

The Coastal Program in South Carolina

The South Carolina Coastal Program (SCCP) was established in the mid-1990's to enhance partnerships developed to conserve the natural resources of South Carolina's coastal plain. Significant coastal resources were identified, potential threats were determined, and a strategic plan was developed based on the concept of ecosystem management. A key component of the original plan was the conservation of private lands via conservation easements. Since the 1990's, the SCCP has directly and indirectly assisted with the permanent protection of private lands across the South Carolina coastal plain. In addition, the program initiated restoration projects within numerous habitats including maritime forests, longleaf pine forests, and intertidal marsh. With this revised strategic plan, the SCCP will build off the program's success and develop new strategies for emerging issues with a continued focus on public/private partnerships. The SCCP will target focal species and their habitats (see table below), but will also work through these partnerships to support numerous additional species as specific concerns emerge. In addition, the SCCP will expand into Georgia with the development on two new geographic sub-focus areas.

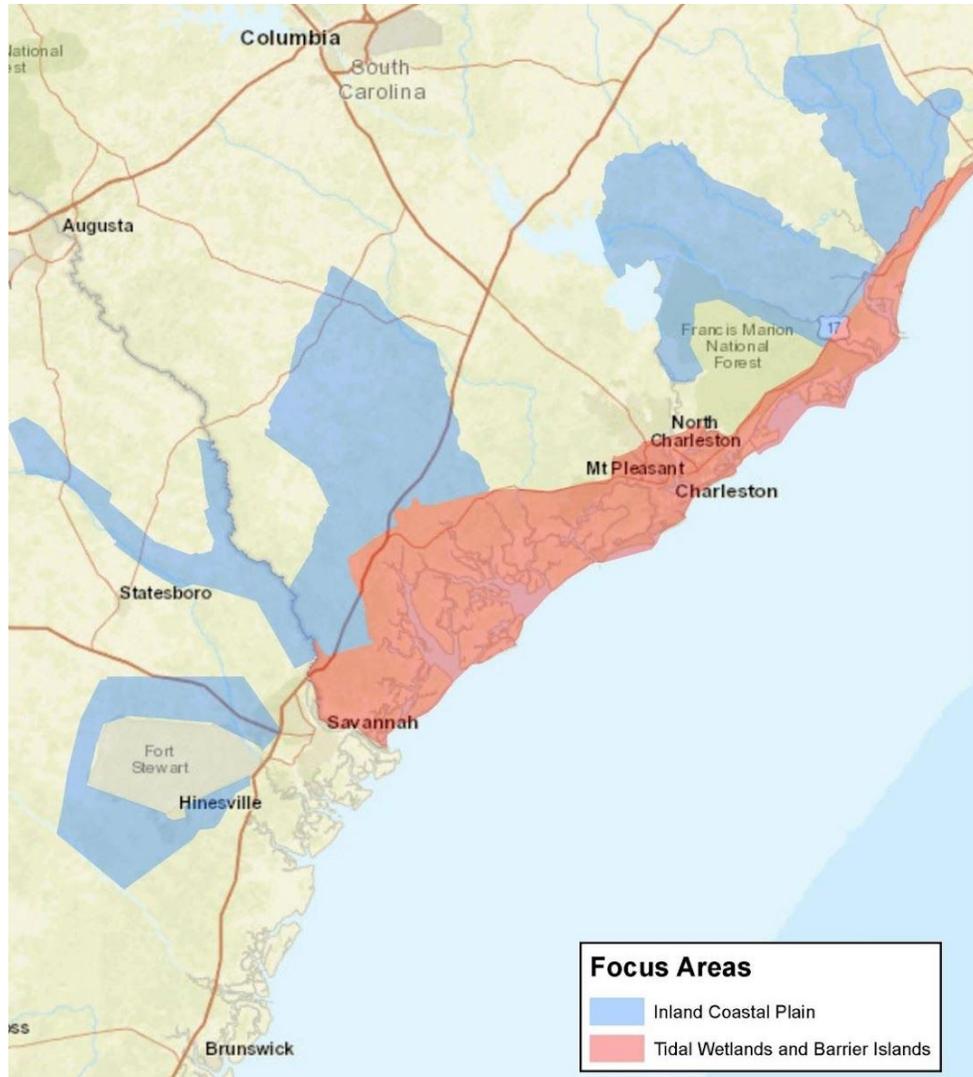
The SCCP has developed two new strategic focus areas, the Inland Coastal Plain Focus Area and the Tidal Wetland and Barrier Islands Focus Area. These focus areas encompasses several major river watersheds, key conservation areas, and vital wildlife corridors in Georgia and South Carolina. They were conceived based upon the occurrence of federally threatened, endangered, and at-risk species; current partnerships; the 2015 South Carolina State Wildlife Action Plan (SC SWAP); the South Carolina Field Office Strategic Plan; and consultation with the Georgia Ecological Services Field Office. These elements, and especially the Landscape Conservation Design analysis (South Atlantic Landscape Conservation Cooperative Blueprint 2.0) and focal watersheds determined the final boundary and inclusion of specific, fundamental areas. The Inland Coastal Plain Focus Area includes portions of the Pee Dee, Savannah, Edisto, Santee, and Ogeechee River watersheds. The Tidal Wetland and Barrier Islands Focus Area includes the majority of the South Carolina coast inland to the freshwater/saltwater divide. Through public/private partnerships, several hundred thousand acres have been permanently protected within these focus areas, including five national wildlife refuges (Cape Romain, Waccamaw, ACE, Pinckney Island, and Savannah).

