



U.S. FISH AND WILDLIFE SERVICE

**THE COASTAL PROGRAM
STRATEGIC PLAN**

Southeast Region

Regional Step-down Plan

Part 2 of 3

*Stewardship of Fish and Wildlife
Through Voluntary Conservation*

October 1, 2006 through September 30, 2010



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I. Executive Summary

The Strategic Plan for the Coastal Program (Program) consists of three parts, each developed cooperatively by the U.S. Fish and Wildlife Service (Service) headquarters, regional, and field office staffs, and most importantly, our stakeholders and partners.

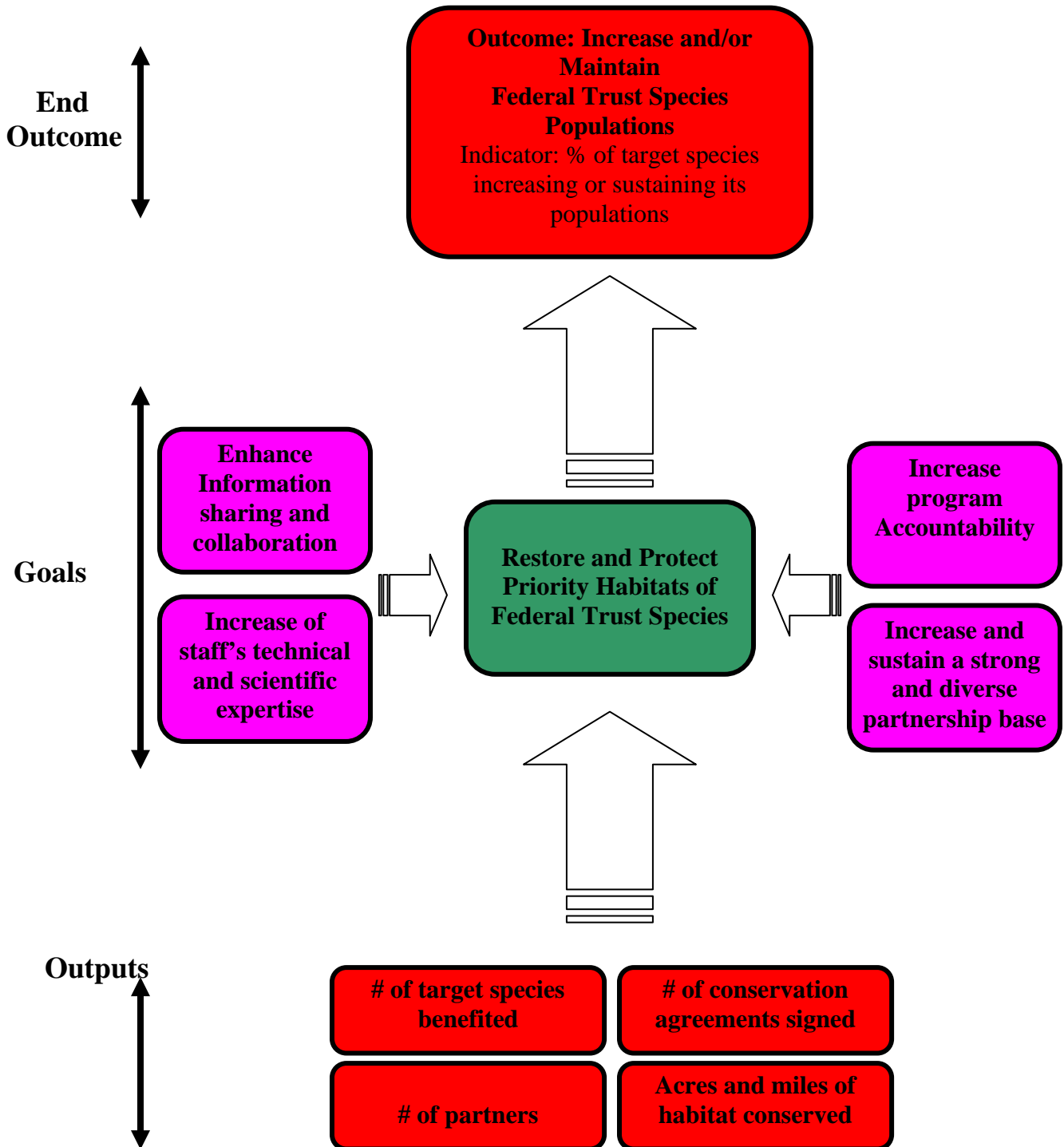
Part 1, the “Vision Document” describes the Program and the five major goals that will guide the program operations nationally for the next five years. These goals are intended to lead to the ultimate end outcome of increasing and maintaining Federal Trust Resources by providing on the ground conservation and technical assistance with our many partners.

This document, Part 2, the “Step-down Plan, Southeast Region” addresses the five major goals identified as the core components of the Program for the Service’s Coastal Program Offices in the Southeast Region. First, and foremost, is our goal to *conserve habitat for the benefit of priority fish and wildlife species* through the strategic application of resources to on-the-ground habitat accomplishments resulting in acres and miles of habitat conserved. The “Regional Step-down Plan, Southeast Region” outlines the geographic focus areas for the six currently funded Coastal Program offices in the Southeast Region: the Coastal Program in North Carolina, the Coastal Program in South Carolina, the Coastal Program in South Florida/Everglades, the Coastal Program in Tampa Bay, the Coastal Program in the Florida Panhandle, and the Coastal Program in the Caribbean. The focus areas for each Program office were developed in conjunction with their major stakeholders and partners and provide estimated annual project accomplishment targets for the protection and restoration of habitat for the benefit of Federal Trust Resources for the fiscal years 2007 through 2011.

The additional four major goals support this core mission and enhance our capabilities to *broaden and strengthen partnerships; improve information sharing and communication; enhance our workforce*; and importantly, *increase accountability* to the American taxpayer by measuring progress toward the Department of the Interior, Service, and Program strategic goals and ensuring that our actions are efficient and effective. The Regional objectives, strategic activities, and performance measures to meet these goals are outlined in this document and will be used as the foundational procedures of each of the Coastal Program offices in the Southeast Region for the next five years.

The final document in the series, Part 3, the “National Step-down Plan” will incorporate the habitat priorities and target identified in this “Region Step-down Plan, Southeast Region” with the plans provided by the Coastal Program offices in the other six Service regions to describe a national overview of habitat priorities and 5-year performance targets.

Coastal Program Conceptual Strategic Model



II. Introduction

As discussed in Part 1, the “Vision Document”, the Service’s Coastal Program works toward achieving the mission of the Service which is “working with others to conserve, protect, and enhance fish, wildlife, and plants and their habitats for the continuing benefit of the American people.” The Vision Document contains the Coastal Program Conceptual Strategic Model, above, that illustrates this concept and provides the foundation for our strategic plan, the goals, and the performance measures that will be used to determine our success.

Five major goals have been identified as core components of our vision:

- Conserve Habitat
- Broaden and Strengthen Partnerships
- Improve Information Sharing and Communication
- Enhance Our Workforce
- Increase Accountability

The above five goals are designed to lead to our ultimate Program outcome: increasing and/or maintaining Federal Trust Resources (migratory birds; threatened and endangered species; inter-jurisdictional fish; certain marine mammals; species of international concern; and the management of the National Wildlife Refuge System). We will measure progress by an outcome indicator that represents the Program contribution to sustaining or increasing target species populations. The species and population targets are derived from information assessed by other Service programs that are responsible for the Trust Resource, and drive the priorities and partnerships developed by the Coastal Program. The contribution of the Coastal Program to meeting these targets are expressed as habitat conservation output measures: acres and mile of habitat conserved, number of target species benefited, number of conservation agreements signed, and number of partnerships developed. These performance targets are developed regionally for each Coastal Program office to be accounted for annually and tracked nationally in the Program’s HabITS data base.

While the Service works under an array of statutory authorities and resource management programs to meet its mandates, our Program serves as a bridge to the owners and managers of Federal and non-Federal lands to develop partnerships that directly benefit fish and wildlife with a particular focus on Federal Trust Resources. Our voluntary, cooperative conservation Program is based on the premise that fish and wildlife conservation is a responsibility shared by citizens and their government. Our approach is to engage willing partners, and provide funding support and technical and planning tools needed to make on-the-ground conservation affordable, feasible, and effective.

This document, Part 2, the “Regional Step-down Plan, Southeast Region” of the Strategic Plan is intended to outline how the Coastal Program in the Southeast Region will address these five goals within our existing Coastal Program offices and contribute to the goals of the Service Coastal Program nationally, given current funding levels. The Southeast Region Coastal Program includes: the Coastal Program in North Carolina, the Coastal Program in South Carolina, the Coastal Program in South Florida/Everglades, the Coastal Program in Tampa Bay, the Coastal Program in the Florida Panhandle, and the Coastal Program in the Caribbean. These are six of the 22 Service Coastal Program Offices that have been established nationally.

Finally, our stakeholders and partners are the key to our success. We will continue to work in partnership with other Federal programs, State agencies, Tribal and local governments, non-governmental organizations, businesses, industry, land trusts and non-profit groups, and most importantly, private landowners and citizens. This input has been vital to the identification and formation of the Coastal Program Offices in the Southeast Region and their continued support will help guide our activities, priorities, and successes in the future.

Location of Fish and Wildlife Service Coastal Program Offices.

Coastal Program Locations

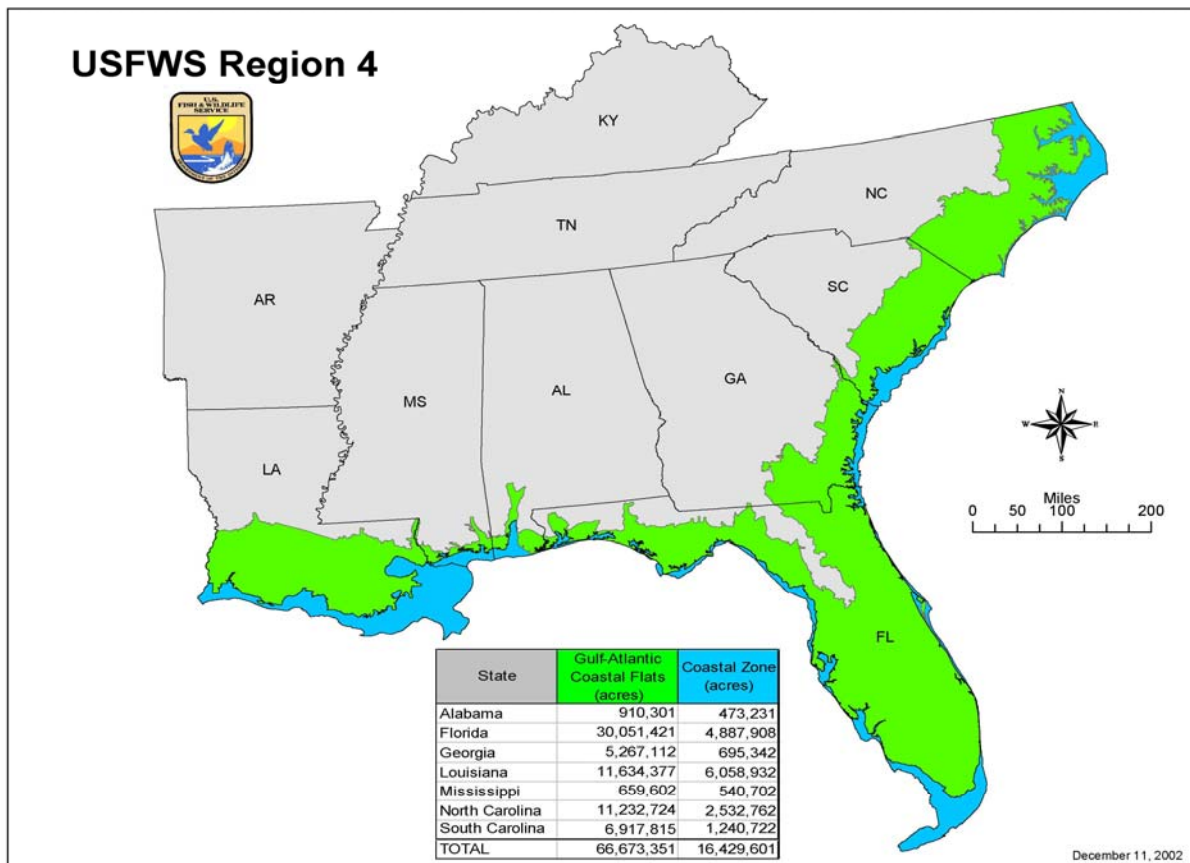


III. Regional Overview

The Service’s Southeast Region coastal area includes over 26,000 miles of tidal shoreline from the Atlantic coast of North Carolina south to Florida, west across the Gulf of Mexico to Louisiana, and the Caribbean coastline of Puerto Rico and the US Virgin Islands (NOAA). This tidal coastal zone, along with the adjacent Gulf Atlantic Coastal Flats physiographic region encompasses 86 million acres of diverse coastal habitat and resources and contains the greatest amount of coastal wetlands in any region, accounting for approximately 25 percent of the estimated wetlands in the conterminous US, including 78 percent of all tidal wetlands of the US (Hefner et.al., 1994).

The Southeast with both the Gulf, South Atlantic, and Caribbean coasts is the largest, most diverse and most productive coastal area in the United States (REA, 2002), representing a wide diversity of habitats ranging from the ecologically rare maritime forest, tropical rain forest, coral reefs, coastal dune lakes, and pocosin wetlands to great expanses of seagrass beds, coastal marsh, and bottomland forests. Within this coastal area is located 62 National Wildlife Refuges (NWRs) with over two million acres of Service Trust lands, three of the four major US migratory bird flyways including the single-most important stopover region in North America, and approximately 300 estuarine systems that support 98 percent of all Gulf of Mexico and 94 percent of all southeast Atlantic commercial fishery landings (NOAA NMFS, 2007) and home to the West Indian manatee, one of the Service’s few marine mammal Trust Resources.

Southeast Region Continental Coastal Physiographic Regions and Area.



In terms of human populations, the Gulf and Atlantic coasts represent the fastest growing region in the nation. According to the 2000 census, this area is also home to over 24 million people and has experienced the fastest population growth in coastal counties anywhere in the nation with an overall growth rate of 20 percent in the last decade. However, some coastal counties are experiencing a near 600 percent increase in housing starts (USA Today, July 27, 2000).

Since the 1970's the Southeast Region has experienced a loss of over 55 percent of its coastal wetlands, particularly in the states of Louisiana, Florida, and North Carolina (Heffner et.al., 1994). Despite the recent national trend of no-net-loss of wetlands, this region continues to show wetland loss. For example, it is estimated that even before Hurricane Katrina, Louisiana loses about 50 acres of coastal wetlands a day (Dahl, 2006). Southeastern coastal upland communities are also largely in decline as evidenced by a 99 percent loss of longleaf pine habitat, 60-80 percent loss of topical hardwood hammocks, 75 percent loss of coastal scrub, as is evidenced by the large number of listed threatened, endangered, and candidate species associated with these ecosystem (Noss, LaRoe, and Scott, 1995).

Because of these great coastal resources and the threats to the Service's Federal Trust Resources, the Coastal Program works closely with other Service programs to help implement our national plans such as the Southeast Region North American Waterfowl Management Plan, North American Landbird Conservation Plan, U.S. Shorebird Conservation Plan, North American Waterbird Conservation Plan, Coral Reef Action Plan, National Fisheries Strategic Plan, National Wildlife Refuge System Strategic Plan, Partners in Flight, National Invasive Species Plan, and Endangered Species Habitat Conservation and Recovery plans. Additional target species and population goals are also developed by the various programs and used to determine Coastal Program on-the-ground and technical assistance projects and partnership development activities.

Likewise, the Southeast Region Coastal Program offices work closely with other Service field and regional staff to help develop and deliver the goals and strategies of more regional, and species or site-specific resource plans and species targets such as the South Atlantic Migratory Bird Management Plan and focal species, the South Florida Multi-species Recovery Plan, over 25 specific NWR Comprehensive Conservation Plans (CCPs) within the focus areas. It also provides complimentary collaboration to other restoration programs such the Southeast Region Partners for Fish and Wildlife Program, Fish Passage Program, as well as the delivery of the Ecological Service's field office strategic plan. Because of these and related efforts, our Program will become increasingly active in integrated Strategic Habitat Conservation planning which will provide for Service-wide integrated management strategies for fish and wildlife conservation.

In this era of cooperative conservation, we will continue to provide biological and technical expertise to other Federal agencies to complement their habitat initiatives such as the Restore America's Estuary's national plan, Environmental Protection Agency National Estuary Program (NEP) Comprehensive Management Plans, NOAA National Estuarine Research Reserve (NERR) and Marine Sanctuary plans, as well as to states in implementing State Comprehensive Wildlife Conservation Plans. The Southeast Region has relied heavily on the available NEP, NOAA, and State Wildlife Action Plans and other available comprehensive plans in the formulation of the priority focus areas and worked with our State and Federal partners to identify

conservation targets. In addition, each Coastal Program office has a compliment of locally based non-governmental organizations (NGOs) and citizen groups, county and regional agencies, academia, and local landowners and business owners that help identify local initiatives for coastal conservation priorities and potential projects. These plans are identified in the appropriate focus area discussion for the six Coastal Program Offices in the Southeast Region.

The success of the Program relies on building trust and credibility with our partners. We achieve this by providing accurate information and being available to assist our partners in a timely manner, by leveraging resources, and by helping implement cost-shared projects. Our staff is experienced at helping people come together to forge and implement collaborative solutions that meet local and regional needs for fish and wildlife stewardship. The Coastal Program and our partners operate in a constantly changing natural, economic, social and political environment. In the face of these challenges, we seek to strategically allocate our resources, while remaining flexible to quickly adapt and respond to change, being as efficient and effective as possible.

Using the input from our partners and stakeholders, this Regional Step-down Plan describes what we envision as priorities within the Coastal Program in the Southeast over the next five years using these five national-level goals outlined in the Vision Document.

Incorporation of Strategic Habitat Conservation

The Service has adopted the Strategic Habitat Conservation (SHC) framework, an adaptive management principles to guide our conservation activities. The National Ecological Assessment Team describes the SHC as a framework for setting and achieving conservation objectives at multiple scales, based on the best available information, data, and ecological models (USFWS and USGS, 2006). The Coastal Program is actively engaged in landscape level conservation and has been a cornerstone program for the Service in providing this framework and perspective since its inception in 1995; utilizing and developing geographic information system technology into its decision making and planning functions and in many cases providing the only means of documenting and monitoring the local effects of conservation activities on target species populations (USFWS, 1995).

The Program is uniquely poised to provide all four elements of the SHC: biological planning, conservation design, conservation delivery, and monitoring and research as the Service works to implement the framework. However, the heart of the Coastal Program is directed to the conservation delivery function with an emphasis on on-the-ground conservation project. The Southeast Region Coastal Program will continue to refine and implement the SHC framework into the Geographic Focus Areas using the principles and methods embodied in SHC as it develops over the next five years covering this strategic planning period and to strategically deliver the habitat needs for target species.

IV. Goal One: Conserve Habitat

Restore and Protect Priority Habitats to Increase and Maintain Federal Trust Resources Populations

Regional Objectives

The purpose of this goal is to collaboratively address the trust obligations of the Service on private, tribal, and public lands operating within the six currently selected Coastal Program offices in the Southeast. Our primary techniques for achieving this goal are on-the-ground, collaborative habitat restoration partnerships and technical assistance activities. Our primary tools are cost-shared funding, expert technical assistance, and Program-implemented projects. Our principal partners are private landowners, local and tribal governments, community and non-governmental organizations, academia, and other state and Federal agencies including other Service programs.

In the Southeast Region, all six Coastal Program offices are co-located in existing Ecological Services (ES) field offices. These offices include the Coastal Program in North Carolina located in the Raleigh, North Carolina ES Field Office; the Coastal Program in South Carolina located in the Charleston, South Carolina ES Field Office; the Coastal Program in South Florida/Everglades located in Vero Beach, Florida Field Office; the Coastal Program in Tampa Bay located at the Tampa Bay ES Sub-Office of the Jacksonville, Florida, ES Field Office; the Coastal Program in the Florida Panhandle located at the Panama City, Florida, ES Field Office; and the Coastal Program in the Caribbean located in the Boqueron, Puerto Rico, ES Field Office.

