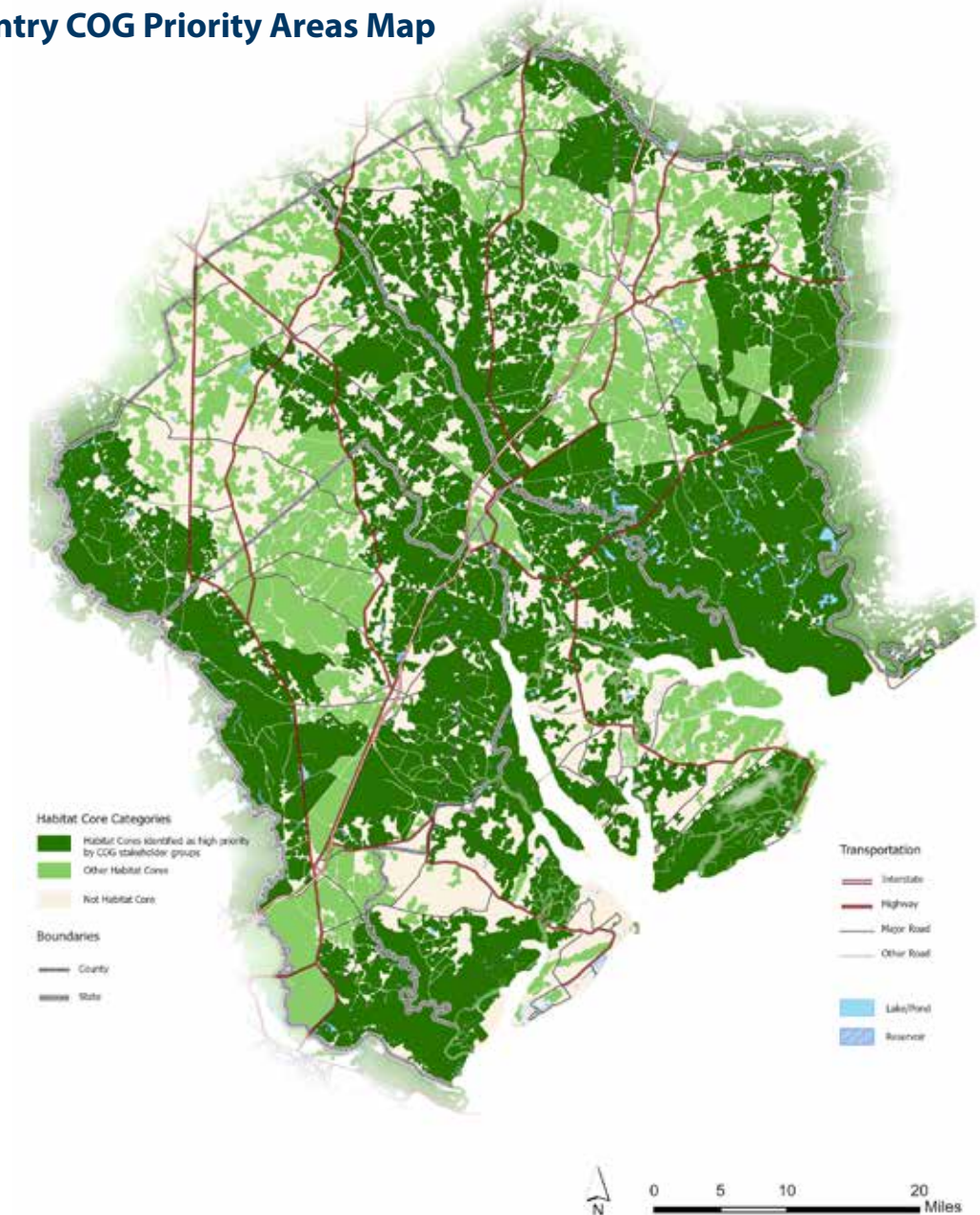
Lowcountry Priority Areas

Lowcountry stakeholders identified several areas in the region that are priorities for protection and restoration.

- The Savannah River Corridor and Port Royal Sound are priorities for protection and restoration in the region.
- Additional priorities for protection include the Dafuskie Area, Upper Combahee Area, Lower Coosawatchie Area, Lower ACE Basin, and Cottageville Area.

■ Acquisitions are underway on the Coosawatchie River in Jasper and Hampton counties for what will become a 12,000 acre Wildlife Management Area (WMA). The Slater Tract and 2 Buckfield Tracts are being purchased by OSI and TNC and will be transferred to SC DNR for the WMA.

Lowcountry COG Priority Areas Map



This map illustrates the habitat cores corresponding to the COG identified priority areas for protection and restoration.



Lowcountry COG

Lowcountry Strategies

Project maps to inform these strategies can be found at the end of this chapter as well as on the project HUB site <https://scgiplan-gicinc.hub.arcgis.com/>. Users can access all the data online and download data for any county.

Strategy 1: Beaufort County is planning for green infrastructure with the Green Print Plan.

The Green Print Plan identifies cultural landscapes, recreation, clean water, critical habitat, hazard zones, and open space connectivity as priority land to protect through the Rural and Critical Land Preservation Program and conservation partners. Beaufort County should compare the Green Print priority lands with the habitat cores and risks data prepared for the Lowcountry COG.

Strategy 2: Implement a Green Space Sales Tax.

Beaufort County passed a Green Space Sales Tax to generate \$100 million over 2 years to purchase and protect critical lands. Jasper, Hampton, and Colleton counties should consider placing the Green Space Sales Tax on their ballots to raise funds to conserve more land in the region. Counties can use the funds collaboratively to protect land across county boundaries.

Strategy 3: Expand the use of collaborative regional planning.

Beaufort County, Bluffton, and Hilton Head Island should collaboratively assess differences in environmental protections, zoning, and ordinances and create complementary environmental protections to ensure greater regional resiliency.