There are a diversity of habitats within both focus areas including longleaf pine uplands, alluvial and blackwater rivers and associated floodplains, forested wetlands, Carolina Bays, managed tidal wetlands, and maritime forests. Many of these habitats are rare and or declining as a result of conversion for agriculture or silviculture, urban development, or lack

of proper management. Subsequently, many species of wildlife utilizing these habitats have become threatened, endangered, or have declined. These habitats are also critically important for the South Carolina and Georgia economy by supporting game species, nursery areas for finfish, shellfish, and sportfish, and passive recreational areas for locals and tourists. The floodplains, marshes, and numerous other wetlands facilitate the retention and slow release of stormwater runoff, filter pollutants and trap suspended sediments, and provide a significant buffer during tropical storms. In addition, these focus areas contains some of the area's most historic and valuable cultural resources. These include a vast assortment of structures on the National Register of Historic Places, historic graveyards and churchyards, and archeological heritage sites. These areas represent not only South Carolina's and Georgia's history, but also their role in American history, many of which are directly associated with their unique natural resources (i.e. historic ricefields).

There are numerous threats within the Inland Coastal Plain and Tidal Marshes and Barrier Island Focus Areas, many of which are anthropogenic in nature. These include forest fragmentation, urban and resort development, point and non-point source pollution, and spread of exotic, invasive species. However, one of the greatest threats is global climate change. Global climate change and subsequent sea level rise, are already resulting in an increase in coastal flooding, the loss of forested wetlands from saltwater encroachment, the erosion of barrier islands, and the conversion of marshes to open water. In addition, global climate change leads to a shift in weather patterns such that rain events become less frequent but also more intense. This can lead to both an increase in droughts and flood events resulting in stressors within habitat far inland (i.e. longleaf pine).

The South Carolina Coastal Program Focus Areas



Focal Species and Habitats

Maritime Strand and associated Estuarine Wetlands:			
Species	Scientific Name	Conservation Plan	Conservation Actions
Monarch Butterfly (ARS)	<i>Danaus plexippus</i>	North American Monarch Conservation Plan	Surveys during fall migration and overwintering; protection of coastal feeding and roosting habitat; and restoration of coastal meadows.
American Wood Stork (T)	<i>Mycteria americana</i>	Wood Stork Recovery Plan (1997), South Atlantic Migratory Bird Initiative	Control of nuisance vegetation within rookeries; protection of rookeries and foraging areas; and aerial surveys.