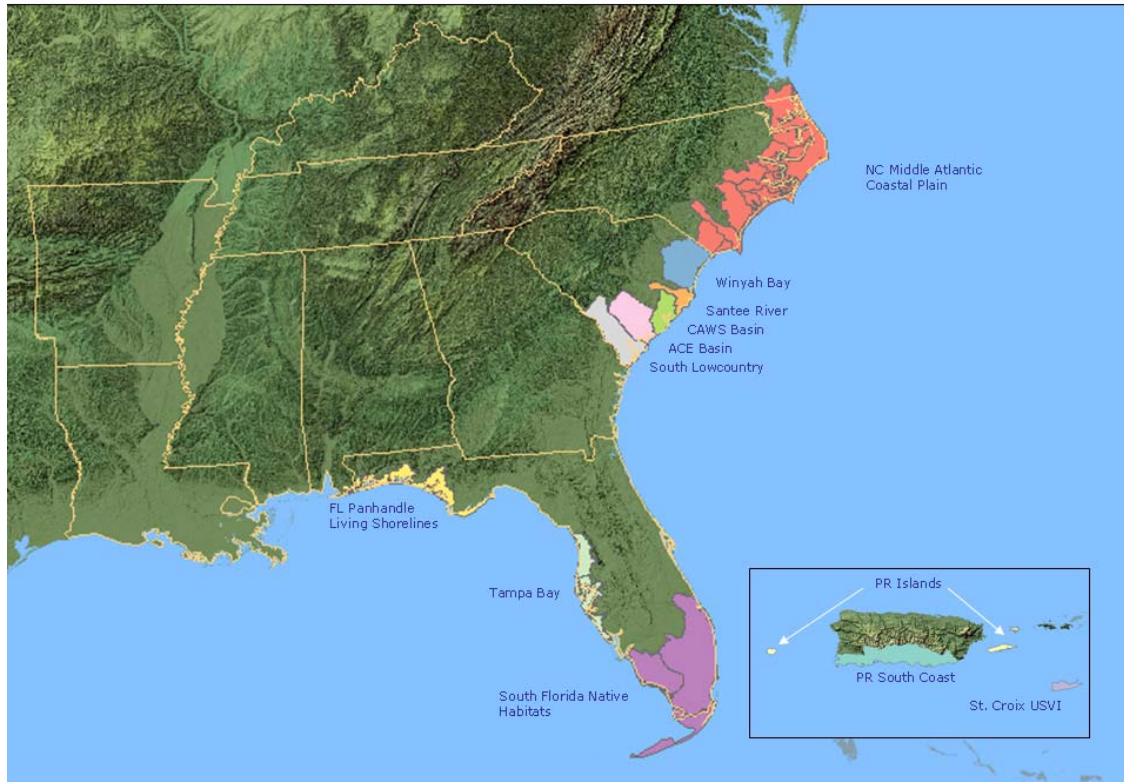
The selected Geographic Focus Areas and their boundaries (see below) are not intended as permanent or inflexible, but do serve as a first edition rallying point for Federal Trust Resource and Species conservation. These Geographic Focus Areas represent a subset of the offices area of jurisdiction and identify where in the landscape our financial and human resources will be strategically targeted during the five year fiscal period from 2007 through 2011. Multiple factors were considered in determining these Focus Areas, including:

- Degree of existing or potential diversity or abundance of Federal Trust Resources
- Extent and strength of existing efforts by partners
- Uniqueness of the area
- Extent and magnitude of resources threats
- Importance of the area to ecosystem structure and function
- Potential for future partnerships
- Education and outreach opportunities
- Community support and interest

Although the Southeast Region includes the seven Atlantic and Gulf of Mexico coastal states from North Carolina to Louisiana and the Commonwealth of Puerto Rico and the U.S. Virgin Islands, the Coastal Program in the Southeast Region is funded and active only in the states of North Carolina, South Carolina, Florida, and the Caribbean. At this time, the Program does not receive funding to service the states of Louisiana, Mississippi, Alabama, Georgia, or the northern Atlantic coast of Florida. These states all contain high potential focus areas for expansion of the Coastal Program should funding become available; Mississippi Sound-Mobile Bay, Barataria-Terrebonne Bay, Sabine-Calcasieu Lakes, and the Indian River Lagoon, were all rated as priority areas for expansion in the original development and analysis of the national

Coastal Program (USFWS, 1995). All of these represent areas that have many opportunities for coastal conservation of the Service's trust resources and many established partnerships and conservation plans. These areas are not outlined or addressed in this document as its purpose is to identify priorities at the current funding level. To meet our regional objectives, the Southeast Region will continue to employ a Geographic Focus Area approach to the Coastal Program.

Southeast Region Coastal Program Geographic Focus Areas (FY 2007-2011)



Key Strategic Activities

The accomplishment of this Regional goal will be addressed through the implementation of the following key strategic activities:

- Development of Geographic Focus Areas
- Determination of habitat conservation output goals (acres/miles) for each Geographic Focus Area
- Involvement of stakeholders in the development of the Geographic Focus Areas and associated habitat acreage goals

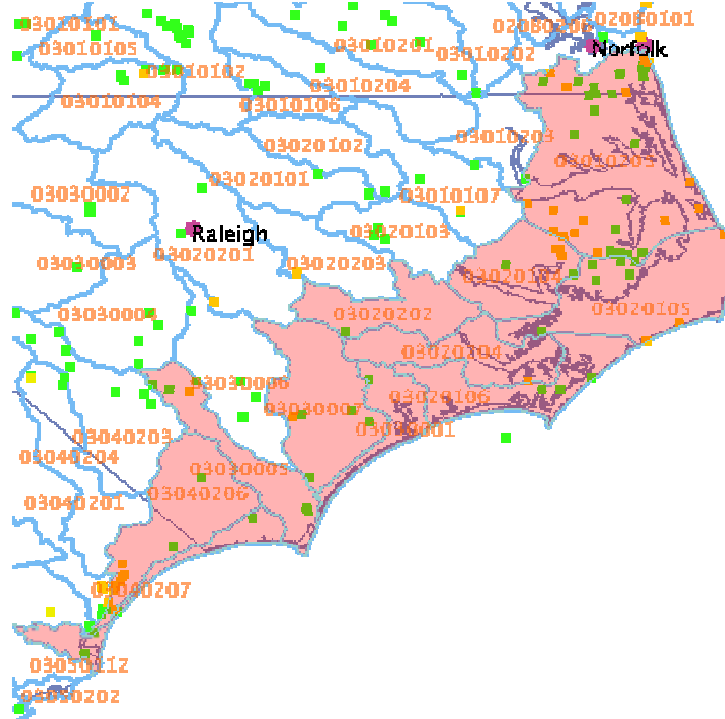
Performance Measures/Outputs

The goal of conserving habitat will be measured by the following performance measures and outputs as derived annually from the HabITS database:

- The acreage of wetland habitats conserved (protected or restored/enhanced)
- The acreage of upland habitats conserved (protected or restored/enhanced)
- The miles of riparian/river/shoreline conserved (protected or restored/enhanced)
- The number of target species benefited

The Coastal Program in North Carolina

North Carolina Middle Atlantic Coastal Plain Focus Area



Focus Area Ecosystem Descriptions

The North Carolina (NC) Middle Atlantic Coastal Plain Focus Area included the eleven contiguous hydrologic unit codes (HUC) that describe the focus of the Coastal Program in North Carolina's activities. They include: (03040206) Waccamaw, (03030005) Lower Cape Fear, (03040207) Carolina Coastal – Sampit, (03030007) Northeast Cape Fear, (03030001) New, (03020106) Bougie – Core Sounds, (03020204) Lower Neuse, (03020105) Pamlico Sound, (03020202) Middle Neuse, (03020104) Pamlico, and (03010205) Albemarle.

The NC Middle Atlantic Coastal Plain Focus Area is described by EPA as the Middle Atlantic Coastal Plain Ecoregion (<http://www.epa.gov/bioiweb1/html/usecoregions.html>) as found primarily in the Carolinas and other states to the north, and has a broad transitional boundary to the south. It consists of low elevation, flat plains, with many swamps, marshes, and estuaries. Forest cover in the region, once dominated by longleaf pine in the Carolinas, is now mostly loblolly and some shortleaf pine, with patches of oak, gum, and cypress near major streams, as compared to the mainly longleaf-slash pine forests of the warmer Southern Coastal Plain. Its low terraces, marshes, dunes, barrier islands, and beaches are underlain by unconsolidated sediments. Pine plantations for pulpwood and lumber are typical, with some areas of cropland.

Within the Middle Atlantic Coastal Plain Ecosystem, Nonriverine Swamps and Peatland communities are flat, poorly drained areas containing organic soils of peat and muck. The dark reddish-brown to black soils, acidic and nutrient-poor, often contain logs, stumps, and other woody matter from bald cypress and Atlantic white cedar trees. Pocosin lakes occur in some areas. The vegetation of the high and low pocosins contains a dense shrub layer, along with

stunted pond pine, swamp red bay, and sweet bay. Swamp forests are dominated by swamp tupelo, bald cypress, and Atlantic white cedar. Fire during drought periods, logging, and construction of drainage ditches has affected natural vegetation patterns. Several areas of mineral and shallow organic soils have been drained and cultivated for crops of corn, soybeans, and wheat. The region extends just into southern Virginia to cover the northern portion of the Dismal Swamp.

The Carolinian Barrier Islands and Coastal Marshes region within the Ecosystem covers most of the North Carolina coast, extending from Bodie Island in the north to North Myrtle Beach, South Carolina in the south. Similar along the coast in northern North Carolina and southern Virginia, the region contains marshes, dunes, beaches, and barrier islands, but it tends to be slightly warmer and wetter. In the north, there is a high diversity of vegetation in the maritime forests in the boundary area where northern and southern maritime forests overlap, such as at Nags Head Woods. The maritime forests include live oak, sand laurel oak, loblolly pine, red cedar, yaupon holly, wax myrtle, dwarf palmetto, with cabbage palm in the southern portion of the region. The region encloses Pamlico Sound, a shallow estuary supporting an important nursery for 90 percent of all the commercial seafood species caught in North Carolina, as well as for vast recreational fisheries.

Habitat Descriptions and Benefits to Federal Trust Resources

Within the NC Middle Atlantic Coastal Plain Focus Area, the Coastal Program in North Carolina works to conserve priority habitat relating to:

- Water quality in the Albemarle Pamlico Estuary
- Migratory fish access to historically important spawning habitat and restoration of free flow in the Neuse and Cape Fear Rivers for listed species
- Restoration of wetland hydrology and vegetative community in deep peat bogs
- Restoration of the Atlantic white cedar ecosystem
- Restoration of Bald Cypress community

Albemarle Pamlico Estuary

The Albemarle Pamlico system, the second largest estuary in the country, is experiencing anoxia (an absence of aquatic oxygen) and blooms of the toxic dinoflagellate *Pfiesteria piscida*, both of which are the result of poor water quality. Historically, the fringe marshes, creeks, and beds of submerged aquatic vegetation in the Albemarle Pamlico Estuary have provided essential nursery habitat for most commercial and recreational fish and shellfish in the North Carolina coastal area and important habitat for waterfowl, shorebirds and other migratory birds. The estuary also provides important habitat for anadromous fish, including the endangered shortnose sturgeon. All of these habitats depend on maintaining adequate water quality.

Neuse and Cape Fear Rivers

Striped bass, American shad, hickory shad, alewife, shortnose sturgeon, and Atlantic sturgeon are anadromous fish in the Neuse River. These species, which spend most of their lives in saltwater, return to freshwater to spawn and can travel hundreds of miles upstream. At one time, more American shad and striped bass were caught in North Carolina than any other state (Smith 1907). The Cape Fear River is North Carolina's largest river basin and the only river in North Carolina that flows directly into the ocean. If its migratory fish populations were allowed to recover by allowing the fish to reach their primary spawning grounds, the economic return to the

state is expected to be large. According to the 2001 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation, fishing expenditures for 2001 in North Carolina totaled 1.1 billion dollars. The Cape Fear River has the potential to become one of the best places to fish on the east coast if the migratory fish are allowed to reach their spawning habitat.



Dam removal and fish passage restoration project on the Little River in 2006. (Photo: USFWS)

Peat Bogs

Deep peat bogs in the North Carolina coastal plain formed over the last 9,000 years since the Wisconsin period of glaciation. Vegetation deposited organic material faster than it could decompose and a thick layer of peat developed slowly over thousands of years. The peat retained the nitrogen that had been stored by growing plants and eventually created a very large bank of nitrogen. The peat also absorbed mercury from the rain water, similar to the way an activated charcoal filter cleans water by accumulating contaminants. Historically, mercury was present in the atmosphere at low levels from volcanic activity, and mercury has increased recently as a consequence of human activities (e.g., combustion of fossil fuels, smelting). When peat bogs are ditched, the water table is lowered and the peat is aerated, which increases microbial activity and accelerates decomposition and nutrient release. Net accumulation of organic material is essential for a peat bog to perform its beneficial water quality role. If ditched bogs are allowed to decompose, they can release excess nutrient loads into coastal rivers and estuaries on par with the largest point source (e.g., industrial site) discharges. Wetlands with deep organic soils can be either very good or very bad for surface water quality, depending on their condition. Peat bogs are tremendously important to estuarine water quality and the resources there.

Atlantic White Cedar

The Atlantic white cedar ecosystem is categorized as globally endangered by The Nature Conservancy and because the area is vitally important as a water filter for the Albemarle Pamlico Estuary. Mature Atlantic white cedar bogs provide a unique habitat that has naturally acidic waters and is cooler than surrounding hardwood swamps or pinelands. Cedar bogs support high breeding bird densities (425 to 554 pairs per 100 acres) of species such as ovenbirds, yellowthroats, and prairie, prothonotary and hooded warblers. The Hessel's hairstreak butterfly uses Atlantic white cedar exclusively. Black bear, river otter, and bobcat are numerous in cedar

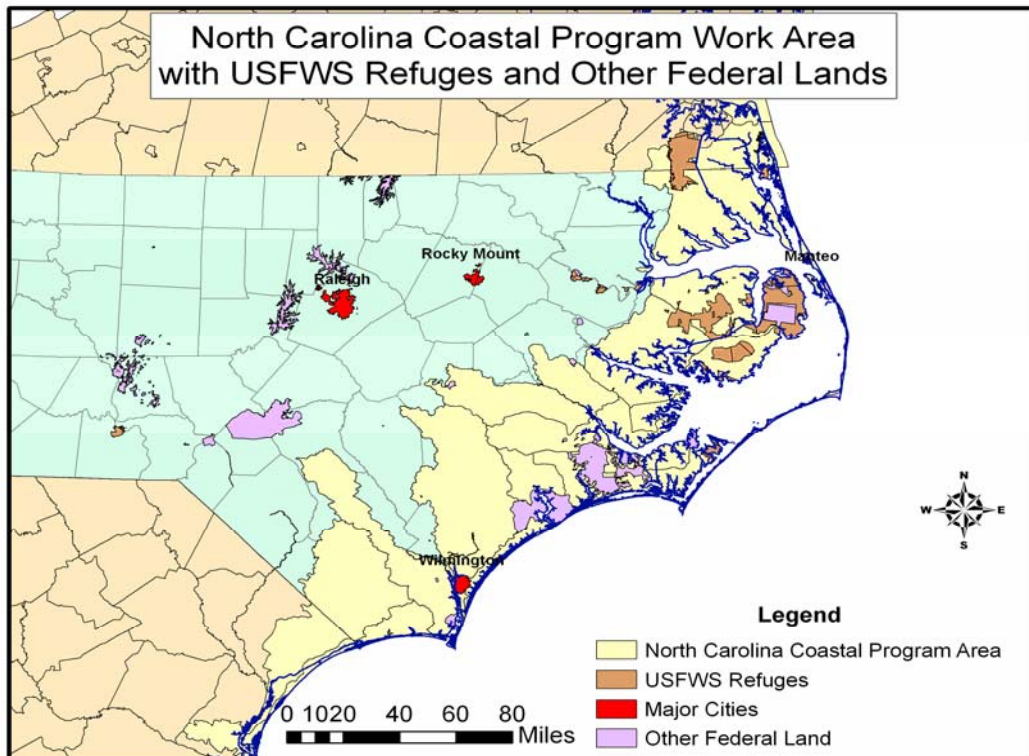
bogs, as is the State-listed eastern diamond-back rattlesnake. The federally-listed red-cockaded woodpecker inhabits mature pond pines that are scattered around cedar bogs.

Atlantic white cedar is an evergreen conifer that grows in fresh water swamps and bogs along a narrow coastal belt from southern Maine to northern Florida and west to southern Mississippi (Laderman 1989). The acreage of Atlantic white cedar today is probably less than 5 percent of the original (Davis et al. 1997, Frost 1987, Kuser and Zimmerman 1995, Lilly 1981). In the late 19th century, the greatest assemblage of Atlantic white cedar was in the Great Dismal Swamp, with large acreage also in Dare, Hyde, Tyrrell and Washington Counties (Ashe 1894). Ashe (1894) estimated 200,000 acres of Atlantic white cedar in eastern North Carolina, with about 40,000 acres in the peninsula and 60,000 acres in Great Dismal Swamp. The precipitous decline in acreage of Atlantic white cedar resulted not only from logging, but also from uncontrolled wildfires and widespread ditching and drainage of peatlands for agricultural purposes.

Bald Cypress

Like Atlantic white cedar, bald cypress has been an important tree of commerce in the South, including North Carolina. The total resource is only a fraction of that in earlier years even though demand is still strong. In addition to its importance for timber, bald cypress is also important to wildlife. Historically, remote cypress swamps were a favored habitat of ivory-billed woodpecker (Ridgeway 1898) as well as Carolina parakeet which is now extinct (Brewster 1889, Maynard 1881). The potentially large size of cypress also makes it an important source of dens large enough to accommodate black bears and other animals. Seeds and fruits of cypress also represent a source of soft mast for neotropical migratory birds.

Land Use and Ownership



The predominate land uses in the focus area are rural row crop agriculture (such as corn, soybean, tobacco and cotton), silviculture, urban development, and coastal development. However, large natural areas under State, Federal or land trust management are present.

Habitat Restoration Challenges

Since lands in the area are owned by very diverse interests, it is necessary to develop mutual goals and use collaborative effort to achieve those goals. Some lands such as the deep mineral peat soils are in great jeopardy because of oxidation and require large scale restoration efforts. This area has a number of rare aquatic fauna that are in extreme risk because of development and the associated nation-wide population shift towards the coast.

Partnership Opportunities

Partners currently include:

- NC DENR
- NC Wildlife Resources Commission
- NC University System, Coastal Federation
- The Coastal Land Trust, Cape Fear River Watch
- The Nature Conservancy
- Progress Energy
- US Army Corps of Engineers
- NOAA National Marine Fisheries Service
- EPA

Opportunities for additional partnerships exist with local non-governmental organizations and with the public school systems for public outreach.

Strategies between Service and Partners to Fulfill Habitat Conservation Targets

Various planning documents have set the stage for partners to work together. Plans such as the NEP Comprehensive Conservation and Management Plan (Albemarle Pamlico Estuarine Study), North Carolina Coastal Habitat Protection Plan, and the North Carolina Wildlife Action Plan are very useful in strategy development between the Service and its partners to implement and satisfy joint goals and deliver the Coastal Program goals and those of the Raleigh NC Ecological Services Field Office strategic plan. Only projects that directly contribute to the goals in one or more of these plans are implemented.

Five Year Performance Targets/Outputs

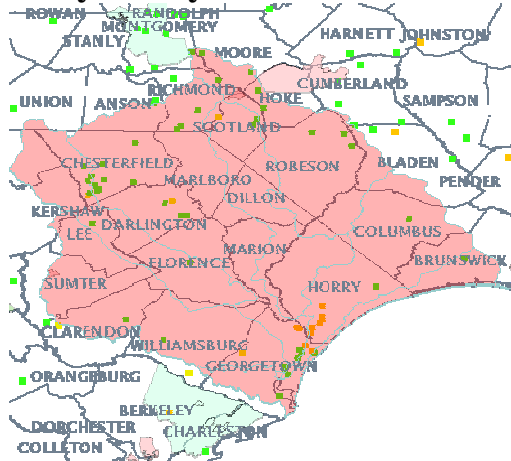
Our habitat conservation goals for the NC Middle Atlantic Coastal Plain Focus Area will be based on the needs identified by the conservation plans listed above. These performance targets and outputs are an estimate of what the Coastal Program may accomplish for Federal Trust Resources given FY 06 funding levels and knowledge of our past partnerships and opportunities.