Strategy 4: Formation of Port Royal Sound Task Force.

A Port Royal Sound Task Force, a partnership of state and federal governmental representatives, nonprofit conservation organizations, and private landowners, should be created to formalize protection of the sound.

Strategy 5: Establish urban growth boundaries for municipalities in the region.

Establish urban growth boundaries for all municipalities in the region and utilize habitat cores and corridors data to inform regional collaboration on protecting green infrastructure.

Strategy 6: Create and strengthen solar ordinances.

Create solar ordinances in Colleton and Hampton counties. Strengthen solar ordinances in Beaufort and Jasper counties. The South Carolina Energy Office has resources for creating or updating solar ordinances and model solar ordinances.

Strategy 7: Apply for Sentinel Landscape designation for the region.

The Beaufort County Open Land Trust applied for Sentinel Landscape designation for the Lowcountry region. The Sentinel Landscape program protects natural and working lands that surround military facilities from incompatible developments. Once an area is designated, the USDA, Department of Defense and Department of the Interior work with local partners to provide private landowners education and assistance for sustainable management practices and conservation easements. The Sentinel Landscape program protects wildlife habitat and natural resources, supports sustainable agriculture and forestry, and strengthens military readiness by minimizing land use conflicts near military bases. The Sentinel Landscape designation will help protect more land in the Lowcountry.

Strategy 8: Document and protect significant cultural resources in the region.

Use the GIS data from this project as a foundation to locate and document other significant cultural resources in the region and protect these resources into the future.

Strategy 9: Establish wildlife-urban interface prescribed fire overlays in zoning.

Homeowners in new rural residential developments often do not understand the risks and management practices associated with rural lands such as prescribed burning. Clear communication about prescribed burns and wildfire risks will reduce misunderstandings and conflicts. Establish Wildland-Urban Interface overlays in county/town zoning and incorporate language to allow for prescribed burns and warn of wildfires. Require HOA's to incorporate similar language.

Strategy 10: Develop community wildfire protection plans.

Residential developments in rural forested areas should develop wildfire protection plans.

Strategy 11: Hilton Head Island will continue to use tree canopy assessment data to plan for green infrastructure and to become more resilient.

Hilton Head Island received a technical support grant from the SCFC to receive an urban tree canopy assessment and planning assistance. The city is now using these data to prioritize new tree plantings and plan for urban forest storm resiliency.

Next Steps

The data created for this plan are a foundation upon which to build a detailed local Green Infrastructure Plan. Any municipality or county wishing to pursue a more detailed local plan should contact GIC.

The purpose of this project was to identify and prioritize those green infrastructure assets that most urgently require protection or restoration in the state. The strategies and maps of habitat cores, corridors, assets, risks, and priorities provide a roadmap and shared vision for conservation and restoration efforts of state agencies, counties, cities, and landowners. Moving forward, agencies, planners, and citizens can view and download these priorities, maps, and data through the HUB site GIC has created in partnership with Esri. Additionally, the GIS datasets have been disseminated to all the agencies, municipalities, and organizations involved in this project to use in land use decisions and conservation planning. <https://scgiplan-gicinc.hub.arcgis.com/>