Black Rail (ARS)	<i>Laterallus jamaicensis</i>	SC SWAP, South Atlantic Migratory Bird Initiative	Surveys; protection of managed tidal wetlands; and enhancement of tidal wetlands (i.e. replace failing water control structures.
Eastern Oyster	<i>Crassostrea virginica</i>	South Atlantic Fishery Management Council Habitat Plan, Southeast Aquatic Resources Partnership's Southeast Aquatic Habitat Plan	Living shoreline construction; research using varying materials/methods for construction; and spartina plug plantings for erosion control.
MacGillivray's Seaside Sparrow (ARS)	<i>Ammodramus maritimus macgillivraii</i>	South Atlantic Migratory Bird Initiative	Banding; and surveys.
American Black duck	<i>Anas rubripes</i>	SC SWAP, North American Waterfowl Management Plan, South Atlantic Migratory Bird Initiative	Habitat protection; invasive species control; and enhancement of managed tidal wetlands (i.e. replace failing water control structures.
Lesser yellowlegs	<i>Tringa flavipes</i>	SC SWAP, South Atlantic Migratory Bird Initiative, Atlantic Flyway Shorebird Initiative	Habitat protection; invasive species control; enhancement of managed tidal wetlands; and target management to in these wetlands to provide seasonal habitat.
Semipalmated sandpiper	<i>Calidrius pusilla</i>	SC SWAP, U.S. Shorebird Conservation Plan, Atlantic Flyway Shorebird Initiative, South Atlantic Migratory Bird Initiative	Habitat protection; invasive species control; enhancement of managed tidal wetlands; target management to in these wetlands to provide seasonal habitat; and living shoreline establishment.
Palustrine Wetlands:			
Canby's dropwort (E)	<i>Oxypolis canbyi</i>	Canby's dropwort Recovery Plan (1990)	Surveys; removal of pines within bays/wetlands; and plantings.
Carolina-birds-in-a-nest (ARS)	<i>Macbridea caroliniana</i>	SC SWAP	Surveys; and habitat enhancement.
Frosted Flatwoods Salamander (T)	<i>Ambystoma cingulatum</i>	SC SWAP, Determination of Status for Reticulated Flatwoods Salamander (2009)	Surveys; removal of pines within bays/wetlands; prescribed fire; and population augmentation.
Longleaf Pine Forests:			

Red-cockaded woodpecker (E)	<i>Picoides borealis</i>	Red-cockaded woodpecker Recovery Plan (2003), SALCC Blueprint, South Atlantic Migratory Bird Initiative	Translocations; population augmentation/reintroduction; prescribed fire; and longleaf pine planting.
Bobwhite Quail	<i>Colinus virginianus</i>	SC SWAP, SC Bobwhite Initiative, SALCC Blueprint, South Atlantic Migratory Bird Initiative	Native grass establishment; longleaf pine planting; prescribed burning; and research.
American chaffseed (E)	<i>Schwalbea americana</i>	American chaffseed Recovery Plan (1982)	Surveys; prescribed fire; and plantings.
Gopher tortoise (C)	<i>Gopherus polyphemus</i>	SC SWAP	Longleaf pine planting; prescribed burning; and surveys.
Eastern diamondback rattlesnake (ARS)	<i>Crotalus adamanteus</i>	SC SWAP	Surveys; prescribed fire; and longleaf pine planting.
Bachman's sparrow	<i>Peucaea aestivalis</i>	SC SWAP, SALCC Blueprint, Partners in Flight Landbird Conservation Plan, South Atlantic Migratory Bird Initiative	Habitat enhancement; habitat protection; and research.
Eastern Indigo Snake (T)	<i>Drymarchon couperi</i>	Eastern Indigo Snake Recovery Plan (1981)	Longleaf pine planting; prescribed burning; and surveys.
Southern hognose snake (ARS)	<i>Heterodon simus</i>	SC SWAP	Prescribed fire; and surveys.
Riverine Systems and Associated Floodplains:			
Swallow-tailed Kite	<i>Elanoides forficatus</i>	SC SWAP, South Atlantic Migratory Bird Initiative	Habitat protection working with local land trusts and Waccamaw NWR.
Swainson's warbler	<i>Limnothlypis swainsonii</i>	SC SWAP, SALCC Blueprint, Partners in Flight Landbird Conservation Plan, South Atlantic Migratory Bird Initiative	Habitat protection.