- The acreage of wetland habitats conserved: 1500 acres restored/enhanced
- The acreage of upland habitats conserved: 0
- The miles of riparian/river or shoreline conserved: 300 miles restored/enhanced

Coastal Program in South Carolina

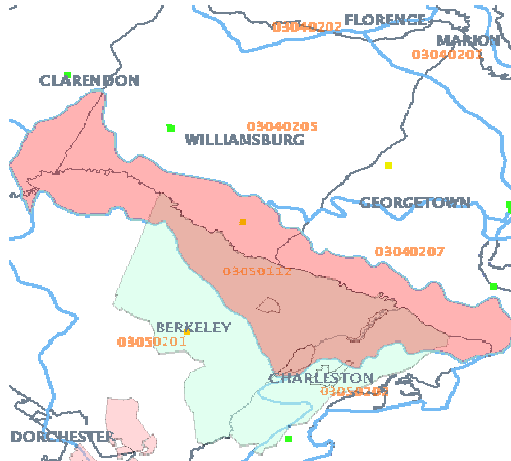
Focus Area Ecosystem Descriptions

Winyah Bay Focus Area



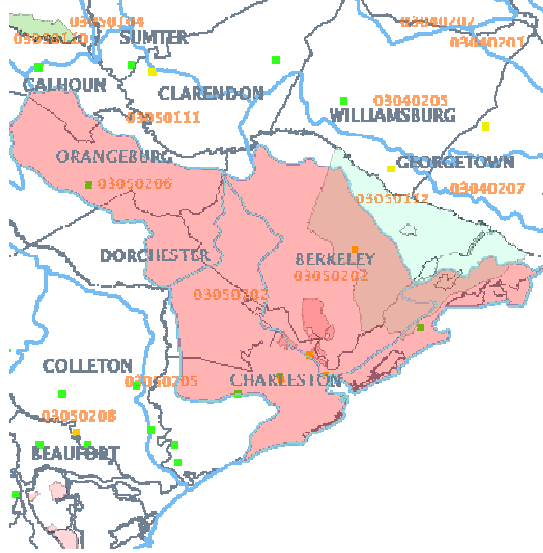
The Winyah Bay Focus area encompasses approximately 1,987,630 acres within seven U.S. Geological Survey 8 digit hydrologic units including the Carolina Coastal-Sampit (03040207), Waccamaw (03040206), Black (03040205), Little Pee Dee (03040204), Lumber (03040203), Lynches (03040202), and Lower Pee Dee (03040201). This Focus Area includes portions of the counties of Horry, Georgetown, Williamsburg, Marion, and Florence counties. Five major rivers, the Waccamaw, Pee Dee, Little Pee Dee, Black, and Sampit flow into the focus area to form Winyah Bay.

Santee River Focus Area



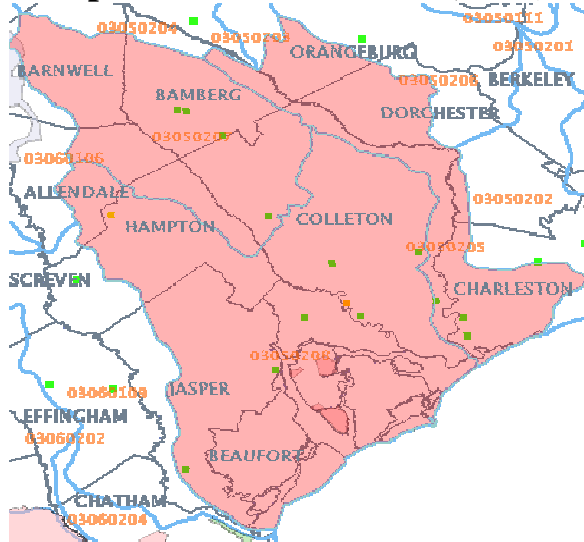
The Santee River Focus Area encompasses approximately 548,968 acres within three U.S. Geological Survey 8 digit hydrologic units including the Carolina Coastal-Sampit (03040207), Santee (03050112), and the South Carolina Coastal (03050202). It encompasses the alluvial floodplain and delta of the Santee River extending from the Santee Dam on Lake Moultrie to the Atlantic Ocean. This Focus Area includes portions of Georgetown, Charleston, Berkeley, Clarendon, and Williamsburg Counties.

Cooper Ashley Wando Stono (CAWS) Basin Focus Area



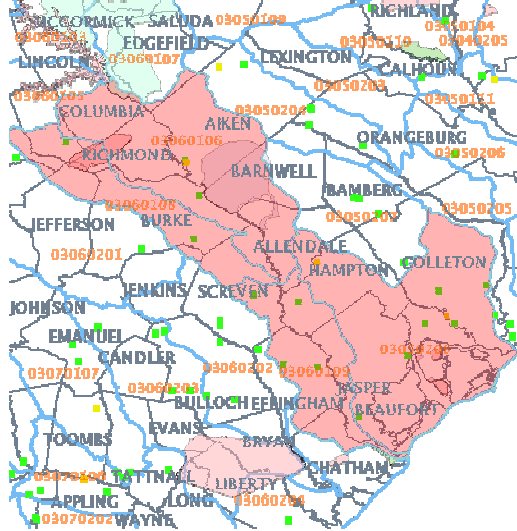
The CAWS Basin Focus Area encompasses approximately 814,666 acres within three U.S. Geological Survey 8 digit hydrologic units including the Cooper (03050201), South Carolina Coastal (03050202), and Four Hole Swamp (03050206). It encompasses the drainages of the Ashley, Cooper, Stono, and Wando Rivers which form the Charleston Harbor estuary. It includes portions of Charleston, Berkeley, and Dorchester Counties and includes the greater Charleston Metropolitan Area.

Ashepo Combahee Edisto (ACE) Basin Focus Area



The ACE Basin Focus Area encompasses approximately 1,667,011 acres within three U.S. Geological Survey 8 digit hydrologic units including the Edisto (03050205), Salkahatchie (03050207), and Broad – St. Helena (03050208). It includes the lower drainage basins of the Ashepo, Combahee and Edisto Rivers. This focus area includes all of Colleton County and portions of Charleston, Beaufort, Hampton, Dorchester, Orangeburg and Bamberg Counties.

South Lowcountry Focus Area



The South Lowcountry Focus Area encompasses approximately 1,787,048 acres within four U.S. Geological Survey 8 digit hydrologic units including the Middle Savannah (03060106), Lower Savannah (03060109), Broad – St. Helena (03050208), and Brier (03060108). It includes the South Carolina portion of the lower Savannah River Drainage. This focus area includes all of Barnwell, Allendale, and Jasper Counties, and the majority of Hampton and Beaufort Counties.

Habitat Descriptions and Benefits to Federal Trust Resources

The coastal focus areas in South Carolina fall within one physiographic province, the Coastal Plain, thus the same major habitats occur in all focus areas. The Coastal Plain extends from the fall line to the coast and was formed by sediments laid down by the sea. Ancient seashores experienced periods of shifting for considerable distances across the coastal plain due to tilting or warping of the landscape and fluctuations of sea level.

Two major types of river systems traverse this province. Alluvial rivers originate in the mountains and piedmont and include the Great Pee Dee, Savannah, and Santee. Blackwater rivers originate in the coastal plain and include the Cooper, Ashley, Edisto, Salkahatchie, Combahee, Ashepoo, New, Four Holes, Little Pee Dee, Waccamaw, Black and Lumber Rivers.

Considerable acreage of tidal freshwater swamp and marsh is associated with these major river systems. In addition, South Carolina also has numerous palustrine wetlands that are isolated or contiguous with freshwater streams and river systems. The river basins drain into an extensive estuarine network of saltwater marsh with tidal creeks, inlets and sounds intermixed with barrier, sea and marsh islands. Dominant tree species are often coniferous with hardwoods dominating only in the maritime forests and river bottoms. Extensive riverine swamps are separated by uplands with more xeric forests, pine flatwoods, Carolina Bays and isolated freshwater wetlands.

The coast of South Carolina supports large populations of wading birds, shorebirds, waterfowl, land birds, mammals, reptiles, amphibians and fish. Forage, refuge, cover and staging areas for a variety of migrating waterfowl, neotropical migrants, raptors and shorebirds are provided. The identification and protection of habitat to support Trust migratory bird populations is one of the

key objectives of the Coastal Program in South Carolina. In addition, several species of flora and fauna listed as federally endangered or threatened in the state are indicative of the development pressures and habitat loss incurred. Over 40 animal and plant species are listed as federally endangered or threatened within South Carolina. Additionally, three species are candidates for listing and are not currently receiving Federal protection. Numerous species of plants and animals are of special concern and are undergoing review for listing. Habitat conservation activities are prioritized to deliver the stated habitat needs to address the population goals and objectives and critical habitat needs identified for these species, particularly those identified as focal species.



Mullet Pond project with migratory birds, shorebirds and alligator. (Photo: USFWS)

Below are more specific habitat descriptions that are common to the coastal focus areas.

Estuarine and Tidal Freshwater

Located in the coastal region of South Carolina, these communities experience fluctuations in their water level diurnally, or twice daily. Tide fluctuations for South Carolina range from 4 feet on the northeast coast to over 8 feet near the South Carolina/Georgia state line. In estuaries freshwater from riverine systems mixes with marine waters producing a nutrient rich system with multiple and distinct habitat types. The diversity of plant species is comparatively low and is dominated by salt tolerant species such as smooth cordgrass. Tidal freshwater wetlands, normally confined by river morphology, are located upstream of the estuaries and have a negligible saline content, normally ≤ 0.5 parts per thousand. Vegetation diversity within tidal freshwater areas is high including broad leaved plants, grasses, rushes, and herbaceous species.

Several Trust Species are known to occur in the estuarine and tidal freshwater communities, either federally listed as threatened or endangered or listed by the State as species of concern. These species include the West Indian Manatee, bald eagle, wood stork, shortnose sturgeon, red knot, swallow-tailed kite, American oystercatcher, black rail, Swainson's warbler, and gull-billed tern. Many of these species spend only a portion of their life cycle within the estuarine environment or they may be migratory and utilize the estuary as resting areas.

Maritime Strand

Maritime communities are found in a discontinuous narrow band along the barrier islands and on the adjacent mainland of the eastern United States. Geologically comprised of relic dunes this dry, well-drained habitat is stabilized with a predominance of broadleaved evergreen trees (live oak) and shrubs (wax myrtle). Typically sculptured and stunted from salt spray the flora is particularly well adapted to survive the salt spray and elevated salt content of the soils. Located seaward of the maritime forest is the beach dune system. Unlike the stable maritime forest, the beach dune system is a nearly fluid environment, constantly shifting in response to wind and wave action. Flora and fauna of the beach dune system have evolved morphologically and behaviorally to adapt to the constantly changing environment.

Several Trust Species known to occur in maritime forests and the beach/dune system, either federally listed as threatened or endangered or identified by the State as a species of concern. These species include piping plover, Kemp's ridley sea turtle, leatherback sea turtle, loggerhead sea turtle, green sea turtle, sea-beach amaranth, red knot, painted bunting, gull-billed tern, and southern hognose snake. Many of these species are dependent upon a relatively undisturbed beach/dune system in order to successfully produce offspring.

Longleaf Pine and Associated Coastal Uplands

Typical longleaf pine communities, which once covered most of the coastal plain along the south Atlantic and Gulf coast, are found on sandy soils and dominated by a tall canopy of longleaf pine. Xeric longleaf pine occurs on dry ridges and frequently supports turkey oak as a co-dominant. Longleaf pine flatwoods and savannas are found on relatively flat terrain with a high water table. This community has been severely reduced throughout its range due to a variety of causes including conversion to loblolly pine plantation, agriculture and commercial or residential use. This habitat also requires prescribed fire to maintain its habitat value for the dependent plant and animal species.

Several Trust Species in South Carolina are dependent on longleaf pine habitat to a large degree, either federally listed as endangered or threatened or identified by the State as species of concern. These include red-cockaded woodpecker, eastern indigo snake, flatwoods salamander, southern dusky salamander, pondberry, Canby's dropwort, chaff-seed, crested fringed orchid, pineland plantain, Bachman's sparrow, Henslow's sparrow, American kestrel, Loggerhead shrike, eastern gopher tortoise, southern hognose snake, mimic glass lizard, northern pine snake, and Florida pine snake. It should be noted that some of these species are dependent on the numerous wetlands, such as pond cypress savannas and depression wetlands, which are an integral part of the flatwoods and savanna habitat.

Freshwater Wetlands

As mentioned above, the high value of the longleaf pine ecosystem is dependent on the numerous and diverse interspersed wetlands, such as pond cypress savannas and depression wetlands, which are an integral part of the flatwoods and savanna habitat. These wetlands support a number of rare plants including Canby's dropwort and pondberry as well as the flatwoods salamander. Many of these wetlands have been lost due to ditching and draining for agriculture and forestry as well as for residential and commercial development. These habitats also require periodic fire in order to maintain habitat value for the dependent plant and animal species.

Rivers and Palustrine Forested Wetlands

South Carolina contains significant wetland resources associated with large rivers and smaller streams. These rivers and streams provide valuable habitat for a number of at-risk mussels, such as the yellow lampmussel, as well as diadromous fish including shortnose sturgeon, Atlantic sturgeon, striped bass, American shad, blueback herring and American eel. Extensive palustrine forested wetlands (bottomland hardwoods, swamps) lie adjacent to these rivers and streams and provide a vast and productive wildlife habitat. These wetland areas support a number of listed or at-risk species and migratory birds such as the swallow-tailed kite. Major wetland areas are found along the Savannah, Combahee, Ashepoo, Edisto, Cooper, Santee, Congaree, Wateree, Pee Dee, and Waccamaw Rivers and their associated tributaries. A total of 3.7 million acres of palustrine forested wetlands occurs in South Carolina, primarily in the coastal plain.

Land Use and Ownership

Forested lands dominate the coastal landscape of South Carolina with over 5 million acres (approximately 34 percent of the land) covered by evergreen, mixed, deciduous, and wetland forests. Evergreen farming is a monoculture farming practice common to the southeastern United States and the coastal plain of South Carolina. At any point in time hundreds of thousands of acres of the landscape are in some form of forestry transition. These transitions represent a cyclic silviculture process, which involves the harvest and reforestation of evergreen tree stands.

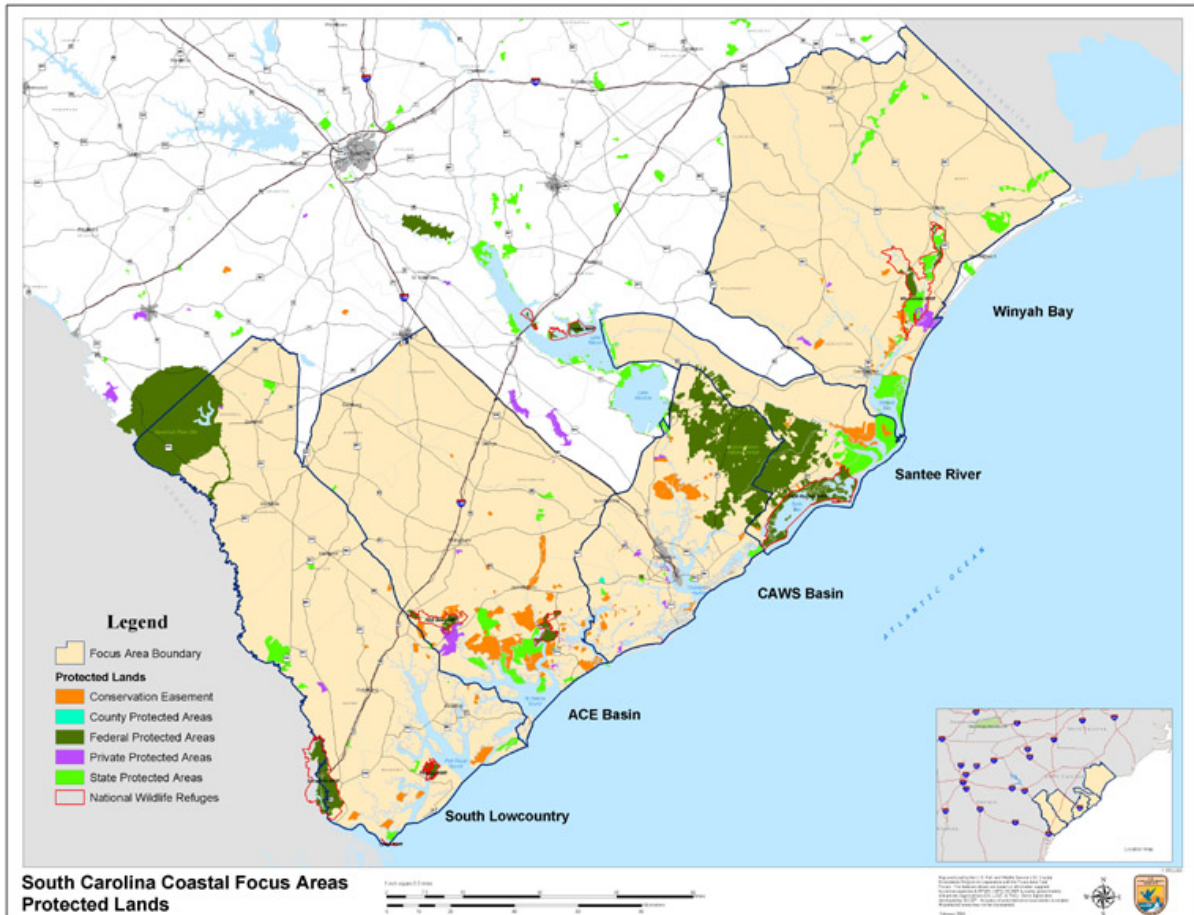
Changes from evergreen, deciduous, and mixed forest covers to human development have increased significantly since 1980 in direct relationship to the increasing human population during the same time period. Forest lands converted to low intensity development, such as residential neighborhoods, typically retain 20 to 50 percent of the vegetative cover through the incorporation of large yards, parks, and trees. High intensity development, such as industrial parks, parking lots, and highways, has impacted once-forested areas severely as these areas are no longer predominated by vegetation; rather the landscape is dominated by buildings and paved surfaces

A dominant feature on the South Carolina coast is the extensive salt marsh or estuarine emergent habitat. Over 3.5 million acres or 20 percent of the South Carolinian coastal landscape is composed of saltwater and freshwater wetlands. Salt marsh habitat is a rather stable environment, demonstrating little change during a twenty-year research period. Changes that do occur are generally related to human impacts or storms.

Ownership patterns of the coastal plain include state, Federal and local government owned lands, with a large component of privately owned lands, including forest industry lands and high quality farmlands located inland away from the immediate coast. The major urban centers include Myrtle Beach on the northern coast, Charleston on the middle coast, and the Hilton Head-Savannah area on the southern coast.

Federal ownership includes extensive acreage of uplands and wetlands on seven NWRs in coastal South Carolina. These include the Ernest F. Hollings ACE Basin NWR, Cape Romain NWR, Pinckney Island NWR, Savannah NWR, Tybee NWR, and Waccamaw NWR. The US Forest Service manages the Francis Marion National Forest located north of Charleston. South

Carolina has two areas designated by the NOAA as reserves under the National Estuarine Research Reserve (NERR) program, the ACE Basin NEER and North Inlet-Winyah Bay NEER. The State's Department of Natural Resources manages significant acreage of coastal uplands and wetlands for purposes similar to that of the NWRs.



Habitat Restoration Challenges

Population growth along the coastline has induced urban and resort development such as residential lots, golf courses, and tourist attractions. Resultant development of barrier and sea islands and marsh-front mainland is a considerable threat to maritime forest habitat and water quality within adjacent wetlands and water bodies. Major urban centers in coastal South Carolina include Myrtle Beach, Hilton Head, and Charleston. Development continues to be one of the main contributing factors in the direct loss of sensitive habitats, forest fragmentation, and non-point source pollution.

The explosion of coastal population growth in the past two decades represents the most ominous threat to the health and stability of estuarine and tidal freshwater communities. Concentrated coastal development has resulted in direct habitat loss and increased pollutant discharge with a corresponding decrease in water quality. Fragmentation of habitat by residential subdivisions, commercial development and their attendant service road systems represents an additional threat.

Several corporate timber companies own significant forested acreage within South Carolina that is managed to produce pulp, saw timber, and pole timber. Loblolly pine plantations play a significant role in the economy and several paper mills are located on the waterways along the coast of South Carolina. Recent down-turns in the lumber market have, however, forced the timber industries in South Carolina to re-evaluate their landholdings. There is a growing trend, because of high land values, for timber companies to sell large blocks of land (5,000-10,000 acres) on the outskirts of urban areas for massive residential developments. International Paper recently announced its' intent to sell over 600,000 acres in South Carolina. This acreage "dump" will pose a great challenge to the land conservation organizations working within South Carolina to protect the state's remaining forestlands.

Ports, industrial, commercial, and urban development are the main source of pollutants and major threat to sensitive habitats within South Carolina. Industrial polluters, such as paper mills, hazardous waste sites, Superfund sites, and public works have contributed to harmful amounts of dioxins, hydrocarbons, and metals. Nutrient loading and has contributed to shellfish closure areas and fish consumption advisories. Stormwater runoff from agriculture, cultivated golf courses, and lawns laden with herbicides, fertilizers, and pesticides has contributed to fish kills and degraded water quality.