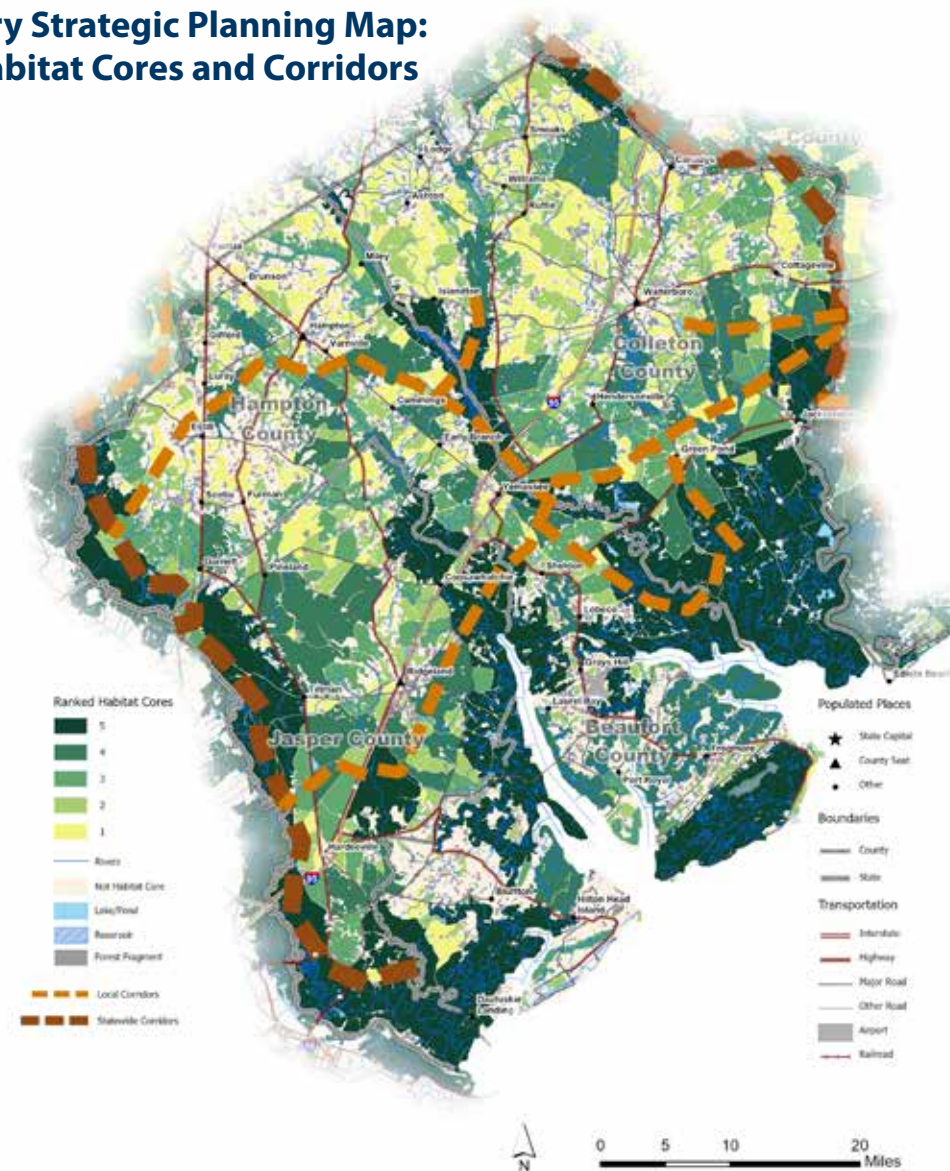
Port Royal Sound



Lowcountry COG

Maps

Lowcountry Strategic Planning Map: Ranked Habitat Cores and Corridors



Habitat cores are intact natural landscapes large enough to support interior forest or marsh dwelling species. This map depicts the region's habitat cores and shows them connected by corridors to form a network. The more connected the landscape, the more resilient it is and the more pathways there are for people, pollinators, and plants. The habitat cores are ranked based on ecological metrics, with dark green representing the highest quality habitat cores and yellow representing the lowest quality habitat cores. A ranking of 5 is the best and 1 is the lowest. Additionally, statewide and regional wildlife corridors are represented on this map by brown dashed lines.

View all these maps on line and download habitat core data at:
<https://scgiplan-gicinc.hub.arcgis.com/>

Lowcountry Assets: Agriculture Map

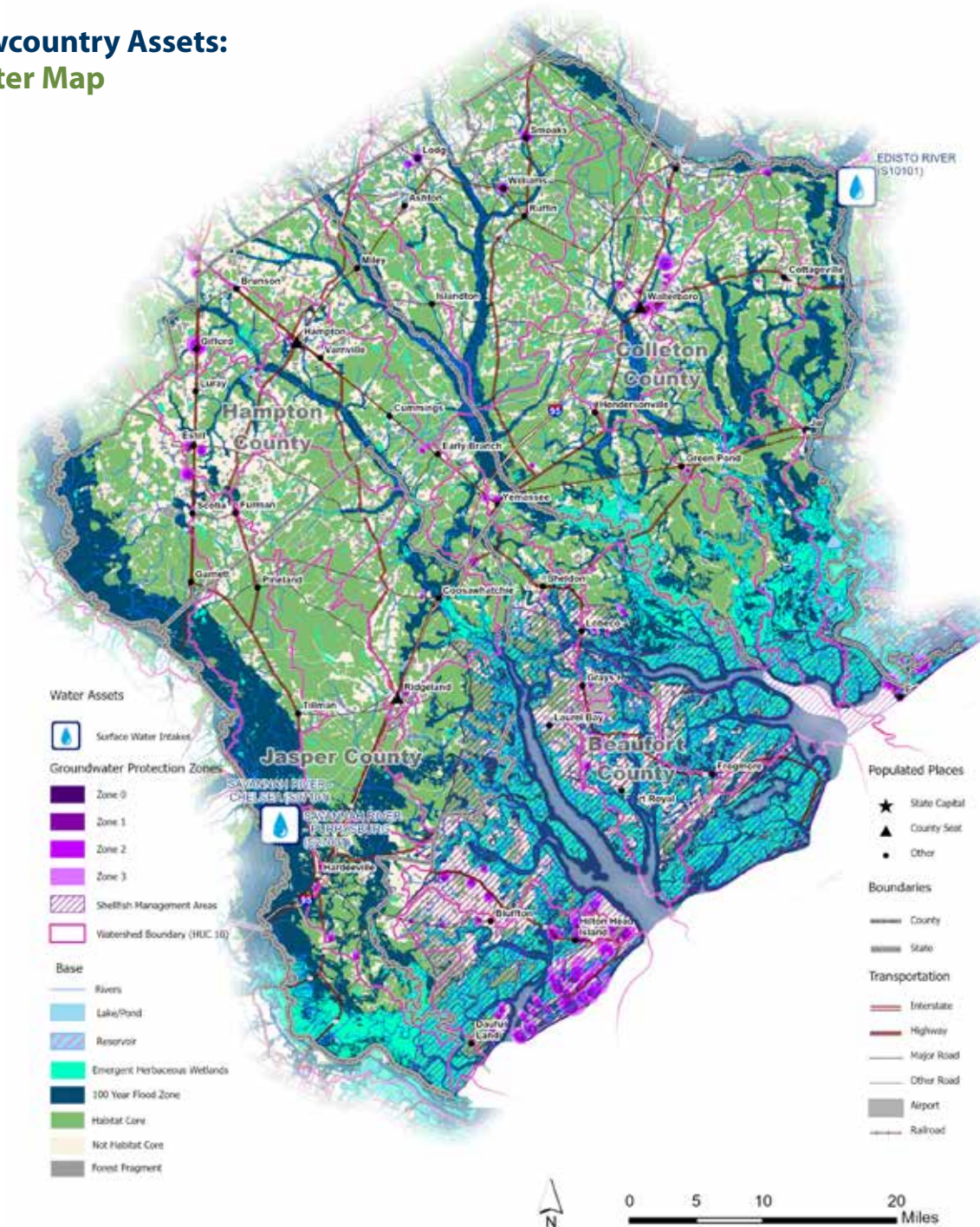


This map identifies the highest quality agriculture soils (classes 1 and 2) on open land, as well as agricultural easements in the region.