SC SWAP: High priority per the South Carolina State Wildlife Action Plan 2015

ARS: Species that the FWS has been petitioned to list and for which a positive 90-day finding has been issued

T: Federally threatened

E: Federally endangered

Five-Year Performance Targets

- Permanently protect thousands of acres of wetlands and uplands via private conservation easements on lands that support neotropical songbird migrants, at-risk/threatened and endangered species, and protect headwaters and tributaries of larger watersheds;

- Provide significant increase in acreage within managed tidal wetlands for shorebirds such as semipalmated sandpipers and lesser yellowlegs, during the spring and fall migrations;
- Enhance management capabilities within managed tidal wetlands for migratory waterfowl (American black ducks) and wading birds (American wood storks);
- Restore additional areas to longleaf pine or enhance with prescribed fire areas that have the potential to benefit the red-cockaded woodpecker, gopher tortoise, Eastern indigo snake, bobwhite quail, and other species associated with the longleaf pine ecosystem;
- Establish new populations of red-cockaded woodpeckers on State wildlife management areas and private properties via habitat enhancement and augmentations.
- Bolster monarch butterfly populations through the protection of key foraging and roosting habitats;
- Enhance American wood stork rookies via removal of nuisance vegetation and/or planting of bald cypress;
- Additional knowledge of preferred habitat and management regimes for black rail;
- Surveys of Southern hognose snake, Carolina-birds-in-a-nest, and other at-risk species to assess their populations;
- Establish new living shorelines and enhance, where feasible, with plantings of *Spartina*; and
- Progress in assessing potential impacts of global climate change and additional information gained on methods to implement green infrastructure and incorporate land protection into long-term land use planning.

Strategic Activities

The SCCP works with a diversity of species, habitats, and issues. Over the years numerous partnerships have been developed and will continue with local land trusts, the S.C. Department of Natural Resources, the Georgia Department of Natural Resources, The Nature Conservancy, Ducks Unlimited, the S.C. Department of Parks, Recreation and Tourism, and Clemson University to name a few. Using a strategic approach with these partners, future Coastal Program projects will be based on Strategic Habitat Conservation principles that deliver solid on the ground projects for our priority species. The SCCP will continue to work with local land trusts to develop conservation easements that will result in the permanent protection of private lands throughout the both focus areas. Many of these protected areas will also be targeted for various restoration and enhancement projects working with partners such as Ducks Unlimited. In fact, the Coastal Program will continue to work with Ducks Unlimited through North American Wetlands Conservation Act and Coastal Program funded projects where funds can be significantly leveraged. Global climate change and coastal resiliency will be addressed working with partners including Clemson University's Kennedy Waterfowl and Wetlands Center, S.C. Department of Natural Resources, The Nature Conservancy, and the ACE Basin and North Inlet-Winyah Bay National Estuarine Research Reserves. Ongoing and future projects addressing coastal resiliency include the Climate Change Vulnerability Assessment Tool for Coastal Habitats and a National Oceanic and Atmospheric Administration funded study designed to analyze various methods of creating living shorelines that ultimately provides regulatory agencies specific standards for permitting private homeowner reefs. The SCCP will continue to support the S.C. Department of Natural Resources' community based South Carolina Oyster Restoration and Enhancement program as well as new initiatives such as The Nature Conservancy's coastal resilience planning for the Southeast U.S. project that the Coastal Program recently funded. Working with the Bears Bluff National Fish Hatchery, the Coastal Program will continue to build living shorelines for private homeowners in areas experiencing erosion and loss of habitat.