Partnership Opportunities

The Coastal Program in South Carolina works with a diverse group of partners to deliver on-the-ground habitat conservation. These include:

- Historic Ricefields Association
- Kiawah Island Natural Habitat Conservancy
- Lowcountry Open Land Trust
- Lord Berkerly Land Trust
- Ducks Unlimited
- The Nature Conservancy (SC and GA Chapters)
- International Paper Company
- Mead-Westvaco Corporation
- Georgia-Pacific Corporation
- Brookgreen Gardens
- Catesby Commemorative Trust
- National Audubon Society
- Trust for Public Land (Atlanta Office)
- Belle W. Baruch Foundation
- Nemours Wildlife Foundation
- National Fish and Wildlife Foundation
- Wallace F. Pate Foundation for Environmental Research and Education
- South Carolina Department of Natural Resources
- North Carolina Wildlife Resources Commission
- Georgia Department of Natural Resources
- Clemson University
- Coastal Carolina University
- University of South Carolina
- USDA Forest Service
- USDA Natural Resources Conservation Service

- US Army Corps of Engineers
- US Department of Commerce, NOAA National Estuarine Research Reserves
- US Golf Association
- SC Turfgrass Foundation
- SC Sea Grant Consortium
- SC Coastal Conservation League
- Private golf courses and residential developments
- Private Landowners
- USFWS Ecological Services Field Office (Charleston, SC)
- USFWS National Wildlife Refuges (SC, NC, and GA)
- USFWS Partners for Fish and Wildlife Program (Charleston, SC)
- USFWS Savannah-Santee-Pee Dee Ecosystem Team
- USFWS Atlantic Coast Joint Venture

They have shown that by working effectively together through partnerships, and by looking at issues on a landscape scale basis, that well planned, mutually beneficial, habitat conservation efforts can be achieved that are beneficial to both the resource and the public.



Winyah Bay Focus Area partnership meeting. (Photo: USFWS)

Strategies between the Service and Partners to Fulfill Habitat Targets

The Coastal Program in South Carolina will achieve habitat conservation targets primarily through public/private partnerships formed to seek landscape scale land management solutions to sustain the ecological integrity of the five coastal focus areas. The primary conservation actions are to protect existing priority habitats through securing permanent conservation easements on private lands through the use of legal conservation easements, limited fee-title acquisition where appropriate to be placed in public ownership, and the restoration of priority habitats through landowner incentive programs.

Landscape protection strategies and implementation are guided by a Task Force established for each Focus Area. Task Force members typically include the Service, SC Department of Natural Resources, non-government conservation organizations, and private landowners. Individuals and organizations involved in focus area partnerships possess expert knowledge about the natural, historical, and cultural resources in each focus area, as well as a keen awareness of optimal ways to accomplish particular land conservation goals. Private landowners are typically citizens prominent in the community having existing relationships with and an understanding of the local people (e.g., landowners, civic and political leaders). Effective partnerships among the watershed stakeholder groups not only encourages meaningful dialog and cooperation to facilitate consensus on solving landscape conservation problems, but they also promote cost-effective solutions, creating the opportunity to pool public and private resources for on-the-ground implementation.

Focus area habitat conservation strategies and priorities will be derived from many Federal, state, and local species and habitat conservation plans. Examples of available plans include the South Carolina Comprehensive Wildlife Conservation Plan, North American Waterfowl Management Plan, U.S. Shorebird Conservation Plan, Partners in Flight North American Landbird Conservation Plan, South Atlantic Migratory Bird Management Plan, National Invasive Species Plan, various endangered species recovery plans, and others.

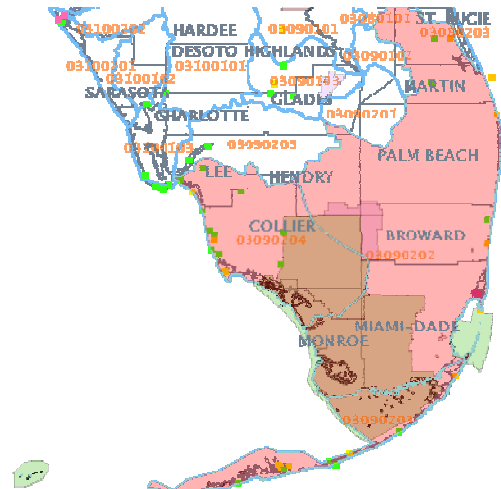
Five Year Performance Targets/Outputs

Our habitat conservation goals for the 5 identified focus areas for the Coastal Program in South Carolina will be based on the needs identified by the conservation plans listed above. These performance targets and outputs are an estimate of what the Coastal Program might accomplish for Federal Trust Resources given FY 06 funding levels and knowledge of our past partnerships and expected opportunities.

- The acreage of wetlands habitats conserved: 6852 acres protected
- The acreage of uplands habitats conserved: 4750 acres protected
- The miles of riparian/river or shoreline conserved: 25 miles protected

Coastal Program in South Florida

South Florida Native Habitats Restoration Focus Area



Focus Area Ecosystem Description

The South Florida Native Habitats Restoration Focus Area is located within three U.S. Geological Survey Hydrologic Units including the Big Cypress Swamp (03090204), Everglades (03090202), and Florida Bay/Florida Keys (03090203). This Focus Area includes Monroe, Miami Dade, Broward, Collier, and parts of Lee, Hendry, Palm Beach, Martin, and St. Lucie Counties. The primary habitats of most concern within the Focus Area have been identified using the Service's *South Florida Multi-Species Recovery Plan* and the State's comprehensive wildlife conservation strategy entitled *Florida's Wildlife Legacy Initiative*.

Habitat Descriptions and Benefits to Federal Trust Species

Coastal Strand

Coastal strand is confined to the northeastern and southern portions of the Focus Area. This habitat is composed of low-growing vines, grasses, and other salt-tolerant vegetation located in a narrow section, parallel to the ocean, which is affected by wind and wave action.

The State of Florida identifies coastal strand as in poor and declining condition. The greatest threat to this habitat is erosion, sedimentation, habitat fragmentation and degradation, altered soil, and altered species composition. The Service has identified that coastal strand communities have a significant ecological role as habitat for up to 16 federally listed and 50 State listed species.

Coastal Tidal River or Stream

The majority of the coastal tidal rivers and streams are located in the southwest portion of the Focus Area along the Gulf coast, although some are moderately distributed along the Atlantic coast. This habitat consists of the freshwater or brackish components of both rivers and streams which are adjacent to estuaries or other habitats that are influenced by tides. Vegetation will vary depending on the salinity, temperature, and water clarity, but may include cord grass, seagrasses, and algae.

The State of Florida identifies coastal tidal rivers and streams as in poor and declining condition. The greatest threat to the freshwater component of this habitat is alteration in species composition, hydrology, and landscape, while the major threats affecting the marine component are alterations in hydrology, species composition, water quality, and habitat degradation and disturbance. The State has identified that coastal tidal rivers and streams have a significant ecological role as habitat for up to 5 federally listed species and 16 State listed species.

Cypress Swamp

Cypress swamps are primarily confined to the western portion of the Focus Area. This wetland habitat which is frequently inundated is located along river banks, creeks, and lakes where they create a forested border. Dominant vegetation includes bald or pond cypress, and to a lesser extent, black gum, red maple, and sweetbay. The understory, which is dependent on the frequency of flooding events, may consist in part of buttonbush, lizard's-tail, and ferns.

The State of Florida identifies cypress swamp as in poor and declining condition. The greatest threat to this habitat is alterations in hydrology, landscape, soil, community, and species

composition. The State has identified that cypress swamps have a significant ecological role as habitat for up to 6 federally listed species and 11 State listed species.

Florida Scrub

Within the South Florida Native Habitats Restoration Focus Area, Florida scrub can be found on coastal and inland ridges in St. Lucie, Martin, Palm Beach, and Broward Counties on the Atlantic Coast, and Lee and Collier Counties on the Gulf Coast. Florida scrub is a plant community easily recognized by the dominance of evergreen shrubs and frequent patches of bare, white sand.

The State of Florida identifies Florida scrub as in poor and declining condition. The greatest threat to this habitat is agricultural, commercial, and residential development, fragmentation of habitat, and altered fire regimes and hydrology. With 32 federally listed and 100 State listed threatened and endangered species dependent upon Florida scrub, this habitat community represents one of the highest priorities for the Coastal Program in South Florida.



Savannas Preserve State Park scrub restoration project and resident threatened Florida scrub-jay. (Photos: USFWS)

Freshwater Marsh and Wet Prairie

Freshwater marshes and wet prairie habitats are principally located in the central portion of the Focus Area. Both habitat types are located in areas of significant alterations in topography and elevation adjacent to lakes and rivers. Freshwater marshes, which are usually found in deeper water, are characterized by an intermediate to long hydroperiod and are dominated by both emergent and floating vegetation including sawgrass, cattail, bulrushes, maidencane, beakrush, spikerush, marsh bladderwort, and water lilies. Wet prairies are usually located in shallow areas that are influenced by a short hydroperiod, and are dominated by aquatic grasses and sedges such as sawgrass, muhly grass, beakrush, black sedge, and wire grass.

The State of Florida identifies freshwater marsh and wet prairie habitats as in poor and declining condition. The greatest threats to these habitats are alteration in hydrology, fire regime, landscape, poor water quality, species composition, and habitat fragmentation. The Service has identified that freshwater marshes and wet prairies have a significant ecological role as habitat for up to 12 federally listed and 82 State listed species.

Mangrove Swamp

The vast majority of the mangrove swamps in the Focus Area are located in the southwestern area along the Gulf coast, south along the Keys (more extensive in the lower Keys), and a narrow

fringe along the Atlantic coast. This habitat is generally found along low-energy shorelines in protected, tidally influenced areas, and is usually composed of red, black, and white mangroves. Additional vegetation commonly associated with mangroves includes buttonwood, and a variety of vines such as rubber vines and morning-glory.

Mangroves play a vital ecological role as habitat for endangered and threatened species, and contribute significantly to the economy of the coastal counties in south Florida. They are a vital component of the estuarine and marine environment, providing a major detrital base to organic food chains, significant habitat for arboreal, intertidal and subtidal organisms and commercially important fish and invertebrates; nesting sites, cover and foraging grounds for birds, and habitat for reptiles and mammals. As a result of habitat loss and degradation, these communities are rapidly declining in south Florida.

The State of Florida identifies mangrove swamp as in poor and declining condition. The greatest threat to this habitat is habitat destruction, and hydrology alteration. The Service has identified that mangroves have a significant ecological role as habitat for up to 9 federally listed and 46 State listed species.



Mangrove restoration project. (Photos: USFWS)

Salt Marsh

The vast majority of salt marsh habitat in the Focus Area is located in the south and southwestern portion of the Gulf coast, the lower Keys, and a narrow fringe along the Atlantic coast. This habitat is located in intertidal areas adjacent to coastal areas which may be inundated by salt or brackish water periodically. Common vegetation in these areas consists of grasses, sedges, and rushes including smooth cordgrass which is usually found in areas of lower elevation, needle rush in less inundated areas, and marsh-hay, glasswort, saltwort, saltgrass, sea-eye daisies, marsh-elder, and saltbush at higher elevations.

The State of Florida identifies salt marshes as in poor and declining condition. The greatest threat to this habitat is habitat destruction and fragmentation, and sedimentation. The Service has identified that salt marshes have a significant ecological role as habitat for up to 6 federally listed and 27 state listed species.

Seagrasses

Seagrasses are submerged plants which form dense vegetative communities primarily in shallow coastal waters throughout south Florida. Factors which effect the distribution of seagrasses include water temperature, salinity, light, nutrient availability, wave energy, and tidal range. In addition to stabilizing sediment and maintaining water clarity, seagrass communities are very productive ecosystems as they support a large and diverse faunal and floral population.

The State of Florida identifies submerged aquatic vegetation as in poor and declining condition. The greatest threat to this habitat is sedimentation, habitat destruction, and altered species composition and water quality. The Service has identified that seagrass communities have a significant ecological role as habitat for up to 11 federally listed and 26 State listed species.

Tropical Hardwood Hammock

Hardwood forests are sparsely distributed south of Vero Beach to Sarasota along the Atlantic and Gulf coasts, respectively, including many of the tree islands in the Everglades and uplands in the Florida Keys. This habitat is composed of as many as 35 species of trees and 65 species of shrubs including Jamaica dogwood, mahogany, gumbo-limbo, ironwood, lancewood, pigeon plum, mastic, bustic, live oak, cabbage palm.

The State of Florida identifies tropical hardwood hammock as a habitat that is in poor and declining condition. The greatest threat to this habitat is alteration of landscape, species composition, hydrology, and community, and excessive depredation and/or parasitism. The Service has identified that tropical hardwood hammock has a significant ecological role as habitat for up to 9 federally listed species and 186 State listed species.

Land Use and Ownership

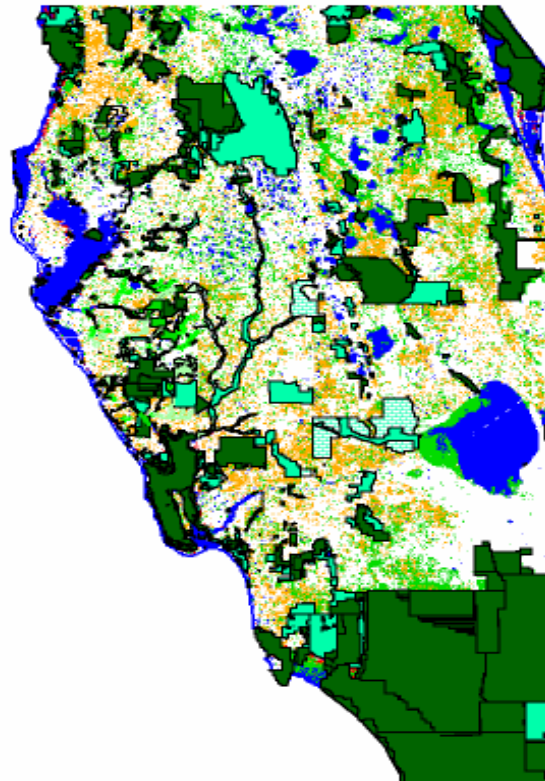
The South Florida Native Habitats Restoration Focus Area is approximately 7,763,000 acres. It represents one of the fastest developing areas in the United States with approximately 1,000 people moving to Florida every day. Within the Focus Area, approximately 900,000 acres are identified as urban, and 1,600,000 acres are in agricultural uses. Despite the heavy development pressure, over 4,000,000 acres are conservation lands. (See Conservation Corridor map below.)

Habitat Restoration Challenges

Threats to fish and wildlife resources and their habitats from urban and commercial sprawl generally include spatial loss of habitat, habitat fragmentation, habitat degradation, environmental contamination, absence of fire or incompatible fire regimes in fire-dependent habitats, disturbance from recreational activities, invasive fauna and flora, and excessive nutrients.

- Actions necessary to reduce these threats include:
- protecting and restoring habitat
- managing native habitats appropriately
- developing low intensity recreational areas
- establishing wildlife corridors
- restoring hydrology
- educating the public
- establishing partnerships and economic incentives for habitat conservation

**Coastal Conservation Corridor
Regional Wildlife Habitat Plan
2000**



Prepared by J. Beaver
Office of Environmental Services
Florida Fish and Wildlife Conservation
Commission, 38200 Tucker Gate,
Punta Gorda, Florida 33955
(813)575-5755



Southwest Florida Conservation Corridor Project.

Partnership Opportunities

The Coastal Program will work with existing partners while seeking new partnerships and opportunities in the South Florida Native Habitats Restoration Focus Area. This will be accomplished in a manner that complements the strategies and established plans outlined above. With the assistance of our partners, the Coastal Program will strive to maintain the structure, function, and ecological processes of coastal habitats while preventing further loss or degradation of these habitats in south Florida.

Strategies between the Service and Partners to Fulfill Habitat Targets

Cooperative efforts undertaken by the Coastal Program and its partners will be complimentary and consistent with strategic and comprehensive plans developed by the Department of the Interior and other Federal, State and county agencies, and NGOs, in fulfilling our mutual habitat restoration goals. The South Florida Native Habitats Focus Area was chosen because it provides the most significant conservation opportunities and allows us to complement the strategies, visions, goals, and conservation plans of the programs highlighted below.

Comprehensive Everglades Restoration Plan

The Florida Everglades is home to 22 federally endangered and threatened species including are 4 birds, 5 reptiles, 5 plants, and 2 mammals: the West Indian manatee and the Florida panther. This area has been extensively modified after decades of canal construction, diking, and agricultural use. The Service, working with the U.S. Army Corps of Engineers, the South Florida Water Management District, and numerous other Federal, State, local and tribal partners, has developed a plan known as the Comprehensive Everglades Restoration Plan (CERP). CERP outlines the effort to capture and redirect most of the 1.7 billion gallons of water lost to the ocean and Gulf every day. Upon completion, 80 percent of the reclaimed water will be directed back to the ecosystem, and up to 94 percent of the pre-drainage flow will be re-routed to benefit Everglades National Park, ecological restoration, and water supply for south Florida.

Migratory Bird Program

The Service's Migratory Bird Program protects, restores, and manages migratory bird populations and their habitats to ensure their sustainability, increase their socioeconomic benefits; and to improve recreational opportunities such as hunting and bird watching. To fulfill these goals, the program focuses on on-the-ground bird conservation primarily through the fiscal support of the Service's National Wildlife Refuge System and Partners for Fish and Wildlife. The South Florida/Everglades area represents the single most important area for unique and rare bird populations in the United States.

National Fisheries Program

The alarming rate of decline of certain fisheries and their habitats in America's coastal areas is a major concern. The national Fisheries Program works with partners to protect the health of aquatic habitats, restore fish and other aquatic resources, and provide opportunities for the public to use and benefit from healthy aquatic resources. The Coastal Program has funded numerous projects involving the eradication of exotic vegetation in aquatic habitats, and the restoration and enhancement of mangrove and seagrass habitats critical for spawning habitat.

National Wildlife Refuge Comprehensive Conservation Plan

Of the 28 NWRs in Florida, 17 occur within the Coastal Program in South Florida/Everglades service area and 11 are addressed in the specific South Florida Native Habitats Focus Area. All NWRs are to be managed according to their approved CCPs. These 15-year management plans provide long range guidance to achieve refuge goals, assist in fulfilling the Refuge System mission, and restore the ecological integrity of each refuge. More specifically, the CCPs address the conservation objective for the species and habitats which the Coastal Program can implement by delivering on the ground habitat restoration projects for priority species and habitats.

The National Parks Legacy Project

The National Parks Legacy Project enhances America’s conservation efforts by improving our understanding of the complex relationships among plants, animals, and ecosystems. It also works to better our understanding of the potential impacts of human development, pollution, non-native species, pressures from increased park visitation, and it protects and restores ecosystems. Five of the 11 national parks in Florida are located in the South Florida Native Species Habitats Restoration Focus Area.

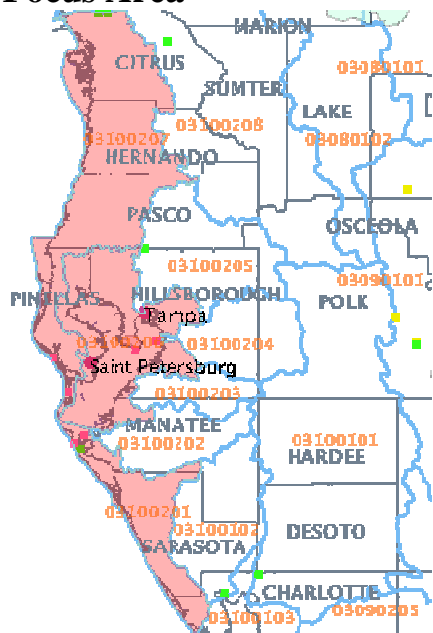
Five Year Performance Targets/Outputs

Our habitat conservation goals for the South Florida Native Habitats Restoration Focus Area will be based on the needs identified by the conservation plans listed above. These goals are an estimate of what the Coastal Program might accomplish for Federal Trust Resources given FY 06 funding levels and knowledge of our past partnerships and expected opportunities.

- The acreage of wetlands habitats conserved: 600 acres restored/enhanced
- The acreage of uplands habitats conserved: 400 acres restored/enhanced
- The miles of riparian/river or shoreline conserved: 0

Coastal Program in Tampa Bay

Tampa Bay Focus Area



Focus Area Ecosystem Description

The Tampa Bay Focus Area coincides with the boundaries of the Tampa Bay Estuary Program which includes Tampa Bay, Boca Ciega Bay, the Manatee River and their associated coastal wetlands and uplands. Portions of Hillsborough, Manatee and Pinellas Counties are included and three US Geologic Service Hydrologic Unit Codes are identified to encompass the focus area; Tampa Bay (03100206), Sarasota Bay (03100201) and Crystal-Pithlachascotee (03100207). The Focus Area is the area where the majority of the Coastal Program in Tampa Bay’s projects

has been implemented in the past, and is the area where most of our partners have mutually directed their efforts. It is an essential and productive area for a multitude of our trust resources.

Habitat Descriptions and Benefits to Federal Trust Resources

Within and around Tampa Bay, there are 9 federally listed species and 2 species that were formerly considered for listing. In addition, there are 2 species that are listed as threatened by the Florida Fish and Wildlife Conservation Commission and 9 that are listed as species of special concern. There are also 6 species that are on the Partners in Flight/Audubon Watch List. The Tampa Bay system also provides habitat for many neo-tropical migrant birds and over 200 species of fish, many of which are commercially and recreationally important. The restoration of habitat to support these Trust Species is the cornerstone of the Coastal Program in Tampa Bay.