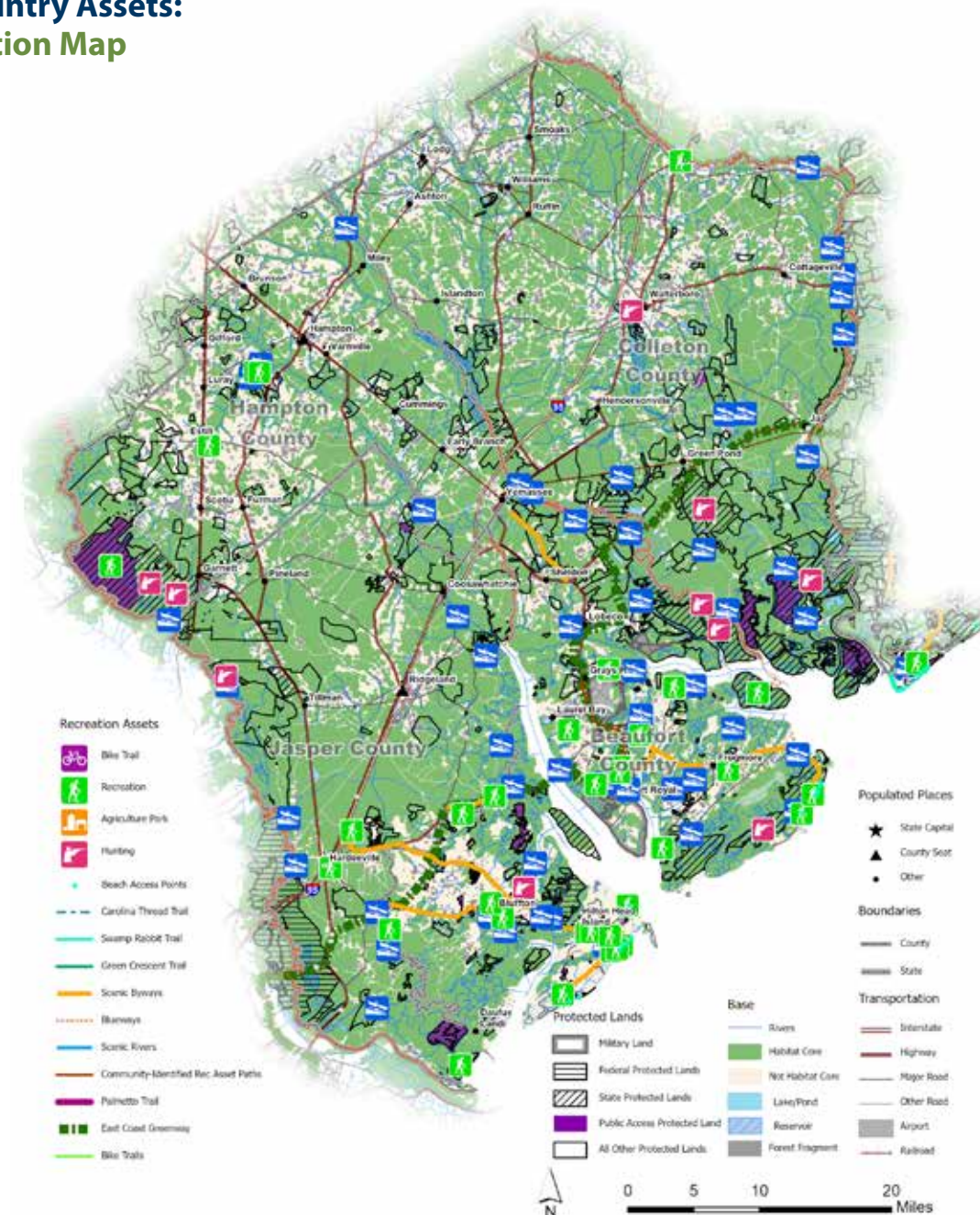
Lowcountry COG

Lowcountry Assets: Water Map



This map depicts drinking water reservoirs, surface water intakes, groundwater protection zones, and the 100-year floodplain in the Lowcountry region. The many forests and wetlands in the region help cleanse runoff to protect surface water quality and provide groundwater recharge.