Public land management agencies are also important partners where strategic principles are incorporated in order to accomplish our goals for priority species. Target projects that directly and indirectly benefit our National Wildlife Refuges include additional living shorelines, surveys for at-risk species such as the black rail and Carolina-birds-in-a-nest, and the protection of private lands that buffer refuges or their watersheds. Living shorelines will provide these coastal refuges additional intertidal habitat, significant buffers during storm events, and engage volunteers/stakeholders in supporting their local refuges. The SCCP will work with the U.S. Forest Service on the Francis Marion National Forest to enhance and manage coastal impoundments for priority species and conduct surveys for at-risk species. Additional S.C. Department of Natural Resource projects will include land conservation

through the National Coastal Wetlands Conservation Grants Program, red-cockaded woodpecker population augmentation and associated habitat enhancement on S.C. Department of Natural Resource lands, the South Carolina Bobwhite Initiative, and numerous other projects. The SCCP has recently expanded its work area into Georgia with the development of a habitat restoration project with the Georgia Department of Natural Resources that will benefit numerous priority species including Canby's dropwort and wood storks. Building off of that project, the SCCP has incorporated two sub-focus areas in Georgia into the Inland Coastal Plain Focus Area. In these areas the SCCP will look for opportunities to build new partnerships for habitat restoration and protection as described above.

Tidal Marshes and Barrier Island Focus Area

The Tidal Marshes and Barrier Island Sub-Focus Area encompasses the majority of the South Carolina coastline, inland to the freshwater/saltwater divide. Habitats within this boundary include maritime forests, tidal marshes and estuaries, longleaf pine forests, and managed tidal wetlands. The South Carolina Coastal Program has a number of initiatives ongoing in the Tidal Marshes and Barrier Island Sub-Focus Area including research/surveys for at-risk species such as monarch butterflies and black rails, living shoreline and coastal resiliency projects, and the enhancement of managed tidal wetlands for priority species. The SCCP works with numerous partners in this focus area, including the Partner for Fish and Wildlife (PFW) Program, particularly with managed tidal wetlands. Through collaboration with PFW biologists, enhancement and management of managed tidal wetlands are considered and maximized to benefit federal trust resources. Managed tidal wetland units are often a complex of ditches, dikes, and water control structures. The SCCP and PFW program consider these complexities and strategize together on how to accomplish management objectives. This sometimes includes each program providing both technical and financial assistance within the same property but for different components of the wetland units.

Inland Coastal Plain Focus Area

The Inland Coastal Plain Focus Area begins near the freshwater/saltwater divide, and continues inland to capture key watersheds/strategic areas. These watersheds include portions of the Pee Dee, Santee, Black, Salkehatchie, and Edisto in South Carolina, and the Savannah and Ogeechee watersheds in Georgia. This Focus Area also includes a buffer around the Francis Marion National Forest and Fort Stewart. Significant habitats within this focus area include palustrine wetlands, longleaf pine forests, isolated wetland depressions, and riverine systems and floodplains. For the SCCP, private lands protection is the primary objective within the Inland Coastal Plain Focus Area. Working with local land trusts, SCCP efforts focus on protecting threatened, endangered, and At-Risk species and their habitats,

the longleaf pine ecosystem, and the watersheds of major river systems that serve as migratory corridors for birds and anadromous fish. Threatened and endangered species whose recovery is supported by SCCP involvement in the Inland Coastal Plain include the red-cockaded woodpecker, Canby's dropwort, frosted flatwoods salamander, Eastern indigo snake, and American chaffseed. In addition, At-Risk species that will benefit from SCCP involvement in this focus area include Carolina birds-in-a-nest, which is found in bottomland hardwood floodplains, and the Eastern diamondback rattlesnake, which inhabits open pine savannas. The SCCP and PFW work collaboratively in this focus area, particularly on historic longleaf pine sites. On these sites, the SCCP provides technical assistance to landowners on the value and benefits of restoring longleaf pine, then provide the connection to PFW biologists for potential project development. Likewise, PFW biologists working on longleaf pine projects will discuss the benefit of conservation easements and the availability of local land trusts and the SCCP in perpetually protecting private lands.