Tampa Bay estuarine marsh communities with resident shorebirds including roseate spoonbill and wood stork. (Photos: USFWS)

Many of the species are mobile and may use multiple habitats at widely dispersed sites on any given day. The best way to provide and maintain the habitats required for multiple mobile species is to address a mosaic of habitats that creates a healthy estuarine ecosystem, rather than implementing projects that address only one species or habitat.

Tampa Bay is located geographically in a transition zone between tropical and temperate climates. Vegetation and biota of each of those zones may be found intermixed in the area. Ecosystems of the focus area (Myers and Ewel, 1990) include pine flatwoods, temperate hardwood forests, rivers and springs, dunes and maritime forests, salt marshes, mangroves and inshore marine habitats. .

The principle habitats associated with those ecosystems that are addressed through the Coastal Program are highlighted below. These habitat descriptions follow those found in the State's comprehensive wildlife conservation strategy entitled *Florida's Wildlife Legacy Initiative*.

Bivalve Reef

This habitat is comprised of dense, expansive concentrations of sessile mollusks that attach to hard substrates and each other. Bivalve Reefs occur in both intertidal and subtidal zones. In Florida the most extensive examples of this habitat, which are oyster dominated, are restricted to estuarine environments where salinity concentrations range from 15 to 30 parts per thousand. Events or processes that alter freshwater deliveries to estuaries are detrimental to this habitat.

Bivalve reef is a diverse ecological community that provides nursery grounds, refugia and foraging areas to a wide variety of wildlife species.

Florida classifies bivalve reef condition as poor and declining. Tampa Bay's bivalve reef is almost exclusively oyster reef. Oysters are important in estuarine systems for their water filtering capabilities and for the habitat their reefs provide for many other species. Although oysters were once an important species in Tampa Bay's commercial fishery industry they are no longer harvested. It was probably a combination of oyster reef loss and reef closure to harvest that led to the demise of the fishery.

Submerged Aquatic Vegetation

Seagrasses are the group of plants in the Submerged Aquatic Vegetation habitat type that the Coastal Program addresses. They are marine flowering plants adapted to grow and reproduce in the underwater environment. Factors that affect the establishment and growth of seagrass include light availability, water temperature, salinity, sediment composition, nutrient levels, wave energy and tidal range. Seagrass most often occurs in areas of low to moderate current velocities where the water is clear, thereby allowing sunlight to penetrate to the leaf blades. Seagrass communities are highly productive, faunally rich, and ecologically important systems. Hundreds to thousands of species of flora and fauna may inhabit seagrass habitats utilizing food, substrate and shelter provided by the plants. Seagrasses also stabilize sediments and help maintain water clarity.

Florida classifies the current status of submerged aquatic vegetation as poor and declining. Up to 40 percent of the historical seagrass acreage of Tampa Bay was lost due to a multitude of reasons. A goal of the restoration community around Tampa Bay is the restoration of an additional 12,000 acres to the 26,000 acre baseline established in the Comprehensive Conservation and Management Plan of the Tampa Bay Estuary Program. The 4 species of seagrass are found in Tampa Bay are Turtlegrass, manateegrass, shoalgrass and stargrass. The relative abundance of each species is not known.

Tidal Flat

Tidal flats are non-vegetated areas of sand or mud protected from wave action. An important characteristic of the tidal flat environment is its alternating condition of submergence and exposure as a result of lunar tides and wind driven events. The unconsolidated substrates of tidal flats around Tampa Bay are mineral based.

Florida classifies the condition of Tidal Flat habitat as poor and declining. Although tidal flats may look barren they may contain infaunal densities of tens of thousands per meter square. This makes them critically important and productive feeding grounds for many species of shorebirds, wading birds and other waterbirds, and fishery species.

Mangrove Swamp

Mangroves form dense, brackish water swamps along low energy shorelines and in protected, tidally influenced bays. Mangrove forests around Tampa Bay are composed of 4 species including red, black, and white mangroves and buttonwoods. A generalized zonation pattern for the distribution of mangroves in relation to tidal inundation indicates red mangroves would occur the most seaward, followed by black mangroves, white mangroves and buttonwoods inhabiting progressively landward zones, with buttonwoods growing above the high tide mark. This pattern

is only a generalization and may be altered by many factors, including slope, soil type, interspecific competition and disturbance.

Mangroves are found throughout the Tampa Bay system on both the mainland and islands, and have suffered less loss than other vegetated habitats around the Bay. They are important habitats of estuarine ecosystems for a multitude of reasons. They provide nesting, fledging, foraging and roosting sites for many species of wading, shore and waterbirds, as well as birds of prey. They also provide similar habitat functions for fish, shellfish and crustaceans. Other functions provided by mangroves include pollutant trapping, nutrient cycling and storm effect attenuation.

The State's wildlife management plan identifies mangrove forests as in poor and declining condition. Although they have suffered less acreage loss than other habitat types around Tampa Bay, they are under continual and increasing threat from coastal development.

Salt Marsh

Salt marsh is vegetated almost completely by herbaceous plants, primarily grasses, sedges and rushes. This community type occurs within the intertidal zone of coastal areas and may be infrequently (high marsh) to frequently (low marsh) inundated by salt or brackish water. Salt marsh develops where wave energies are low and where mangroves are absent. Tidal creeks usually dissect larger salt marshes. Within a salt marsh plant species are often distributed unevenly, with distributions affected by biotic and abiotic variables such as, elevation, substrate type, degree of slope, wave energy, competing species and salinity. Smooth cordgrass typically occupies the lower elevations and is usually adjacent to tidal creeks and pools. Needlerush dominates the slightly less frequently inundated zone.

Florida lists the current condition of Salt Marsh as poor and declining. Salt marsh is found in all segments of Tampa Bay. Around the Bay up to 38 percent of the needlerush marsh has been lost, and up to 13 percent of the area mapped as mangrove/cordgrass marsh has been lost. Restoring salt marsh is a priority of the natural resource restoration community of Tampa Bay in recognition of the primary production, habitat for aquatic and terrestrial species, and sediment stabilization and storm protection it provides.

Coastal Tidal River or Stream

Coastal Tidal River or Stream habitat includes the freshwater or brackish portions of a river or stream adjacent to an estuary or marine habitat in which the effects of tides cause the rise and fall of water levels. The amount of water movement is controlled by the height of the tides, tidal range, downstream freshwater flow rates, rainfall and wind. Saltwater wedges are formed in many of these systems, enabling numerous species a mechanism to move up or down river. Water flow is bidirectional in coastal tidal rivers and streams; as the tide rises, water flows toward the head of the river and, as the tide retreats, the water flows toward the coastal outlet. This habitat bridges the freshwater and marine realms, with aquatic communities ranging from tidal freshwater to tidal brackish. Salinities can vary from freshwater to approximately that of seawater. This variation, along with temperature and water clarity, determines the flora and fauna of the Coastal Tidal River or Stream. Typical plants may include cord grass or submerged aquatic vegetation such as seagrasses and algae.

Four rivers (Hillsborough, Alafia, Little Manatee and Manatee) and 101 named minor tributaries contribute freshwater to the Bay. Two of these 4 rivers entering Tampa Bay are dammed, and an unknown number of the minor tributaries have altered shorelines and saltwater barriers. The

State lists the current condition of Tidal Rivers and Streams as poor and declining. Oligohaline (low salinity) habitats found in the upper reaches of tidally influenced rivers and streams are vital nursery areas for many commercially, recreationally and ecologically important fishery species. Restoring that habitat type is a priority of the Tampa Bay Estuary Program and many of the partners involved in habitat restoration around Tampa Bay.

Hardwood Hammock Forest

This class includes the major upland hardwood associations that occur statewide on fairly rich sand soils. Variations in species composition and the local or spatial distributions of these communities are due in part to differences in soil moisture regimes, soil type and geographic location within the state. Included in this category are cabbage palm/live oak hammocks. This class is characterized by cabbage palms and live oaks occurring in small clumps within prairie communities. These hammocks typically have an open understory which may include such species as wax myrtle, water oak and saw palmetto. Cabbage palms often form a fringe around hardwood "islands." Hardwood hammock forests are a cabbage palm/live oak assemblage with saw palmetto and wax myrtle being the most common understory plants.

Natural Pineland

Natural Pineland habitats include upland pine forests as well as mesic, hydric and scrubby flatwoods and upland pine forests. Before European settlement much of north and central Florida was covered by Natural Pineland, but has been altered by conversion to agriculture and pine plantations, alteration of fire regimes, and the introduction of exotic species. Pine flatwoods occur on flat sandy terrain where the overstory is characterized by longleaf pine, slash pine or pond pine. The type of pineland habitat present is usually related to soil differences and small variations in topography. Hydroperiod is an important factor determining what kind of pineland is represented. Flatwoods may be dominated by longleaf pine, pond pine or slash pine. The understory and groundcover within these three communities are somewhat similar. Natural pinelands are either long leaf or slash pine habitats with a predominantly a saw palmetto understory.

The state lists the status of natural pineland as poor and declining and that of hardwood hammock as unknown. Both upland habitat types have been severely impacted by commercial, residential and agricultural alterations with very little natural upland remaining around the bay. Uplands that were cleared and subsequently abandoned have become prime locations for invasion by exotic vegetation. Extensive monotypic stands of Brazilian pepper, along with Australian pine, cogon grass and many other species now cover what historically were forested uplands, reducing or eliminating their natural habitat characteristics and functions.

Land Use and Ownership

Land ownership and use of Tampa Bay is mixed among private, city, county, state and Federal entities and is most characterized by the large urban metropolitan areas of Tampa/St. Petersburg. Although most of the bay bottom is under state ownership, the Tampa Port Authority has permitting authority. Just as land ownership is mixed so is land use; running the gamut from coastal preserve to city to port and industrial. There are natural shorelines and several hundred miles of altered shoreline.

Partnership Opportunities

Tampa Bay has a well established, aggressive habitat restoration community. Groups that the Coastal Program has partnered with include:

- Tampa Bay Estuary Program
- Sarasota Bay Estuary Program
- Tampa Bay Watch
- National Audubon Society, Florida Coastal Islands Sanctuaries
- Hillsborough County
- Manatee County
- Pinellas County
- Florida Department of Environmental Protection
- Southwest Florida Water Management District
- Florida Institute for Saltwater Heritage

Strategies between the Service and Partners to Fulfill Habitat Targets

The Coastal Program in Tampa Bay will achieve its natural resource conservation goals by working in cooperation with our partners to implement conservation strategies that address pertinent issues identified in numerous Federal, state and local habitat conservation plans. Examples of the conservation plans included are: the Service's Strategic Plan for the Division of Migratory Birds, the Strategic Plan for the Jacksonville, Florida Ecological Services Field Office, *Florida's Wildlife Legacy Initiative* comprehensive wildlife management initiative, and the Comprehensive Conservation and Management Plans for the Tampa Bay and Sarasota Bay Estuary Programs.



Cockroach Bay multi-partnership restoration project. (Photos: USFWS)

Habitat Restoration Challenges

The perpetual challenges for restoration efforts are identifying suitable sites, generating adequate funding and developing techniques that effectively address the difficulties of reestablishing complex habitats. Identifying the most important habitats and finding suitable sites are the first steps to restoration. Those have been initially identified through planning committees involving partners around the bay, and then incorporating those findings into restoration plans of the individual partners. By having identified habitats, sites and potential partners, strength is added to funding requests from all sources. Habitat restoration research and implementation in Tampa Bay are active and progressive. They will continue to grow as our knowledge increases and as new partnerships are established.

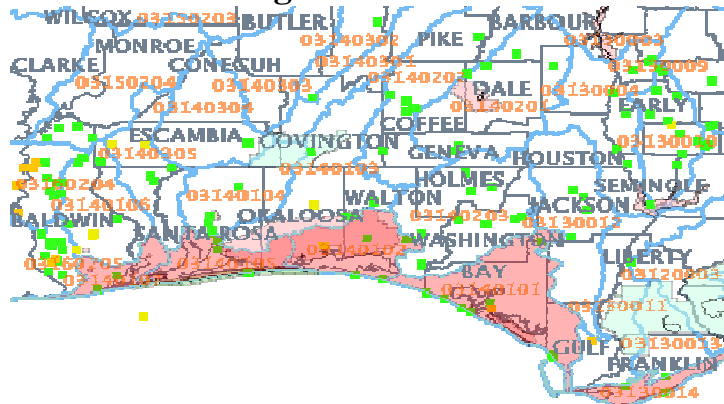
Five Year Performance Targets/Outputs

Our habitat conservation goals for the Tampa Bay Focus Area will be based on the needs identified by the conservation plans listed above. These goals are an estimate of what the Coastal Program might accomplish for Federal Trust Resources given FY 06 funding levels and knowledge of our past partnerships and expected opportunities.

- The acreage of wetlands habitats conserved: 200 acres restored/enhanced
- The acreage of uplands habitats conserved: 200 acres restored/enhanced
- The miles of riparian/river or shoreline conserved: 0

The Coastal Program in the Florida Panhandle

Panhandle Living Shorelines Focus Area



Focus Area Ecosystems Descriptions

The Panhandle Living Shorelines Initiative Focus Area coincides with the shoreline on the Gulf of Mexico from Perdido Key to St. George Sound, including Pensacola Bay, Choctawhatchee Bay, St. Andrews Bay, San Blas Bay, and western Apalachee Bay. The US Geologic Service

Hydrologic Unit Codes identified in the focus area include: Perdido Bay (03140107), Choctawhatchee Bay (03140102), Pensacola Bay (03140105), St. Andrew-St. Joseph Bay (03140101), Apalachicola Bay (03130014). The following geographically significant areas lie within this Focus Area:

- Apalachicola National Estuarine Research Reserve
- Gulf Island National Seashore
- St. Vincent National Wildlife Refuge
- 5 bay systems – Perdido, Pensacola, Choctawhatchee, St. Andrews, and Apalachicola Bays
- 6 aquatic preserves – Apalachicola Bay, Fort Pickens, Rocky Bayou, St. Andrews, St. Joseph, and Yellow River Marsh
- 23 units identified under the Coastal Barriers Resources Act
- Approximately 60 other managed lands including Navy and Air Force lands, State parks, and private preserves

Habitat Descriptions and Benefits to Federal Trust Resources

The primary goal in our Focus Area is to establish living shorelines (e.g., salt marsh, seagrass, oyster reef, tidal flat, beach, and dune habitats) as the primary means for protecting eroding shorelines in the bayous, estuaries, and coastline of northwest Florida, thereby steering coastal protection towards soft alternatives and away from hardening where appropriate. Restoration and enhancement actions that improve coastal wetland and upland habitat quality and/or water quality in the Panhandle Living Shoreline Initiative Focus Area will benefit several Trust Species. These include more than 30 federally listed fish, reptiles, birds, mammals, and plants, and more than 20 species of concern. The Focus Area also includes critical habitat for the gulf sturgeon, Choctawhatchee beach mouse, Perdido Key beach mouse, and piping plover, and proposed critical habitat for the flatwoods salamander.

Florida's Wildlife Legacy Initiative, Florida's comprehensive wildlife conservation strategy (Strategy), describes 45 terrestrial, freshwater, and marine habitat categories that comprise the state of Florida. Nearly 1,000 wildlife species are identified as Species of Greatest Conservation Need in these 45 habitats. The Strategy identifies 9 marine habitat categories with the highest relative threat status, including 7 that are found in our focus area: Beach/Surf Zone, Bivalve Reef, Coastal Tidal River or Stream, Inlet, Salt Marsh, Submerged Aquatic Vegetation, and Tidal Flat. It also identifies 3 freshwater habitat categories with the highest relative threat status, including 2 that are found in our Focus Area: Coastal Tidal River or Stream, and Softwater Stream. In addition, it identifies 8 terrestrial habitat categories with the highest relative threat status, including 5 that are found in our Focus Area: Beach/Surf Zone, Coastal Strand, Freshwater Marsh and Wet Prairie, Natural Pineland, and Scrub.

Bivalve Reef

This habitat is comprised of dense, expansive concentrations of sessile mollusks that attach to hard substrates and each other in both intertidal and subtidal zones to depths of 40 feet (12 m). It is a diverse ecological community that provides nursery grounds, refugia, and foraging areas to a wide variety of wildlife species. Bivalve reefs in the focus area are dominated by oysters and restricted to estuarine environments where salinity concentrations range from 15 to 30 parts per thousand.

Submerged Aquatic Vegetation

Submerged Aquatic Vegetation is defined as any combination of seagrasses, oligohaline grasses, attached macroalgae and drift algae that covers 10 to 100 percent of a substrate. Seagrasses are marine flowering plants adapted to growth and reproduction underwater. Florida estuaries and nearshore coastal waters contain the nation's largest seagrass resources (more than two-million acres), as well as its two most extensive, contiguous seagrass beds (i.e., Florida Bay and the Big Bend region). Factors that affect the establishment and growth of seagrass include light availability, water temperature, salinity, sediment composition, nutrient levels, wave energy, and tidal range. Seagrass most often occurs in areas of low to moderate current velocities where the water is clear; thereby allowing sunlight to penetrate to the leaf blades. Seagrass communities are highly productive, faunally rich, and ecologically important systems. Hundreds to thousands of species of flora and fauna may inhabit seagrass habitats utilizing food, substrate, and shelter provided by the plants. Seagrasses also stabilize sediments and help maintain water clarity.

Tidal Flat

Tidal flats are non-vegetated areas of sand or mud protected from wave action and composed primarily of mud transported by tidal channels. An important characteristic of the tidal flat environment is its alternating tidal cycle of submergence and exposure to the atmosphere.

Salt Marsh

The Salt Marsh habitat is among the most productive communities in the world. Primary production is greatly affected by soil salinity and tidal frequency. Vegetation is herbaceous plants, primarily grasses, sedges, and rushes. This community type occurs within the intertidal zone of coastal areas and may be infrequently (high marsh) to frequently (low marsh) inundated by salt or brackish water. Salt Marsh develops where wave energies are low and where mangroves are absent. Species distributions are affected by biotic and abiotic variables such as elevation, substrate type, degree of slope, wave energy, competing species, and salinity.

Beach/Surf Zone

The Beach/Surf Zone is the long, often narrow strip of sand and shells between the tides. Daily flooding by salt water and moderate- to high-energy waves prohibit most plant growth. Low-energy beaches provide important spawning habitat for horseshoe crabs and feeding habitat for many species of shorebirds. Beach dunes are mounds of windblown sand that are periodically inundated by seawater during extreme high tides and storms. Beaches are important nesting sites for several species of shorebirds and wintering grounds for others. They also provide nesting habitat for sea turtles and support numerous other mammals and invertebrates. The surf zone is an important nursery and feeding habitat for many species of fish.

Inlet

Inlets are natural or man-made cuts in the shoreline that link coastal and inland water bodies. This habitat is defined as the subtidal area within a two-kilometer radius of the central part (i.e., throat) of the Inlet. These features tend to be hot spots of biodiversity and are critical in the recruitment of many fish and invertebrate species. Inlets provide habitat for the settling larvae from coastal areas and provide an emigration conduit for outgoing juveniles. They also are essential spawning habitat for several marine fishes.

Coastal Tidal River or Stream

This habitat includes the freshwater or brackish portions of a river or stream adjacent to an estuary or marine habitat in which the effects of tides cause the rise and fall of water levels. The amount of water movement is controlled by the height of the tides, tidal range, downstream freshwater flow rates, rainfall, and wind. Tides upriver may lag several hours behind those on the coast. Varying salinity, from freshwater to approximately that of seawater, allows for diversity in the aquatic communities. Typical plants include cord grass or submerged aquatic vegetation such as seagrasses and algae. Coastal tidal rivers and streams in the focus area drain into the Gulf of Mexico through the 5 bay systems in our focus area.

Coastal Strand

Coastal Strand is the vegetated zone that typically occurs between open beach and maritime hammock habitats, including dunes, upper beach, and coastal rock formations. It occurs on deep, well-drained, sandy soils that are largely wind-deposited and washed or sorted by wave action to some extent. It occurs in long, narrow bands along high-energy shorelines of the Gulf of Mexico, and some coastal bays or sounds. Vegetation in this habitat is strongly affected by wind, wave action, and salt spray and consists of low-growing vines, grasses, and other herbaceous plants and salt-tolerant shrub species that, in some areas, may form dense thickets. Pioneer or early successional herbaceous vegetation characterizes foredune and upper beach areas with a gradual change to woody shrub species on the more protected and stabilized areas farther landward.



Fragile coastal strand community and Santa Rosa beach mouse. (Photos: © Paul Lang,USFWS)

Freshwater Marsh and Wet Prairie

These wetland communities are dominated by a wide assortment of herbaceous plant species growing on sand, clay, marl, and organic soils in areas of variable water depths and inundation regimes. Generally, freshwater marshes occur in deeper, more strongly inundated areas and are characterized by tall emergents and floating-leaved species. They are common features of many river deltas, including the Escambia, Apalachicola and Choctawhatchee, where these rivers discharge into estuaries. Wet prairies commonly occur in shallow, periodically inundated areas and are usually dominated by aquatic grasses, sedges, and their associates.