Lowcountry Assets: Recreation Map

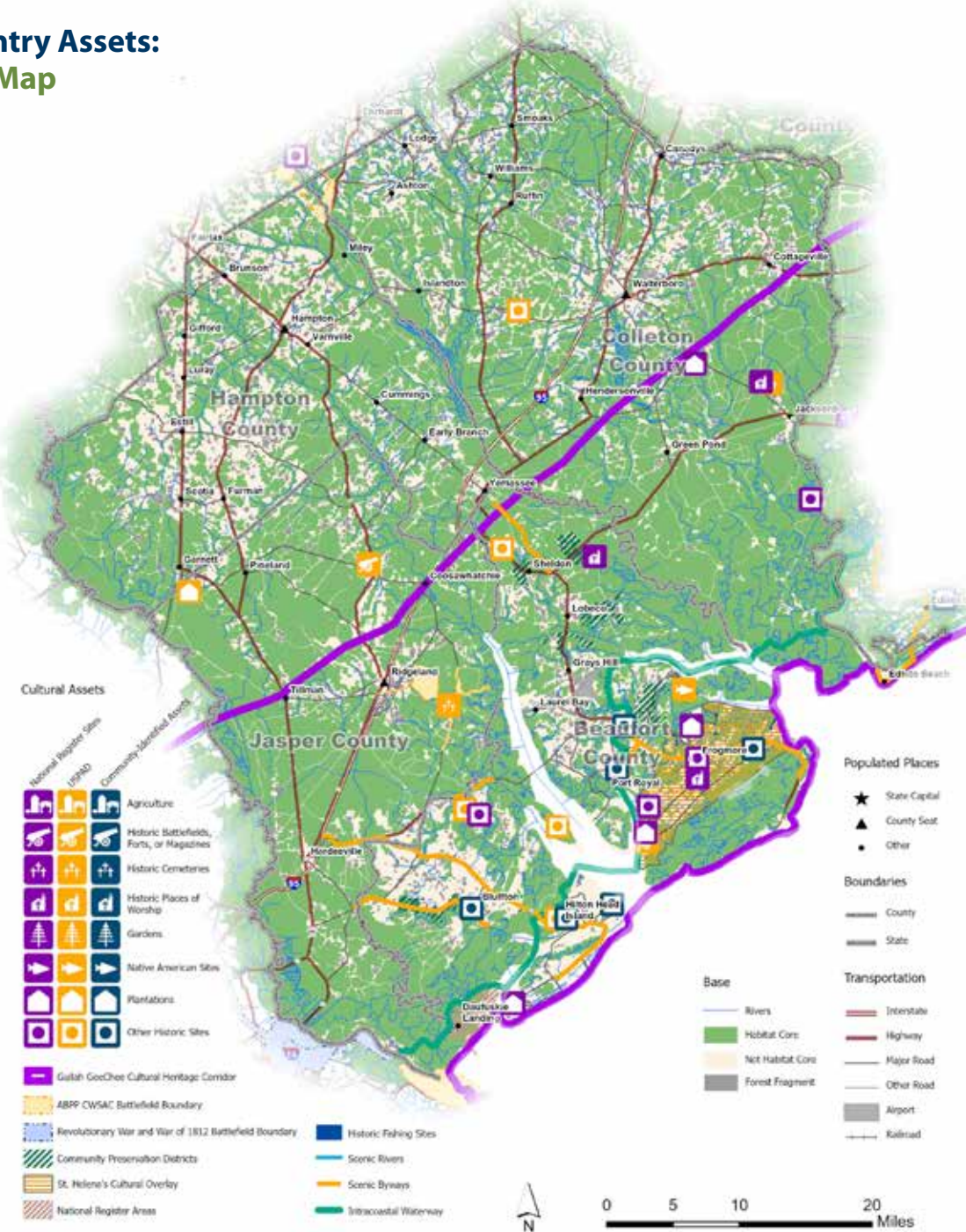


This map depicts boat ramps, blueways, scenic rivers, scenic highways, greenways, Wildlife Management Areas, and federal, state, and local parks over 10 acres in the Lowcountry region. Many recreational activities depend on a healthy landscape for their enjoyment, such as hiking, birding, boating, fishing, hunting, and other nature-based sports. A healthy landscape provides both access and scenic settings for enjoying the outdoors. Large intact habitats provide refuge, shelter, and food for the many species that residents and tourists appreciate when enjoying the outdoors.



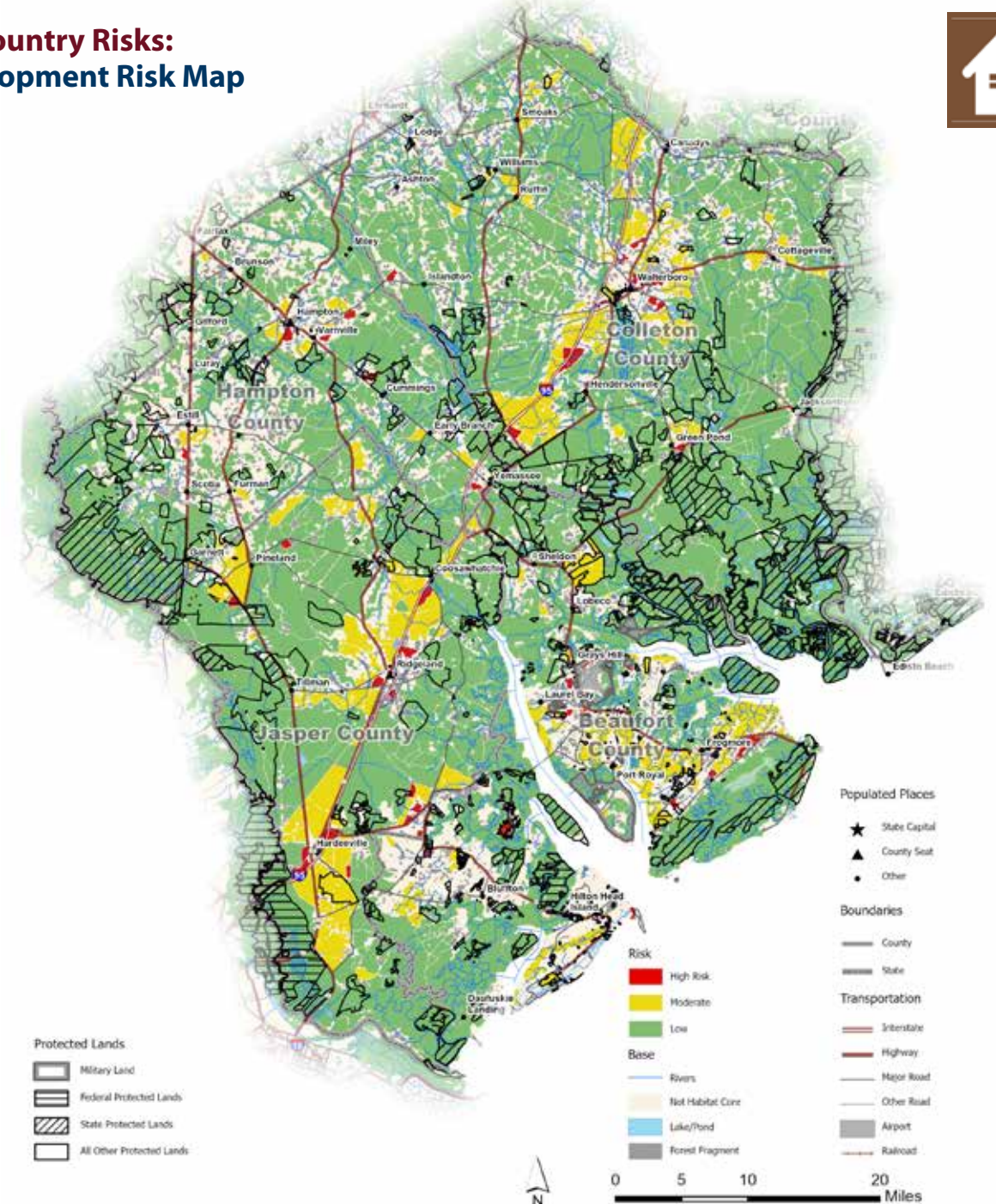
Lowcountry COG

Lowcountry Assets: Culture Map



This map displays historic sites, Native Peoples sites, cultural overlay districts, scenic highways, scenic rivers, and waterfalls in the Lowcountry region. Natural landscapes provide the context, backdrops, and buffers for these sites and contribute to their settings and beauty.