Scrub

This habitat occurs on areas of deep, well-drained, infertile sandy soils that are typically white or near white. Scrub has a patchy distribution and occurs in both inland and coastal areas. It is fire-

dependent, maintained by fires that are usually very hot or intense, but occur infrequently at intervals of 10-20 years, or more. Generally, Scrub is dominated by evergreen, or nearly evergreen, oaks and/or Florida rosemary, with or without a pine overstory.

Natural Pineland

Natural Pineland habitats include mesic, hydric and scrubby flatwoods, and upland pine forests. Before human settlement, much of north and central Florida was covered by Natural Pineland. Much of this habitat type has been altered by humans as a result of conversion to agriculture and pine plantations, alteration of fire regimes, and introduced species. Pine flatwoods occur on flat sandy terrain where the overstory is characterized by longleaf pine, slash pine, or pond pine. The type of pineland habitat present is usually related to soil differences and small variations in topography. Hydroperiod is an important factor determining what kind of pineland is represented. Fire is an important factor that helps to maintain and shape Natural Pineland communities, and nearly all of the plants and animals that occur there are adapted to a fire interval of 1-8 years.

Softwater Stream

Typical Softwater Streams originate from sandy flats containing broad wetlands which collect rainfall and slowly release water into the stream. This habitat category has water with low pH, low carbonate, that may be stained by tannins and humic acids filtered from the drainage of swamps and marshes. The flow rate is usually gentle in smaller streams to moderate in larger, but is altogether influenced by seasonal local rainfall. These streams typically have sand or silt bottoms with varying amounts of aquatic vegetation. Most of the streams in this category are small natural streams originating in pinelands or swamps or small natural segments of otherwise channelized streams in south central Florida. Large Softwater Streams include the Blackwater, Yellow, Perdido, Econfina, Sopchoppy, and Ochlockonee rivers.

Land Use and Ownership

Densely developed urban areas occur on the coast of the Florida Panhandle, and urban growth continues to increase rapidly. Historic activities such as dredging, filling, industrial practices, silviculture, and agriculture have altered habitats and resulted in losses of seagrass beds, marshes, river flood plains, and coastal upland forests.

Habitat Restoration Challenges

The Strategy compiles habitat threats and proposed actions to alleviate them, prioritizes the most urgent concerns, and develops a cooperative and incentive-based approach to address these issues. It demonstrates the great challenges we face in trying to conserve our natural resources and to keep common species common for the enjoyment and use by all Floridians.

As many Americans build their homes in coastal areas, and many more flock to the coast for recreation and economic opportunities, the demand intensifies for conservation of coastal resources. Four species of federally protected sea turtles use Panhandle beaches for nesting. Shoreline hardening and coastal armoring including vertical bulkheading, interferes with their ability to come ashore, dig their nests, and lay eggs; interrupts natural shoreline processes; eliminates nursery habitat for marine species and foraging habitat for wading birds; and degrades water quality. A primary goal in our Focus Area is to establish living shorelines (e.g., salt marsh,

seagrass, and oyster reef, tidal flat, and dune habitats) as the primary means for protecting eroding shorelines in the coastal areas of northwest Florida, thereby steering coastal protection towards soft alternatives and away from hardening where appropriate.



Living Shoreline Initiative saltmarsh and seagrass restoration project. (Photo: USFWS)

Coastal lighting also deters female sea turtles from coming ashore and disorients hatchlings. The Panhandle also supports primary nesting and/or wintering and migrating habitat for hundreds of species of birds including the Federally-protected piping plover and several state-listed species. Increasing human population, coastal development, beach use, erosion, and habitat disturbance and loss are some of the causes for concern.

The threatened gulf sturgeon is another resident of our focus area, migrating from salt water into coastal rivers to spawn. It inhabits the bays and estuaries in Florida, Alabama, Mississippi, and Louisiana, as well as the major freshwater rivers from the Suwannee River west to the Mississippi River. Threats to its survival include barriers to spawning grounds (dams), habitat loss, and poor water quality. Three species of endangered beach mice survive in dunes and open scrub along the beach, feeding primarily on seeds and insects. Habitat loss is due mostly to coastal development and hurricanes.

Partnership Opportunities (existing and expected)

- Apalachee Regional Planning Council
- Apalachicola Bay and Riverkeeper, Inc.
- Apalachicola National Estuarine Research Reserve
- Bay County Conservancy
- Bay Environmental Study Team
- Choctawhatchee Basin Alliance
- City of Lynn Haven
- Eglin Air Force Base
- Escambia County
- Federal Emergency Management Agency
- Florida Department of Agriculture and Consumer Services
- Florida Department of Community Affairs

- Florida Department of Environmental Protection
- Florida Fish & Wildlife Conservation Commission
- Florida Natural Areas Inventory
- Florida State University
- Florida Trails Association
- Friends of Beatty Bayou
- Friends of Goose Bayou
- Friends of St. Andrew State Park
- Gulf Coast Community College
- International Paper Foundation
- Lake Powell Community Alliance
- National Marine Fisheries Service
- The Nature Conservancy
- Northwest Florida Water Management District
- Okaloosa-Walton College
- Pensacola Bay Area Resource Council
- St. Andrew Bay Environmental Study Team
- St. Andrew Bay Resource Management Association
- St. Joe Community Foundation
- St. Vincent and St. Marks National Wildlife Refuges
- Three Rivers Resource Conservation and Development Council, Inc.
- U.S. Army Corps of Engineers
- U.S. Department of Agriculture
- U.S. Geological Survey
- University of West Florida
- University of Florida
- West Florida Regional Management Council

Strategies between Service and Partners to Fulfill Targets

The Coastal Program of the Florida Panhandle is pro-active, results-oriented, and non-regulatory in our mission to conserve bays, estuaries, shore-lines, and watersheds for the benefit of fish, wildlife, and people. We meet our objectives by:

- Catalyzing partnerships with government agencies and private groups to deliver on-the-ground conservation, restoration, and enhancement;
- Assisting counties in identifying watershed-wide improvements to protect valuable coastal resources and to minimize impacts of development;
- Providing technical assistance to land managers to ensure that management plans for public lands incorporate strong provisions for habitat and resource protection;
- Leveraging Coastal Program funds with other partner contributions to maximize environmental results for each Coastal Program dollar spent, with the goal of achieving a 10:1 funding ratio.

Five Year Performance Targets/Outputs

Our habitat conservation goals for the Panhandle Living Shorelines Focus Area will be based on the needs identified by the conservation plans listed above. These performance targets and outputs are an estimate of what the Coastal Program might accomplish for Federal Trust

Resources given FY 06 funding levels and knowledge of our past partnerships and expected opportunities.

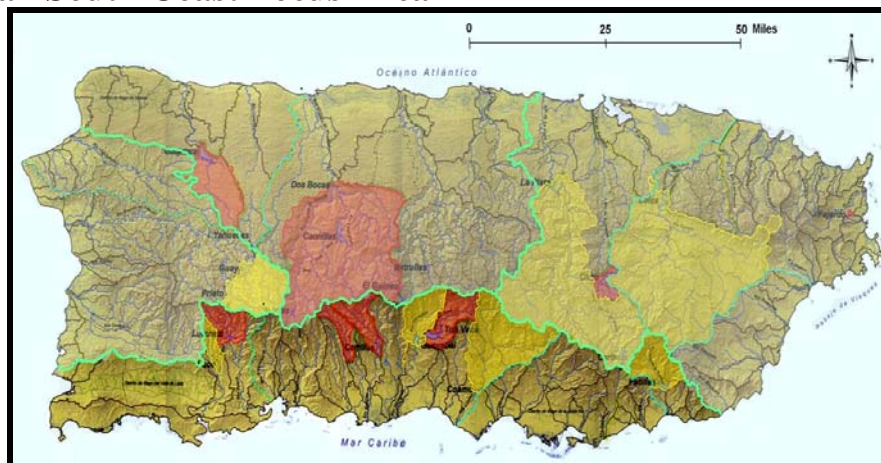
- The acreage of wetlands habitats conserved: 65 acres restored/enhanced
- The acreage of uplands habitats conserved: 5 acres restored/enhanced
- The miles of riparian/river or shoreline conserved: 0

The Coastal Program in the Caribbean

Focus Area Ecosystem Descriptions

The Coastal Program in the Caribbean has developed 3 priority geographic focus areas to guide the Program effort for the next three to five years. The 3 focus areas are: the Puerto Rican South Coast Focus Area, the Puerto Rican Islands Focus Area, and the St. Croix in the U.S. Virgin Island Focus areas. Each is represented by a single 8 digit US Geologic Service Hydrologic Unit Code (HUC). Selection was based on the presence and numbers of Critical Wildlife Areas, National Wildlife Refuges, and other trust resources that offer opportunities for habitat restoration. These 3 Focus Areas are being used in combination with the state Comprehensive Wildlife Conservation Strategies and associated documents to prioritize proposed projects for the Program, allowing geographic area focus with consideration for particularly good opportunities arising outside of the selected focus areas. Additional consideration will go to well designed projects that benefit a combination of trust resources and described habitats.

Puerto Rican South Coast Focus Area



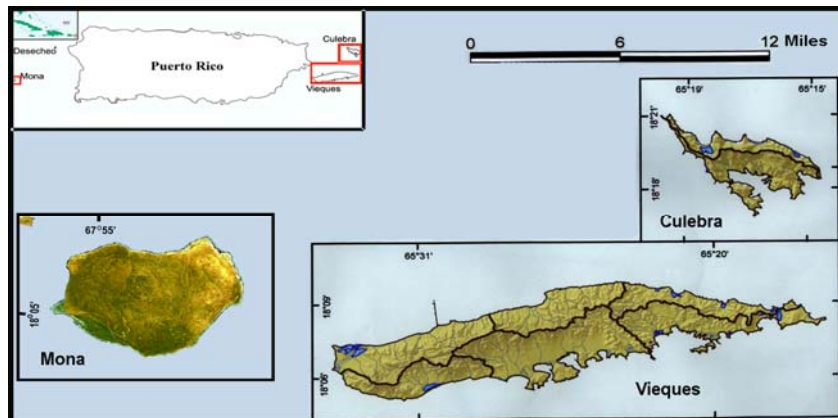
The Puerto Rican South Coast watersheds include the Caribbean Sea coastline from Punta Mala Pascua in the east to Punta Guaniquilla in the west (over 150 miles of coastline). The unit encompasses approximately 765 square miles of the total 3,459 square miles in Puerto Rico. The population of Puerto Rico is approaching four million, and the southern watersheds have an estimated population of 636,799 (2002 census). This unit includes 15 of the 78 island municipalities (Cabo Rojo, Lajas, Yauco, Guánica, Peñuelas, Guayanilla, Ponce, Juan Díaz, Villalba, Coamo, Santa Isabel, Salinas, Guayama, Arroyo, Patillas) and small parts of eight others. The focus area is identified by the USGS HUC 21010004.

The Puerto Rican South Coast unit was selected due to the presence of National Wildlife Refuge units, threatened and endangered species, migratory birds, and the high number of state Critical Wildlife Areas (22) within these watersheds (DNER, 2005). At least 23 federally listed threatened and endangered species are found within these watersheds or nearshore waters. Among the federally listed animal species found mostly or exclusively here are the yellow-shouldered blackbird, the Puerto Rican nightjar, and the Puerto Rican crested toad. Federally listed plant species found in these watersheds (some of them exclusively) are the cobana negra tree, the palo de rosa tree, *Catasbaea melanocarpa* (a shrub), *Eugenia woodburyana*, *Trichilia triacantha*, *Mitracarpus maxwelliae*, *Mitracarpus polycaldus*, and *Vernonia proctorii*. Many other listed species such as the roseate tern, the piping plover, the brown pelican, the Puerto Rican broad-winged hawk, the Puerto Rican sharp-shinned hawk, the Puerto Rican boa, the West-Indian manatee, sea turtles (leatherback, hawksbill, and green), staghorn and elkhorn corals occur within this Focus Area. Dry and moist subtropical forest provides excellent habitat for a wide variety of warblers and other migratory and resident songbirds, and the coastal areas provide important feeding, roosting, and nesting habitat for a wide variety of migratory and resident shorebirds, wading birds and sea birds. The river systems support amphidromous and catadromous native fish and crustacean populations that include at least six species of fish and 13 species of crustaceans, including the American eel. Reservoirs on the island support introduced sportfish.

At least 17 river watersheds with their headwaters in the southern slopes of the Cordillera Central are included in the Focus Area with the possible exception of areas above high dams (red and yellow in the above figure). The high central mountains have rainfall in excess of 80 inches per year, supporting moist and wet montane forest in the higher elevations. Annual rainfall decreases rapidly at lower elevations due to the rain shadow effect to less than 20 inches per year in the southwest corner of the island. Lower elevations near the coast support narrow riparian strips of moist forest near some streams and dry forest in upland areas. The complex shoreline includes numerous bays and offshore cays with mangrove swamp, saline mud flats, and coastal lagoons. Shallow coastal shelf waters support extensive seagrass beds and coral reefs.

Mosaics of these habitats are particularly well developed in the Jobos Bay National Marine Research Reserve (NOAA designated), the Guánica Forest coastline, the La Parguera Commonwealth Marine Reserve, the Boquerón Commonwealth Forest, and the Cabo Rojo National Wildlife Refuge. The once extensive freshwater wetland systems in the Lajas Valley (southwest Puerto Rico), were reduced by agricultural conversion to Laguna Cartagena NWR.

Puerto Rican Islands Focus Area



The Puerto Rican Islands Focus Area (USGS HUC 21010006) includes Vieques and Culebra to the east and Mona Island (including Monito Island) to the west of Puerto Rico. For operational purposes, Desecheo Island (off the west coast of Puerto Rico) and Navassa Island (to the west of Haiti and not shown above), are NWRs with similar characteristics that should be included in this Focus Area. Navassa, Desecheo, and Mona Islands are not inhabited, although Mona has a PRDNER rotating management staff on the island. The coastline, land area, and populations of the islands are summarized below (Mona includes Monito, and Culebra includes associated islands).

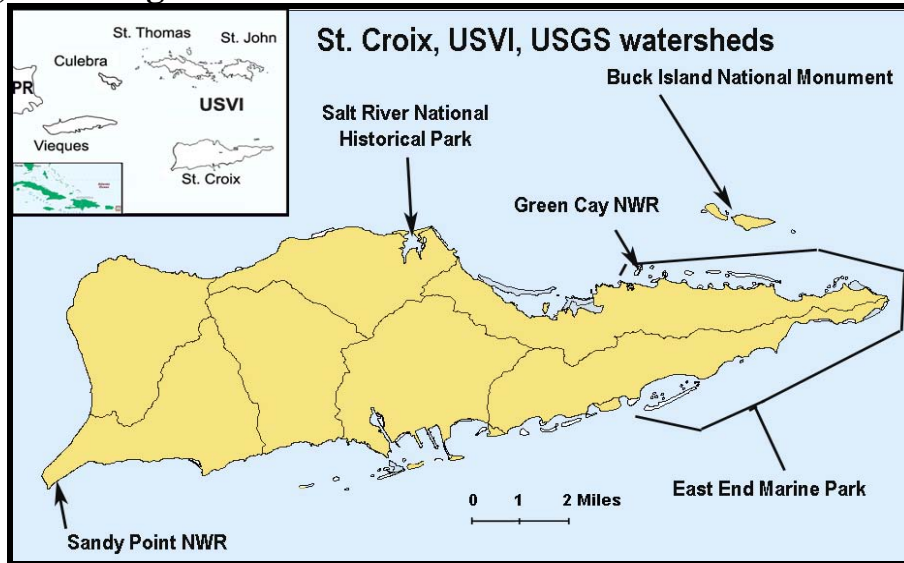
Island	Culebra	Vieques	Mona	Desecheo	Navassa
Coastline (mi)	43	62	20	3	5
Area (sq. mi.)	10	52	22	0.6	2
Population	1,868	9,351			

These islands are relatively dry with low rainfall (less than 30 inches per year). Vieques, Culebra, and Desecheo consist of central volcanic formations with limited limestone coasts and numerous sandy beaches. Mona and Navassa Islands are relatively flat, uplifted karst limestone blocks (former reef) with high cliff coastlines surrounded by deep waters along most of the coast. Mona has limited beaches on the south and southwest coasts, while Navassa has no beaches.

Trust resources on these islands include at least 19 threatened and endangered species, migratory birds, and NWR units. Threatened and endangered species using habitat on these islands include at least three species of sea turtle, brown pelicans, Virgin Island tree boas (Culebra, Vieques), Mona boas (endemic to Mona), Monito geckos (endemic to Monito), yellow-shouldered blackbirds (Mona and Vieques), “Higo chumbo” cactuses (Mona and Desecheo), Mona iguanas (endemic to Mona), roseate terns (Vieques), Antillean manatees (occasional in Vieques waters), Wheeler's Peppermomia (Culebra), *Leptocereus grantianus* (cactuses endemic to Culebra), “cobana negra” trees (Vieques), *Goetzea elegans* shrubs (Vieques), and *Calyptanthus thomasiana* shrubs (Vieques). The recently listed *Acropora* coral species (staghorn and elkhorn corals), are found in the shallow coastal waters of all these islands. Monito harbors the largest seabird colonies in the U.S. Caribbean. Cayos Conejo, a cay associated with Vieques, hosts one of the few remaining brown pelican nesting sites in the U.S. Caribbean. The smaller cays associated with Vieques and Culebra and the uninhabited islands provide particularly important seabird nesting habitat for terns, brown boobies, red-footed boobies, and other sea birds. Culebra and associated cays are visited by over 50,000 seabirds of 13 species annually. The islands with beaches have sea turtle nesting habitat, particularly for leatherbacks and hawksbills, with the highest numbers of nesting hawksbill sea turtles in the U.S. Caribbean on Mona Island, and the second most important leatherback nesting beaches on Culebra. The islands all have coral reefs, and Culebra and Vieques have extensive seagrass beds. Antillean manatees regularly visit the seagrass beds of Vieques.

Shoreline and nearshore habitats in the Puerto Rican Islands Focus Area include high rocky cliffs, low rocky intertidal shoreline, sandy beaches and low dunes, bays, lagoons, salt ponds, hypersaline mud flats, mangrove swamp, seagrass beds, and coral reefs. Because of the steepness, low rainfall, and soil types, most of the uplands are dominated by subtropical dry forest with some moist forest where there are ephemeral or intermittent streams. There are no perennial streams on these islands, although Vieques retains water in pools in some of the intermittent streams, and Culebra has small man-made ponds visited by waterfowl.

St. Croix, U.S. Virgin Islands Focus Area



The St. Croix, VI Focus area encompasses the USGS HUC 21020002. St. Croix is the largest of the three major U.S. Virgin Islands (84 square miles), lying approximately 40 miles south of St. Thomas and St. John with a coastline of over 70 miles and a population of approximately 55,000. A central range of hills (maximum elevation 1,165 ft) runs down the north central length of the island from east to west, with a gently sloped coastal plain dominating the south central and western portions of the island. Rainfall averages about 40 in, with lower rainfall in the east end of the island, and the heaviest in the northwest sector.

Trust Resources include at least 10 threatened and endangered species, many migratory bird species, National Wildlife Refuges (Sandy Point and Green Cay), coral reefs and seagrass beds. Federally listed species include 4 species of sea turtles (leatherback, hawksbills, greens, and an occasional loggerhead), the St. Croix ground lizard, brown pelicans, roseate terns (occasional), piping plovers (occasional), Vahl's Boxwood (a tree), and *Catasbaeia melanocarpa* (a shrub).

Migratory birds include songbirds, raptors, ducks, shorebirds, wading birds, and sea birds. Sandy Point NWR has the most important leatherback sea turtle nesting beaches under U.S. jurisdiction, and has an endangered tree (Vahl's Boxwood) on the Refuge. Hawksbill, green and occasional loggerhead sea turtles also nest at Sandy Point. Green Cay NWR has the largest remaining populations of the endangered St. Croix ground lizard with other populations on Ruth and Protestant Cays. Subtidal areas include rich coral reef assemblages and seagrass beds. Coral reefs include the recently listed (NOAA, threatened) *Acropora* spp. (staghorn and elkhorn corals).

Upland habitat on the island was historically dry forest over most of the island, but is now largely grassland and scrub shrub habitat with the exception of the northwest sector of the island that is dominated by moist forest and locally known as the "rainforest". Most of the island's wetlands are estuarine mangroves, salt ponds, and salt flats. The dry climate results in clear nearshore waters, which in turn has promoted the growth of extensive seagrass beds and coral reefs on the insular shelf. The east end of the island is known for rare stromatolite (algal) reef formations.