Lowcountry Risks: Development Risk Map

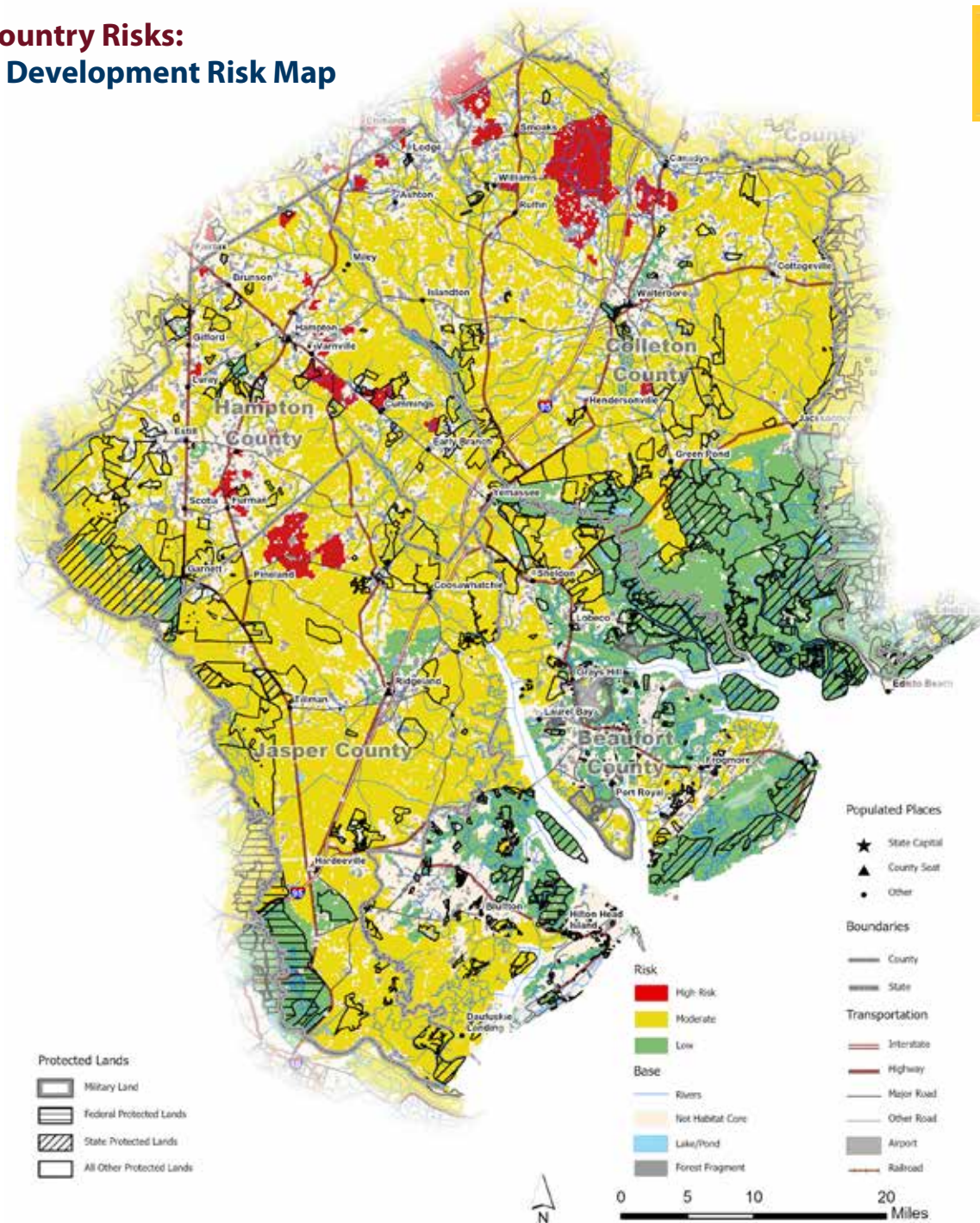


This map depicts the level of development risk based on the SLEUTH Urban Growth Model projected to the year 2060, with protected lands excluded.