Habitat Descriptions and Benefits to Federal Trust Resources

The U.S. Caribbean Islands (Puerto Rico and the U.S. Virgin Islands) are a subtropical/ tropical ecosystem lying on the edge of the Caribbean tectonic plate. The islands form part of the Antilles Archipelago with the Atlantic Ocean to the north and the Caribbean Sea to the south. The Puerto Rico trench, the deepest point in the Atlantic Ocean, lies a few miles north of Puerto Rico. The deep depths, prevailing wind direction, and exposure to North Atlantic winter storm waves make the north coasts of the islands a high energy environment. The south coasts are generally calmer except when hurricanes pass to the south of the islands. The islands are volcanic in origin with alluvial coastal plains mixed with limestone formations. Based on historical records and native plant communities, these islands were predominantly forest habitat over volcanic, serpentine and limestone geology. Grassland, now common on the islands, was rare. The habitats below are the most important natural habitats in the current Focus Areas starting from high elevations and proceeding to the coasts and marine communities. These classifications are descriptive, and it is understood that these habitat types are a continuum and frequently intermingle to form mosaics that increase the value of the habitat for many species.

Trust Resources in the Caribbean include 29 animal and 49 plant federally listed species. Of these, virtually all of the plants and 15 of the animal species are endemic to the islands (some to particular islands or cays). Others, such as the brown pelican, Roseate tern, sea turtles, and piping plover are more widely distributed. Endemic federally listed species include the highly endangered Puerto Rican parrot, two species of hawks, three species of boa constrictor, and a large number of plant species.

Puerto Rico and the Virgin Islands lie on the Atlantic flyway, and are important stopover sites for migratory birds that include a variety of songbirds, seabirds, shore birds and wading birds. These include migratory terns, waterfowl, tropic birds, brown boobies, peregrine falcons, and warblers, among others.

Moist and Wet Subtropical Montane Forest

Upland moist and wet forest is dominated by a mixture of native and introduced semi-deciduous trees. With few exceptions, the forests are in various stages of secondary growth, some very well developed. Within the 3 Focus Areas, this forest type occurs in the higher elevations and lower riparian areas of the Puerto Rican South Coast watersheds, in the northwest section and some of the wetter guts of St. Croix, and some of the wetter guts in Culebra and Vieques. Moist forest supports a wide variety of native or endemic bird, bat, reptile, amphibian, and plant species, including a number of endemic Puerto Rican tree frog (coqui) species. Threatened and endangered species such as the Puerto Rican sharp-shinned and broad-winged hawks, the Puerto Rican boa, and the Palo de Rosa tree occur within moist forest in the Puerto Rican South Coast Focus Area. These forests provide habitat for a wide variety of warblers and other resident and migratory songbirds.

Riparian Forest and Freshwater Streams

High watershed streams in Puerto Rico are very steep with many falls and steep passes in the mountains, and relatively short low gradient coastal plains, making these streams subject to extended periods of low base flow and high flash flood frequency. Riparian forests provide corridors for wildlife in an increasingly urbanized landscape, and protect water quality by retarding erosion and sedimentation to the coastal regions from the steep, highly erodible slopes.

The native aquatic fauna include at least 5 fish, 12 shrimp, and a snail species that are migratory, either catadromous or amphidromous. Additionally, there is a freshwater river crab that does not have to migrate, and a number of estuarine species enter into the lower portions of the rivers. Many of the fishes and shrimps are fished for recreation and consumption, and populations are shared with other Caribbean areas. Therefore they should be considered to be interjurisdictional. Stream habitat is largely restricted to the Puerto Rican South Coast Focus Area, although there are intermittent streams with persistent pools in Vieques and St. Croix. Riparian forest habitat in the dry washes of the drier islands is important for retarding sedimentation to highly sensitive marine habitats.

Subtropical Dry Forest

Subtropical dry forest is a declining upland forest type worldwide. Dry forest is characterized by high species diversity of semi-deciduous trees, shrubs and cactus. It was the dominant forest type in the lower slopes of the Puerto Rican South Coast watersheds, Culebra, Vieques, and St. Croix, and it dominates Mona, Desecheo, and Navassa Islands. Dominant species are highly influenced by the underlying geology that includes serpentine, volcanic, and limestone. Remaining dry forest is in various stages of secondary growth, with very old and well developed dry forest remaining in the Guánica Commonwealth Forest where it is underlain by southern karst geology, and a few other areas. The dry forest varies from older secondary forest with relatively high canopies in the dry streambeds to low scrub shrub mixed with cactus in drier areas. In addition to the high plant diversity, it provides habitat for many native and resident songbirds, bats, reptiles and amphibians. This includes habitat for federally listed species such as the Puerto Rican nightjar, the yellow-shouldered blackbird, the Puerto Rican crested toad, the Virgin Islands tree boa, the Mona boa, the Monito gecko, and the St. Croix ground lizard. At least 15 federally listed plant species are found in or near dry forest, and many are found on the coastal hills (Sierra Bermeja) of southwest Puerto Rico. Scrub-shrub dry forest on cays of St. Croix is particularly important for the St. Croix ground lizard.

Subtropical Coastal Forest and Beaches

This upland forest type is in serious decline throughout the Caribbean Region due to extensive coastal development. Coastal forest generally starts on the seaward side of the beach berm, and continues inland. Coastal beach forest shares many components with dry forest, but is generally dominated by salt tolerant species such as sea grape and beach hibiscus next to the beach, and a variety of semi-deciduous trees further inland. Exotic trees and shrubs dominate many areas due to past disturbance. Coastal forest is particularly important for sea turtles as it directly provides nesting habitat for hawksbill sea turtles and shields sea turtle nesting habitat for leatherbacks, greens, and hawksbills from inland light sources that disorient adult and hatchling sea turtles. Coastal beach forest on Mona Island provides prime nesting habitat for the hawksbill sea turtle and the Mona iguana. Coastal beach forest provides nesting and roosting habitat for a variety of sea birds and songbirds, including the federally listed yellow-shouldered blackbird and the brown pelican. Within the focus units, beach forest habitat is particularly important in Mona, Guánica, Culebra, Vieques, and St Croix.

Rocky Cliffs and Shoreline

Rocky cliffs and shoreline occur in all of the units, but are particularly important on Mona and Monito Islands, islands associated with Culebra (Luis Peña and several smaller rocky cays), and Navassa Island where they provide roosting and nesting habitat for a wide variety of seabirds including brown boobies, red-footed boobies, tropic birds, sooty and other terns species. The

cliffs of Mona also provide nesting habitat for the yellow-shouldered blackbird population found there. This habitat type varies from large rocks on the beach and in the intertidal zone to cliffs over several hundred feet high.

Freshwater (Palustrine) Wetlands

Freshwater wetlands within the Focus Areas consist mostly of freshwater marsh and open water. The major remaining natural freshwater open water habitat is Laguna Cartagena National Wildlife Refuge. It was associated with similar marsh and open water areas that were drained in the Lajas Valley and has been converting into freshwater marsh due to eutrophication. Most other open water habitats within these focus areas are small man-made impoundments such as the Ponce Serralles Lakes and farm ponds in the Puerto Rico South Coast Focus Area, Culebra, Vieques, and St. Croix. The large water supply and flood control reservoirs and their watersheds in the Puerto Rico South Coast unit are lower priority since the connection to the coast is questionable, although they support introduced gamefish species.

Freshwater marsh is the most common freshwater wetland type, and is dominated by a variety of exotic grasses, sedges, and cattails that vary according to the seasonal water regime. These areas provide feeding and nesting habitat for a variety of migratory and resident wading birds and waterfowl. Variable water levels in many of these areas increase their value as seasonal feeding habitat for many bird species. Open-water freshwater wetlands provide habitat for an endemic turtle species, and are frequented by raptors such as ospreys, peregrine falcons, and other raptors.

Freshwater swamp dominated by swamp bloodwood or swamp apple occurs in other hydrologic units in Puerto Rico, with some limited stand within the Puerto Rican South Coast watersheds. It has become an extremely rare wetland type throughout the island.

Mangrove Swamp, Coastal Lagoons, Salt Ponds, and Unvegetated Mud Flats

The classification and development of mangrove forest, coastal lagoons, salt pond, and unvegetated (hypersaline) mud flats depends upon isolation from the open sea, tidal range, and local climate conditions. They often co-occur forming rich mosaics that greatly enhance their nesting, roosting, and foraging habitat value for a high diversity of migratory and resident seabirds, shorebirds, wading birds, and songbirds. The federally listed yellow-shouldered blackbird and brown pelican utilize these areas. These habitats protect ocean water quality by retaining sediments, excess nutrients, and pollutants.

Mangrove swamp is prevalent along low wave energy shorelines, estuarine river mouths, and back-basin wetlands with saline intrusion. The four dominant species (red, black, white and buttonwood mangrove) occur in zones determined by soil salinity and tidal influence. Red mangroves occur in estuarine and ocean salinity intertidal and shallow subtidal coastal areas where they colonize shallow shoals, forming forests that protect shoreline and provide superb habitat for a wide variety of birds (seabirds, wading birds, and songbirds), fish, and invertebrates. Black mangroves tolerate very high salinities, and dominate back-basin hypersaline areas adjacent to unvegetated salt flats. White mangroves dominate high intertidal and supertidal estuarine and lower salinity wetlands. The canopies of black and white mangrove forest form similar roosting and nesting habitat for a wide variety of seabirds, wading birds, and song birds; and their root systems form habitat for a variety of crabs and other invertebrates. Buttonwood grows from upper intertidal to upland beach berm, where, with other salt tolerant species, they provide beach and dune forest habitat.

Coastal lagoons are enclosed embayments with limited direct connection to the sea, maintaining their salinities near seawater, but with variation. Their shorelines are usually forested with red mangrove, and they provide superb fish and shellfish nursery habitat. Their variable salinity and limited exchange with the open ocean supports high concentrations of plankton, particularly bioluminescent plankton, producing bioluminescent bays important for tourism. The best known of these are in Lajas in the Puerto Rican south coast, and in Vieques.

Salt ponds are generally enclosed with only occasional connection to the sea, and vary from low to very high saline conditions depending upon local runoff and the frequency of connection to the sea. They may or may not be lined by mangrove forest depending upon the salinity conditions. Some, such as the Cabo Rojo Salt Flats (part of the Cabo Rojo NWR), support dense blooms of insect larvae and brine shrimp (again varying with salinity levels), that provide superb forage for wading and shore birds, and are particularly important for migratory birds moving along the Atlantic flyway. Several very low salinity (essentially freshwater) ponds in coastal areas in the Guánica Forest are the remaining natural spawning areas for the federally listed Puerto Rican crested toad.



Cabo Rojo Salt Flats (part of the Cabo Rojo NWR) restoration project. (Photo: USFWS)

Saline mudflats occur in upper intertidal areas where dry climate conditions and limited exchange with the sea create hypersaline conditions that preclude vegetation. They are most commonly associated with black mangroves. They flood seasonally either from high tides or runoff, producing superb forage for a high diversity of wading and shorebirds.

Seagrass Beds and Coral Reefs

These two habitat types are frequently mixed in shallow areas depending on depth and substrate type. Seagrass beds vegetate shallow (usually less than 30 feet) soft bottom, while actively growing coral reefs occur on rocky substrate up to about 125 feet (depending largely on water clarity). Coral reefs are among the most diverse and productive habitats in the world, providing actively growing shoreline protection, habitat for a wide variety of commercial and recreational

fish and shellfish, and unique recreational diving that supports a flourishing tourism industry. Seagrass beds and coral reefs are considered to be essential fish habitat by NOAA. Seagrass beds provide foraging habitat for the federally listed Antillean manatee and green sea turtle, and coral and sponge dominated hard bottom provides grazing habitat for hawksbill sea turtles. The importance of coral reefs and their recent decline resulted in Executive Order 13089 for Coral Reef Protection and the Coral Reef Task Force which developed the National Action Plan to Conserve Coral Reefs (2000).

Land Use and Ownership

The Caribbean islands have a long history of agricultural use (over 500 years of European colonization). The low hills and most of the coastal plains were cultivated for sugarcane. Mountain forests were heavily logged for valuable hardwoods, and converted to orchards (mostly coffee and citrus), plantain, banana, and small crop cultivation in moist areas. Sugarcane cultivation has virtually stopped throughout the islands.

Coastal areas on all the islands have become heavily developed for ports, resorts, hotels, and vacation homes. Many coastal mangrove wetland areas were also displaced by development, although this has become less prevalent with stronger wetland regulation. Upland coast remains the most susceptible to development.

All of the islands have subtidal insular shelves that support well developed coral reefs and coral colonized hard bottom. The Puerto Rico South Coast, Culebra, Vieques, and St. Croix also have extensive seagrass beds. Major human impacts to seagrass beds and coral reefs include decreased water quality from heavy land runoff, excessive or careless recreational boat use, and over-fishing.

Southern Puerto Rican Watersheds

Most of the Puerto Rican South Coast Focus Area is private land with the exception of the Commonwealth Forests (Susua, Maricao, Boquerón, Guánica, Toro Negro, and Aguirre), the PRDNER Boqueron Reserve, Caja del Muertos Island Natural Reserve, the Jobos Bay National Marine Research Reserve, and the Cabo Rojo and Laguna Cartagena National Wildlife Refuges. The Puerto Rico Conservation Trust, a private organization, owns and manages private conservation properties in the Guaniquilla peninsula, Bahía Ballena (co-managed with PRDNER as part of the Guánica Forest), La Parguera/Fortunas area, Finca Convento, and Hacienda Buena Vista.

Lowland agriculture in this unit consists of cattle, hay, winter vegetable, and mango and avocado orchard production. The increasing population is resulting in increased conversion of agricultural lands to urban use including commercial, industrial, and residential. This trend has greatly increased in the coastal areas in the past three decades. High elevation areas were largely abandoned for cultivation during the push for industrial development in the late 1900s resulting in recuperation of well developed secondary forest. The new push for sun coffee production is promoting new deforestation of these steep slopes.

Puerto Rican Islands Focus Area

In the Puerto Rican Islands Focus Area, Desecheo and Navassa Islands, parts of Culebra, and the east and west ends of Vieques are National Wildlife Refuges. Desecheo and Navassa are uninhabited and managed from the Caribbean Islands National Wildlife Refuge. The Commonwealth owns and manages areas in Vieques and Culebra through the PRDNER and the Puerto Rico National Parks Corporation. Waters around Desecheo, Mona, and part of Culebra have been designated by the Commonwealth as Marine Reserves.

The prior use of Culebra, Vieques, and Desecheo Islands for military bombardment practice has resulted in unexploded ordnance safety concerns that limit public and management agency access to some areas. Residential and tourism development in private lands in Culebra is intense. Road cuts on the steep island hills have greatly increased erosion to the once pristine nearshore waters. Vieques has some grazing lands, however, this is rapidly changing due to intense development of the areas not under conservation. Vieques and Culebra Islands and some of their associated cays have introduced white-tailed deer and feral goat populations. Mona and Navassa Islands were historically mined for guano with very limited efforts at agriculture. Mona and Monito Islands are a Commonwealth Natural Reserve managed by DNER through a rotating staff, and Mona is a popular hunting (feral pigs and goats), camping, and diving destination. Desecheo Island, once harbored large brown booby nesting colonies that were affected by introduced monkeys, and the vegetation has been impacted by introduced goats. Navassa Island has large seabird nesting colonies, but has some introduced feral goats and is being used as a camping area for Haitians who fish the limited island shelf waters.

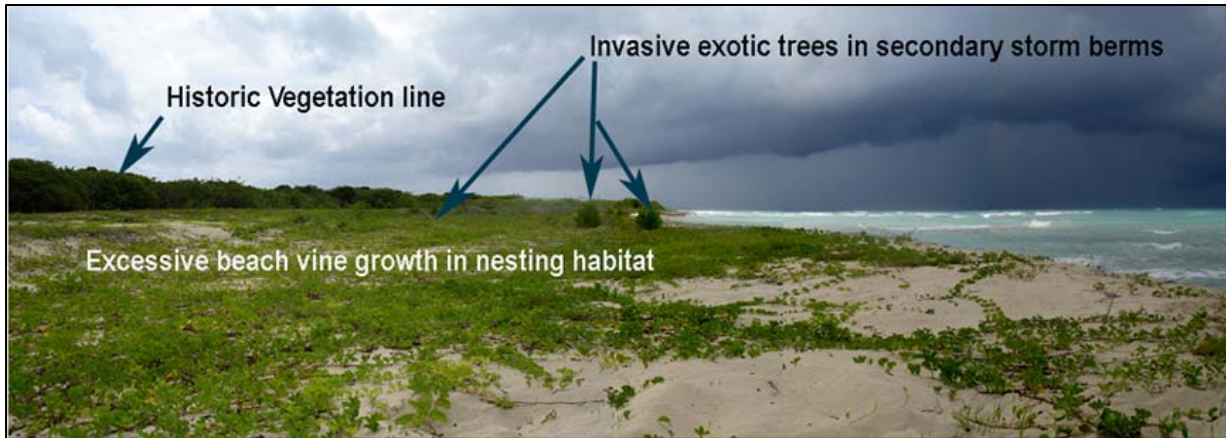
St. Croix, USVI Focus Area

Most of the St. Croix Focus Area is privately owned except for the Sandy Point and Green Cay National Wildlife Refuges, Buck Island National Monument, Salt River National Historical Park, and the Christiansted Fort. The Nature Conservancy owns and manages Little Princess Estate near Christiansted and Jack and Isaac Bays in the southeast, and the St. Croix Environmental Association owns and manages Southgate Pond on the northeast coast.

Agriculture in St. Croix is limited to cattle and goat pasture, hay land, small tilled crops and animal production. Major industries are an oil refinery (one of the world's largest), rum production, and tourism development. Most of the forests were cut early in the colonization era to make way for agriculture and harvest valuable tropical hardwoods. Dry conditions and economics forced abandonment of sugar production and dry forest is slowly recuperating in some areas, particularly the east end. The moister northwest of the island is mountainous and is forested with secondary moist forest in various stages of succession. Severe hurricane damage and social conditions retarded tourism and development, which has been slowly recuperating in the past decade.

Habitat Restoration Challenges

Invasive exotic wild and domestic animals and plants have affected habitat types on the islands, and impacted native and endemic species, including federally listed threatened and endangered species. Among the introduced animals that impact local species through predation and/or competition for resources are mongooses, cane toads, Rhesus and Patus monkeys, green iguanas, caiman, rats, pigs, cats, and dogs. Feral introduced grazers include white-tailed deer, goats, and pigs that have seriously affected native vegetation, and trample or root out ground nesting



Invasive species removal project on Sandy Point NWR sea turtle nesting beach. (Photo: USFWS)

species. The mongoose, introduced to Puerto Rico, Vieques, and St. Croix for rat control, is one of the most damaging as it predated on a wide variety of wildlife including the highly endangered Puerto Rican nightjar, the Puerto Rican crested toad, the St. Croix ground lizard (now restricted to a few offshore cays), the Virgin Islands boa, and sea turtle hatchlings. Rhesus monkeys on Desecheo are considered to be partially responsible for the abandonment of the island's once thriving brown booby nesting colonies. The most viable areas to eradicate or control pest species are the small associated uninhabited cays where reintroduction is less likely (Desecheo, Monito, Culebra cays, Caja del Muertos Island, Green Cay, Ruth Cay, Buck Island, and small cays off the Puerto Rican mainland. On the main islands, seasonal control may be the most effective, and some species (particularly deer, pigs, and goats) are considered desirable by hunters and the general public, and may have to be managed.

Most of the plants normally seen by visitors to the islands are exotic, and many have high value for agriculture and landscaping. The invasive exotic plants so far identified as undesirable include some species of mesquite, grasses (such as guinea grass), and malaleuca (currently invading emergent wetlands in northern Puerto Rico). In Culebra invasive exotic mesquite are colonizing disturbed upland and wetland margins, limiting the natural reforestation by native trees. Mona Island has introduced Australian pine that adversely affects hawksbill sea turtle and Mona iguana nesting habitat. Invasive or undesirable exotic plant issues will be mostly treated in conjunction with reforestation efforts described below.

Restoration actions in upland moist forest and riparian zones will concentrate on reforestation, re-conversion of sun coffee plantations to shade coffee, and riparian forest restoration. In addition to reestablishing habitat for a variety of species, reforestation of these habitats would benefit downstream aquatic, estuarine, and marine habitats by reducing sediment and pollutant runoff.

Dry forest habitat restoration is a challenge that must be met. Recuperation of dry forest is slow due to the slow growth of native forest trees, and the presence of more aggressive colonizing exotic plants such as mesquite and grasses that occupy space and create a greater fire hazard. Deforestation of dry forest in the coastal hills for development coupled with particularly poorly designed road cuts, has had serious impacts on nearshore waters, including seagrass beds and coral reefs in all three focus areas. Opportunities to restore previously impacted or burned dry forest exist and will be pursued within conservation properties and adjacent private lands.

Addressing erosion control needs for existing problematic road cuts will be another priority for these areas, mostly to benefit marine ecosystems.