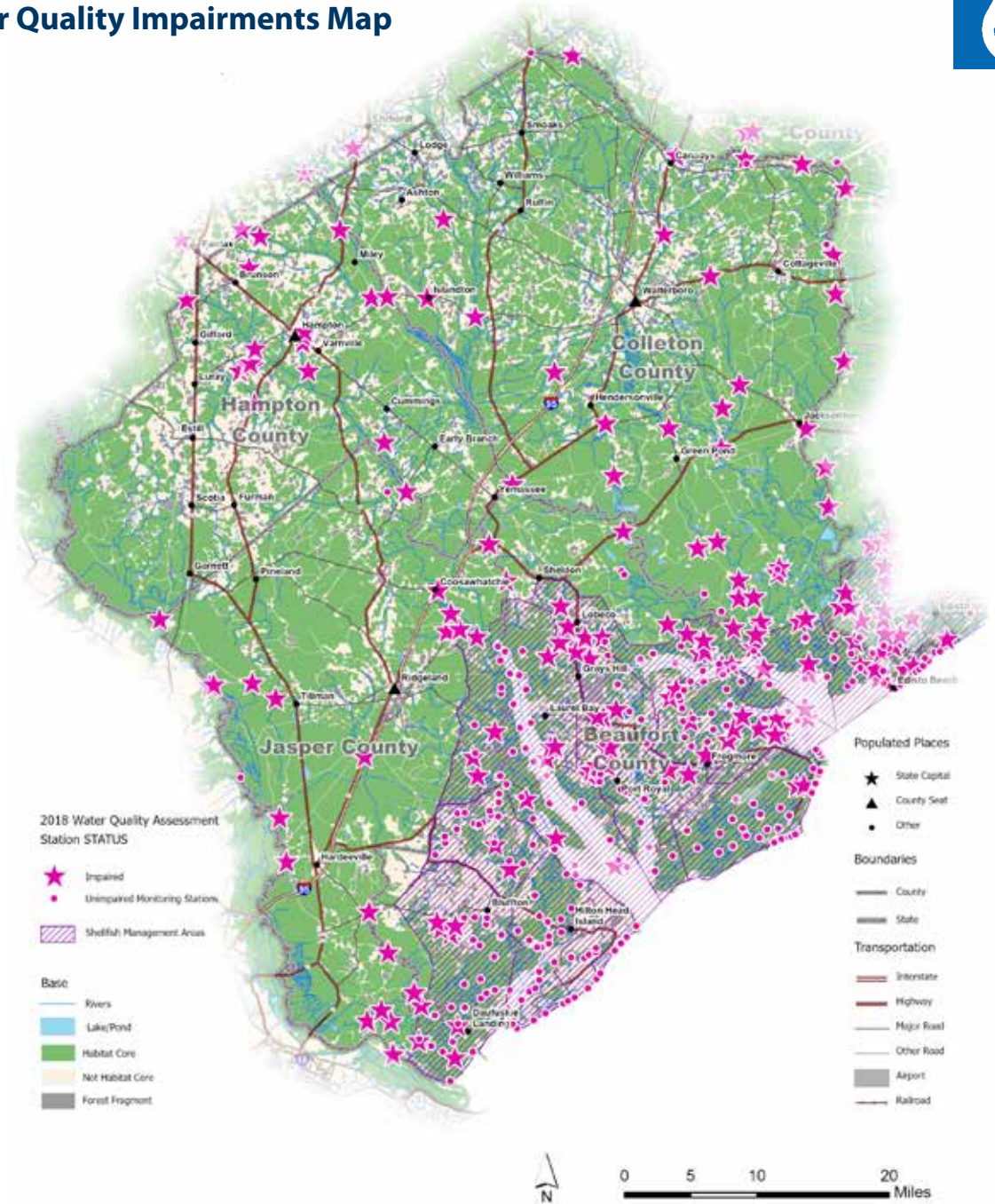
Lowcountry COG

Lowcountry Risks: Solar Development Risk Map



This map depicts the level of solar development risk based on Argonne Lab's Solar Site Suitability Analysis, with wetlands and protected lands excluded.

Lowcountry Risks: Water Quality Impairments Map

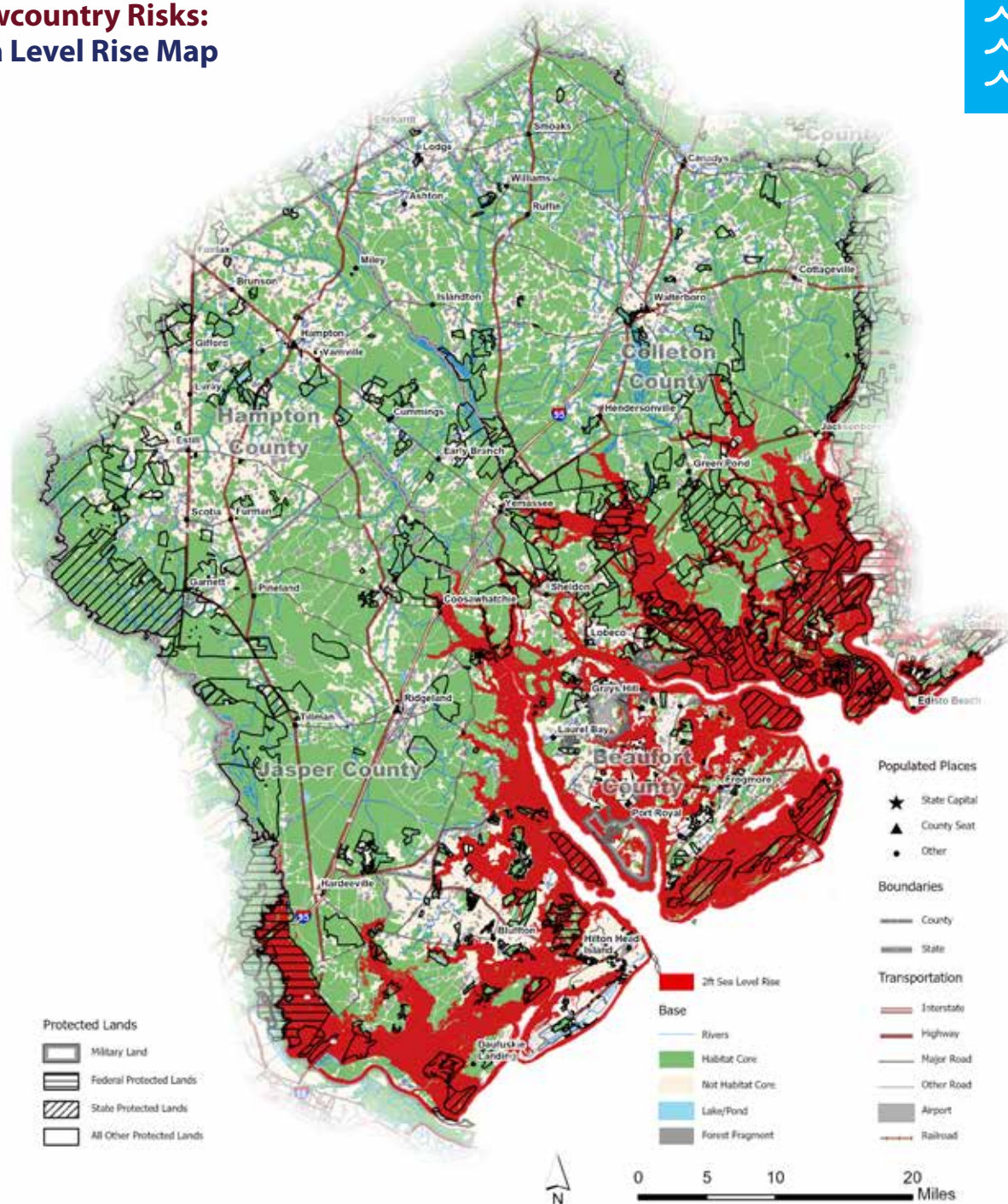


This map depicts water quality assessment sites and specific impairments across the region, and includes SC DHEC Water Quality Assessment data.



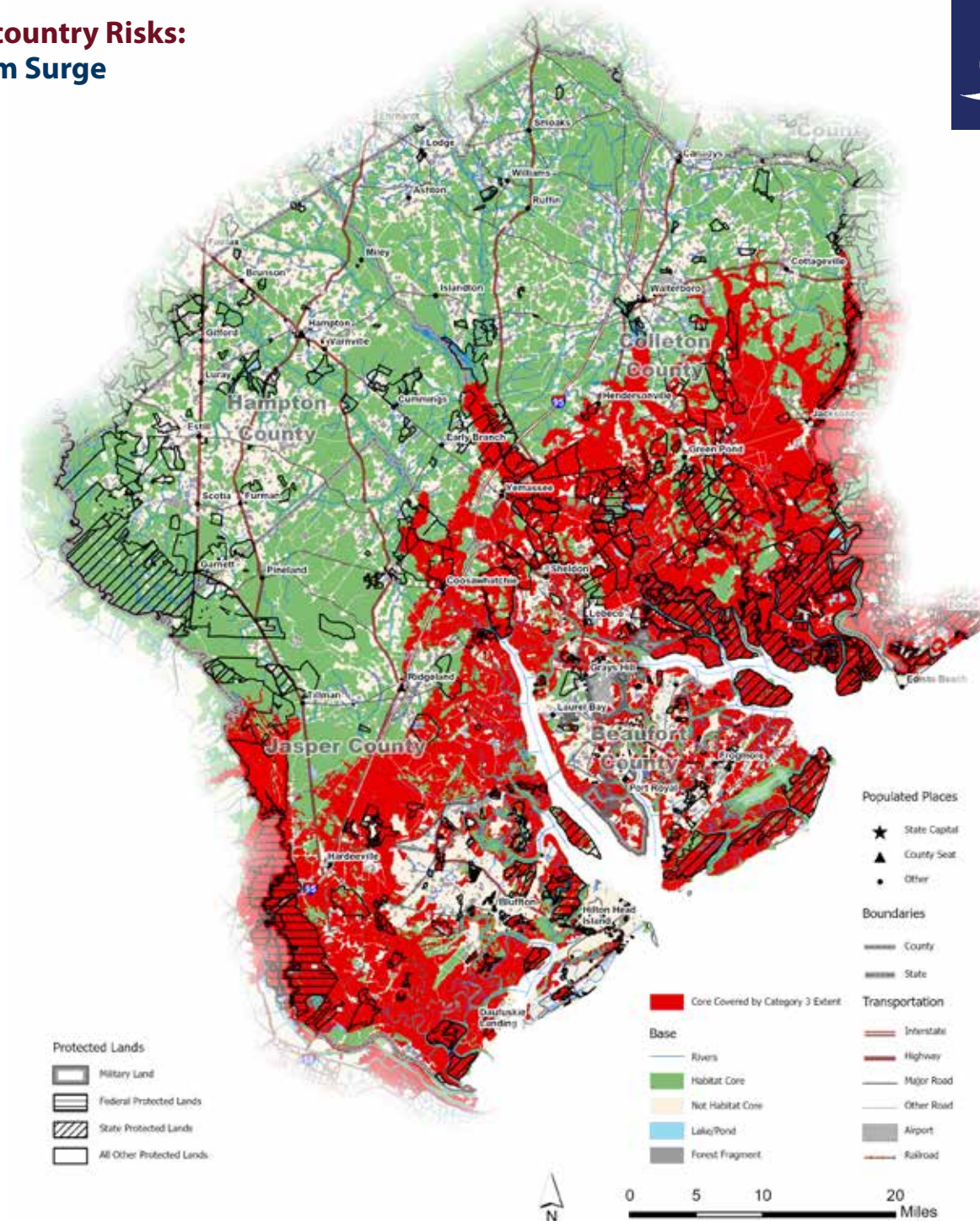
Lowcountry COG

Lowcountry Risks: Sea Level Rise Map



This map shows in red the core areas that will be inundated by 2 ft sea level rise based on the intermediate-high curve for the year 2060 in NOAA's 2017 sea level rise data.

Lowcountry Risks: Storm Surge



This map shows in red the core areas that will be inundated by a Category 3 storm based on NOAA's SLOSH model for storm surge.

Notes

*Native people of the Lowcountry region as shown on Native Land Map:

Disclaimer from <https://native-land.ca/>

This map does not represent or intend to represent official or legal boundaries of any Indigenous Nations. To learn about definitive boundaries, contact the nations in question.

**Additional Native people of the Lowcountry:

<https://www.ccpl.org/charleston-time-machine/first-people-south-carolina-lowcountry>

Waddell, Gene. 1980. Indians of the South Carolina Lowcountry, 1562-1751. Columbia, SC: Southern Studies Program, University of South Carolina.

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