Pursuing reforestation efforts for coastal and beach forest presents a great challenge given the permanent change in character along coastal areas as development continues, and the high cost of land. The single most important restoration action in these areas is permanent conservation of the most sensitive remaining areas, particularly those with identified high quality sea turtle nesting habitat. Coastal reforestation with native species in prior disturbed areas that fall under conservation will also be a priority. Planting screening vegetation through cooperation with property owners, changing existing problematic lighting, and working with new developments to reduce lighting impacts will be another focus for the program. These efforts will require major outreach and cooperative work with landowners to find reasonable solutions.

Rocky beaches and cliffs are generally not highly suitable for development, and most are on cays already under conservation. The more likely impacts to wildlife in these areas come from introduced predators such as rats, mongoose, cats, and monkeys. Elimination of such predators from uninhabited cays is a viable strategy, and has already worked on Monito Island. Potential areas for such treatments include Desecheo, Green Cay, Ruth Cay, Cayo Luis Peña, and the smaller cays of Culebra. Several projects are already underway.

Freshwater wetland restoration will concentrate on freshwater wetlands in the Lajas Valley (including Laguna Cartagena NWR) where the major identified problem has been eutrophication due to excessive agricultural fertilizer input and inadequate septic systems. Habitat improvements for degraded and abandoned farm ponds, where significant waterfowl habitat could result will also be considered. The challenge will be to find sites that will retain water without requiring well or irrigation system input. An exception to this is the recovery effort for the Puerto Rican crested toad which requires freshwater ponding habitat that may have to be augmented. Other measures to improve freshwater wetland habitat may include restoration of freshwater swamp forest.

Estuarine intertidal coastal habitats (mangroves, lagoons, salt ponds, and mud flats) offer the widest variety of challenges and possible restoration actions. Although impacts to these areas from development have decreased due to regulations, fragmentation of coastal habitat remains a problem. Careless recreational activities associated with these areas include uncontrolled vehicle access to beach areas and recreational vehicle use in sensitive mangrove and mudflat areas. These uses are prevalent in many of the state or federally owned conservation areas where staffing is not adequate to police these uses. Control of trash (including clandestine dumping of large materials) and excessive sedimentation from upland disturbance in these areas is also a problem. The challenge is to provide the public with reasonable and safe access for legitimate use of these areas, while allowing for the protection and restoration of damaged vegetation. Passive measures, such as selective fencing, can be very effective at reducing impacts within the existing staffing of conservation agencies. A number of areas would benefit from restoring hydrology to mangrove areas that have been closed off by prior human activities or extreme weather events. Actions to restore hydrologic connection for salt ponds will carefully consider other impacts of opening these areas.

Subtidal and intertidal marine habitats in these focus areas have been impacted by development in a variety of ways: increased erosion to estuarine and marine habitats from land clearing for

development and agriculture, filling for development, dredging for ports and marinas, and point and non-point pollution discharges. Subtidal habitats, particularly highly sensitive coral reefs and seagrass beds have declined due to a variety of impacts including: sedimentation and turbidity from erosion, storm waves, disease outbreaks, overfishing, and excessive/uncontrolled recreational uses. The Coastal Program will focus on reducing land runoff through reforestation of denuded upland and riparian areas (as discussed above) that would also restore habitat, providing multiple benefits. Installing erosion control measures on already constructed roads with demonstrated erosion problems will also be considered. The Service has been a leader in other efforts in the water such as installation of low-impact mooring systems, and those efforts will continue in cooperation with similar NOAA programs. Other possibilities include targeted reef or seagrass restoration projects, again in cooperation with NOAA programs and funding sources.

Partnership Opportunities

In addition to close cooperation with the Caribbean Islands National Wildlife Refuge System, the Coastal Program in the Caribbean is working with a diverse and growing group of state and private partners, including:

- The Puerto Rico Department of Natural and Environmental Resources (PRDNER)
- Divisions of Forests, Natural Reserves, and the Water Plan of Puerto Rico
- Jobos Bay National Marine Research Reserve (NOAA and PRDNER Coastal Zone)
- The Virgin Islands Department of Planning and Natural Resources (VIDPNR)
- Fish and Wildlife Division, Coastal Zone Division
- USDA Natural Resource Conservation Service (several programs)
- USDA Farm Service Agency
- US Environmental Protection Agency (San Juan Bay Estuary Program)
- USDA Forest Service
- The Island Resource Foundation (IRF)
- The Puerto Rico Conservation Trust (PRCT)
- The San Juan Bay Estuary Program (SJBEP)
- The Nature Conservancy (TNC)
- The St. Croix Environmental Association (SEA)
- The Natural History Society of Puerto Rico (NHSPR)
- Parques Nacionales de Puerto Rico
- Caborrojeños Pro-Salud y Ambiente
- The West Indies Marine Animal Research and Conservation Service (WIMARCS)
- Chelonia Inc.
- National Fish and Wildlife Foundation (NFWF)
- Envirosurvey
- EcoKinetics

Strategies between the Service and Partners to Fulfill Habitat Targets

The Coastal Program will continue close cooperation with the National Wildlife Refuge System, and the Puerto Rico Department of Natural and Environmental Resources; and increase the communication and cooperation with the Virgin Islands Department of Natural and Environmental Resources. Other close partners with growing cooperative programs include NRCS where we are currently promoting and working with two Rapid Watershed Assessment

projects (Jobos Bay and Bariñas Valley) and coordinating our practices with their Wildlife Habitat Incentive Program, NOAA with several projects (Fish Bay watershed erosion control in St. John, the Jobos Bay National Marine Research Reserve, and with DNER and TPL for potential acquisition of coastal properties in the Northeast Corridor of Puerto Rico). We are also working with a multi-agency and NGO Habitat Restoration Committee to coordinate efforts through a GIS system to enhance existing projects and avoid duplication of efforts. Our Partners include a wide variety of NGO groups that usually concentrate their efforts locally, and can be very effective partners in specific restoration projects. We are expanding cooperation with NGOs and businesses to further advance our habitat restoration goals.

The following are reports or plans that have been and will continue to be used to further refine strategies for achieving and possibly exceeding our performance goals for the Coastal Program in the Caribbean:

- Southgate Pond: Geology and ecology of a tropical coastal pond.
- Puerto Rico's Comprehensive Wildlife Conservation Strategy.
- A Comprehensive Wildlife Conservation Strategy for the U.S. Virgin Islands.
- Forest Legacy for the U.S. Virgin Islands, an assessment of need.
- Puerto Rico Critical Wildlife Areas.
- Puerto Rico Waterfowl Focus Areas. Puerto Rico DNER Atlantic Coast Joint Venture report.

Five Year Performance Targets/Outputs

Our habitat conservation goals for the three focus areas identified by the Coastal Program in the Caribbean will be based on the needs identified by the conservation plans listed above. These performance targets and output goals are an estimate of what the Coastal Program might accomplish for Federal Trust Resources given FY 06 funding levels and knowledge of our past partnerships and expected opportunities.

- The acreage of wetland habitats conserved: 278 acres restored/enhanced
- The acreage of upland habitats conserved: 175 acres restored/enhanced
- The miles of riparian/river or shoreline conserved: 2 miles restored/enhanced

V. Goal Two: Broaden and Strengthen Partnerships

Accomplish our work through voluntary partnerships

The Coastal Program in the Southeast Region is working successfully with our partners to accomplish our work. The credit is to our partners who share our conservation interests and willingness to collaborate to conserve fish and wildlife habitats in each of our Coastal Program areas. It is the goal of the Coastal Program to strengthen and broaden our partnerships to address the Trust Resource needs of the Southeast Region.

In the Southeast Region, broad and diverse partnerships exist. Collaborative partnerships have been established with Federal and state agencies, local governments, non-governmental organizations, academia, private corporations, foundations, land trusts and private landowners. Partners from each of these categories have cooperated with the Coastal Program to accomplish our goals.

Regional Objectives

To address our goal to strengthen and broaden partnerships, the Coastal Program will work toward the following key outcomes.

- Maintain existing partnerships
- Increase the partnership base
- Provide technical assistance to our partners to achieve on-the-ground results
- Leverage funds

Key Strategic Activities

The accomplishment of each regional objective will be addressed through the implementation of the key strategic activities described below.

Maintain exiting partnerships.

- Maintain regular communication with partners by participating in project meetings, briefings and field visits;
- Meet in person to discuss status and updates within the partner's organization and the Service;
- Promote partner recognition through awards programs, news releases and outreach document.

Increase the partnership base.

- Perform outreach activities through public presentations to inform potential partners of the Service's Coastal Program at public meetings, conferences and workshops;
- Communicate with existing partners of the Program's objective to broaden the base of potential partners and ask for their assistance to reach a broader constituency;
- Identify key stakeholders in focal areas and make direct contact with those which haven't previously partnered with the Coastal Program.

Provide technical assistance to our partners to achieve on-the-ground results.

- Identify specific technical assistance needs required to implement a proposed project and work with partner to provide assistance;

- Identify resource issues that would benefit from partnership efforts and work to develop initiatives, partners, and projects to address needs.

Leverage funds or proportion of Federal to nonfederal match.

- Compile and maintain a list of potential funding sources including Federal, state and known private sources identifying the fund source, eligibility of applicant and match, and application dates;
- Capture and include all costs and funding sources associated with projects in reports and proposals, including all costs and sources of funds in project proposals, agreements and reports to insure accurate reporting of fund leveraging and show true costs of projects.

Performance Measures/Outputs

The goal of broadening and strengthening partnership will be measured by the following performance measures and outputs, which will be reported annually through HabITS:

- The number of partnerships providing funds or in-kind services
- Funds and in-kind services leveraged

VI. Goal Three: Improve Information Sharing and Communication

Collaborate and share information and concerns with our partners, stakeholders, future partners, decision-makers, and others to protect, restore, and enhance Trust Resources

Communication and information sharing is an important element of successful conservation projects and a priority of the Southeast Region. Achieving this Goal directly affects Goals One, Two and Five. It provides a mechanism to learn of project successes, failures, tips or strategies to improve project coordination and implementation which directly affects on-the-ground results. Partnerships are strengthened and broadened through this goal and it improves accountability. This goal will enable the Southeast Region Coastal Program to increase its visibility and effectiveness in delivering the mission of the Service, and addressing Regional priorities both internally and externally and support a strategic landscape level conservation effort.

Regional Objectives

- Increase coordination with other agencies and stakeholders, both internal and external
- Improve project results through information sharing
- Inform stakeholders and decision-makers of Coastal Program activities and accomplishments in the Region

Key Strategic Activities

The following strategies will be implemented to accomplish the regional outcomes of this Goal.

Increase coordination with other agencies and stakeholders.

- Conduct regular project meetings to maintain communication among cooperating partners consisting of the primary partner implementing the project and the Service's Coastal Program project officer at a minimum;
- Continue participation in regional councils, committees, and local meetings that can contribute to the delivery of the Service's conservation mission to provide an open channel of communication between agencies, and other stakeholders;
- Promote the development and coordination of data, both written and spatial, to support a comprehensive landscape level planning for the delivery of the Service's conservation mission.

Improve project results through information sharing.

- Share information on "lessons learned" of related projects at project meetings to assist a partner during project planning and development to improve project results;
- Present oral and poster presentations at scientific and technical national or regional conferences and workshops to provide and opportunity to reach a broad audience and exchange information with other professionals;
- Collaborate with project partners to publicize accomplishments through peer-reviewed journals and newsletters, including the Regional E-Grits electronic newsletter.

Inform stakeholders and decision-makers of Coastal Program activities and accomplishments in the Region.

- Hold periodic stakeholder meetings to provide an opportunity to share updates on the Coastal Program and improve project results and promote inter-agency coordination;

- Present Coastal program annual accomplishments and updates at local meetings and committees;
- Provide information to local, State and congressional decision makers on Program activities and partnerships;
- Maintain current website for Coastal Program activities and information.

Performance Measures/Outputs

The goal to improve information sharing and communication will be measured annually by the following performance measures and outputs:

- Numbers of technical assistance projects implemented each year reported through the HabITS database including public narratives, pictures, references, and species links
- Written narratives of type and number of technical assistant projects and outreach activities provided in annual data call reports requested by the Washington Office

VII. Goal Four: Enhance Our Workforce

The staff of our Program is our most important resource. Maintaining and supporting the staff are the keys to the success of the Program in achieving on the ground results for Federal Trust Resources.

The purpose of this goal is to carry on the continuous development of our staff, maintain our reputation for excellent customer service, provide employees with opportunities to teach and lead in their communities, and stay abreast of the current technology, techniques, and scientific knowledge to deliver habitat conservation projects and critical decision making information. These skills and abilities are the key to the future success of the Southeast Regional Coastal Program and the delivery of coastal conservation on-the-ground.

Regional Outcomes

- Develop and retain skilled local staff with state-of-the-art restoration knowledge, skills and abilities.
- Provide excellent customer service.
- Increase use and development of technical assistance expertise.

Key Strategic Activities

Develop and retain skilled local staff with state-of-the-art restoration knowledge, skills and abilities.

- Assess current and future skills and capabilities needed for effective and efficient operation of the Program and strategic development of the individual staff;
- Use skills assessment to develop employees Individual Development Plans (IDP) and Individual Action Plan (IAP);
- Attend National Conservation Training Center training developed or recommended for Coastal Program staff as needed and other available training as identified in IDP.
- Perform work details in other Service Programs and Regions;
- Promote mentoring program, developed by the WO, to connect highly experienced staff to new hires or less experienced employees.

Excellent customer service

- Provide prompt responses to emails, phone messages and other correspondence from both intra-service and outside partners;
- Create and opportunity for partners to provide customer satisfaction evaluations through written surveys or open stakeholders meetings;
- Provide partnership and customer service training to all Coastal Program office staff.

Increased use of our expertise for technical assistance

- Improve record keeping of the quantity and quality of technical assistance provided or otherwise facilitated without formal partnership agreements;
- Promote technical assistance capabilities to potential partners at meetings and workshops described in Goals Two and Goal Three.

Performance Measures/Outputs

Successful progress toward this Goal and the regional objectives above will be captured predominantly in performance measures under Goals One, Two, Three and Five. Additional performance measures and output of this Goal include:

- Number of hours each staff person spends in training related specifically to implementing the Coastal Program activities based on the IDP for each staff person

VIII. Goal 5: Increase Accountability

Measure, assess, and report on the effectiveness, efficiency and fiscal integrity of our habitat conservation programs and activities

The purpose of this goal is to ensure to ourselves, our partners, and the American public that the conservation projects and activities of the Coastal Program in the Southeast Region are consistent with our mission, goals, and vision and deliver the coastal conservation objectives and priorities of our partnerships. The objective, strategies and performance measures of this Goal are critically linked to the Habitat Information Tracking System (HabITS) database. This system provides the primary input of accomplishment data to report the number of acres or miles of conserved (protected/restored/enhanced) habitat, species benefits, project funding, focus areas and project locations for our on-the-ground habitat conservation projects. This information is vital to determine the effectiveness of our activities and to adapt our strategies and priorities with our partners to address our conservation goals in the Region. The Southeast Region will pursue the following outcomes in support of this important goal:

Regional Outcomes

- Increased number of acres and miles of priority Federal Trust Resources habitat conserved.
- Increased management and control of program activities and subactivity funding fidelity.
- Ensure control and quality of accomplishment data.
- Provide visual resources in HabITS.
- Ensure program integrity
- Implement Strategic Habitat Conservation planning.
- Increased subactivity funding fidelity

Key Strategic Activities

The following strategies will be implemented to accomplish the regional outcomes of this goal.

Increased number of acres and miles of priority Federal Trust Resources habitat conserved.

- Annually develop cooperative habitat conservation projects through grant, cooperative agreements, and developed mechanisms to implement on-the-ground projects that result in acres restored, protected, or enhanced using Program guidance and definitions developed;
- Annually develop and meet performance targets to support compliance with the Government Performance and Results Act.

Increased management and control of program activities.

- Develop criteria for project selection based on local Program goals and objectives.
- Increase monitoring of project implementation;
- Increase accountability of cooperators;
- Perform management program oversight reviews of Coastal Program Office on a periodic basis evaluating project funding, staff time, effectiveness of partnership development, and progress towards the conservation goals and objectives of the Program.

Ensure control and quality of accomplishment data.

- Increase communication with cooperators to ensure that required documentation, monitoring, and most accurate funding and acreage data are provided to the Service's project officer;
- Standardize information recorded into HabITS database and certify that all data entries are complete and accurate by end of fiscal year reporting;
- Annually review projects entered in HabITS and update information and completion status.

Provide visual resources in HabITS.

- Include electronic formatted photos to projects entered into HabITS database;
- Include accurate GIS based information for HabITS mapping tools as needed.

Implement the principles and practices of the SHC Approach

- Continually review and evaluate our habitat results for the intended outcome as outlined in our Coastal Program Conceptual Strategic Model.
- Work with partners to improve understanding of the relationships between habitat objectives and management of Federal Trust Resources and target species.
- Incorporate the latest scientific, decision, and analysis tools which will produce greater efficiency and effectiveness in achieving Program goals and objectives.

Performance Measures/Outputs

- Annual account of acres/miles restored/maintained or protected within each geographic focus area reported through the HabITS database
- Timely submission of annual end of the year reporting requirements
- Proportion of projects accurately entered into the HabITS database
- Proportion of HabITS accomplishments linked to species and target species
- Percent of HabITS project accomplishments with images
- Annual regional report on number of FTE's supported by the Coastal Program funding
- Number of management control reviews performed for the Region

IX. Stakeholder Involvement

To help achieve these goals, the views of our stakeholders have and will continue to provide valuable guidance. At the outset of the strategic planning process, a national outreach effort was conducted throughout the country to provide stakeholders the opportunity to reflect on the internal and external factors impacting the Programs' current performance and future accomplishments. That input provided valuable direction for the design and content of this document. Of note, the vast majority of the more than 400 national stakeholders involved expressed strong support for the Program citing on-the-ground accomplishments, flexibility, technical expertise, and responsiveness to the needs and values local communities as important strengths.

Within the Southeast Region, each Coastal Program office reached out to its major stakeholders and received valuable feedback for this strategic planning effort, for the development of Part 1, "Vision Document", and for the identification of the focus areas in Goal 1, and in determining performance targets for Goals 1 through 5, outlined in this document Part 2, "Regional Step-down Plan, Southeast Region." Most stakeholder input was gained through either one-on-one personal or electronic communication with the local Coastal Program Office Coordinator or group meetings hosted by the Coastal Program Office.

The following list of stakeholders provided input into this strategic planning process:

The Coastal Program in North Carolina

North Carolina State University
NC Wildlife Resources Commission
Haw River Assembly
Private Citizens, North Carolina
East Carolina University
North Carolina Coastal Land Trust
North Carolina Plant Conservation Program

The Coastal Program in South Carolina

Clemson University, Baruch Institute of Coastal Ecology & Forest Science
Ducks Unlimited
Lowcountry Open Land Trust
The Nature Conservancy
Private Citizens, South Carolina

The Coastal Program in South Florida

The NOAA Restoration Center
The Sanibel-Captiva Conservation Foundation
Sarasota County
Indian River Mosquito Control
USDA NRCS
Marine Resources Council
Indian River Lagoon Program
Martin County Parks and Recreation
Congressman David Weldon

Environmental Learning Center
Pelican Island/Archie Carr National Wildlife Refuges
The Nature Conservancy

The Coastal Program in Tampa Bay

Tampa Bay Estuary Program
Sarasota Bay Estuary Program
Tampa Bay Watch
National Audubon Society, Florida Coastal Islands Sanctuaries
Hillsborough County
Manatee County
Pinellas County
Florida Department of Environmental Protection
Southwest Florida Water Management District
Florida Institute for Saltwater Heritage

The Coastal Program in the Florida Panhandle

Bay Area Resource Council
Bay County Planning Commission
Bay County Conservancy
Blackwater River State Forest
Choctawhatchee Basin Alliance
Choctawhatchee Riverkeeper
St. Andrew Bay Resource Management Association
St. Vincent NWR
Troy State University, Center for Environmental Research and Service
West Florida Regional Planning Council
Escambia County, Environmental Quality Division,

The Coastal Program in the Caribbean

Chelonia, Inc.
Ciudanos del Karso
Envirosurvey, Inc.
National Fish and Wildlife Foundation
NOAA
Puerto Rico Department of Natural and Environmental Resources
Sea Grant
Sociedad Ambiente Marino
St. Croix Environmental Association
The Nature Conservancy
The Puerto Rico Conservation Trust
USDA- Forest Service
USDA-Natural Resources Conservation Service
US Geological Survey
Virgin Islands Department of Natural and Environmental Resources
West Indies Marine Animal Research and Conservation Service

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U.S. Fish and Wildlife Service
Branch of Habitat Restoration
Division of Fish and Wildlife Management and Habitat Restoration
4401 N. Fairfax Drive
Arlington, VA 22203
(703) 358-2201



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