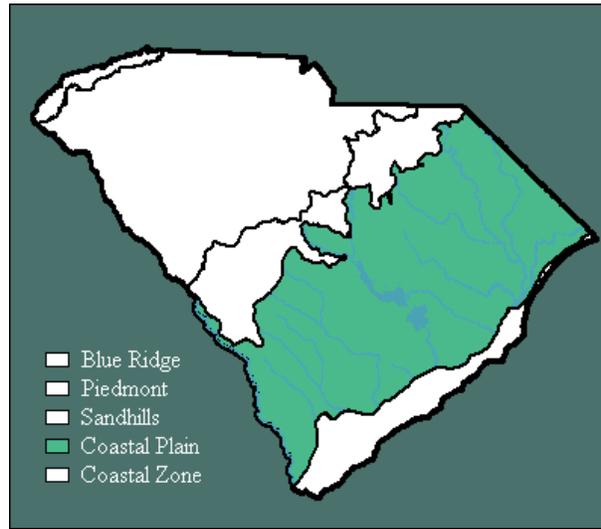


Coastal Plain Ecoregion Terrestrial Habitats

Description and Location

The coastal plain is the largest ecoregion in South Carolina. Land elevation in this ecoregion begins at 270 to 300 feet at the inland boundary with the sandhills and reaches nearly to sea level at the coastal zone boundary. Although the Sandhills Ecoregion shares some of the geological history and physical features and is included in some definitions of the coastal plain, wildlife habitats in the two regions differ in some important respects. Therefore, the coastal plain and sandhills are treated as separate ecoregions in the CWCS.



The sedimentary formations of the coastal plain consist variously of marine-deposited sand, clay, gravel, marl and limestone that lie over granite and other crystalline rocks (Murray 1995). The older inner terraces have been dissected into rolling hills separating major drainages, while the younger outer terraces are essentially flat. Outcrops throughout the region are scarce, since the formations are overlain by a thin layer of Pleistocene and recent age material (Siple 1957). However, the mineral and chemical composition of the soils that formed over the older marine sediments is influenced by the parent material.

From a land use standpoint, the coastal plain consists of two significantly different landscapes. An inner belt is predominantly composed of cropland, with forest limited to small patches and hardwood “stringers” along creeks. An outer belt, sometimes called the “flatwoods” is primarily pine-dominated forest. Bisecting both belts are major floodplains, which are largely forested.

Habitats and Priority Species

Eight major habitat types are defined for the coastal plain, of which six are either unique to the region or reach their greatest extent there. The predominant habitat types that most casual observers associate with the coastal plain are 1) grassland and early successional habitats, 2) pine woodland and 3) river bottoms. Although the remaining types are less extensive, they provide habitat diversity that is important to a number of animals, especially wetland species.

Pine Woodland

General Description and Location

This habitat is used to describe all pine-dominated forests throughout the region, including those occupying a variety of soil moisture characteristics except floodplains. The canopy is dominated by one or several species of pine, generally loblolly (*Pinus taeda*), or longleaf (*Pinus palustris*), depending on elevation, soil type and silvicultural history. Dense shrub thickets of hollies (*Ilex*

spp.) and wax myrtle (*Morella cerifera*) may be present. Higher elevation pine woodlands have abundant grasses and herbaceous cover, particularly when burning is frequent. Optimal habitat for priority species consists of open stands of longleaf pine, sparse understory and shrub layers, a ground cover of wiregrass (*Aristida* spp.) and diverse herbaceous species.

Pine savanna, an important variant of pine woodland, also known as open savanna. Wet prairie, grass-sedge bog, herb bog or pitcher plant bog, is typically found in the outer coastal plain on flat sites with high water table and soil that is saturated for at least part of the year. Vegetation consists of a thin canopy of pines, almost always longleaf (*Pinus palustris*), although loblolly (*P. taeda*) and pond pine (*P. serotina*) may also be present. The understory is essentially absent or very scattered. Herbaceous flora is quite rich, consisting of many grasses and sedges. Pine flatwoods intergrade with pine savanna; like pine savanna, it is pine woodland situated on essentially flat or rolling terrain with sandy soil and a high water table. Unlike pine savanna, pine flatwoods features a well-developed subcanopy of several tall shrub species. Pine flatwoods is the principal forest type for much of the outer coastal plain.

Associated Species

Highest Priority: American Kestrel, Bachman's Sparrow, Brown-headed Nuthatch, Henslow's Sparrow, Northern Bobwhite, Red-cockaded Woodpecker, Black Bear, Northern Yellow Bat
High Priority: Eastern Diamondback Rattlesnake, Mimic Glass Lizard, Pine Woods Snake
Moderate Priority: Slender Glass Lizard, Eastern Fox Squirrel, Eastern Woodrat

Sandhill Pine Woodland

General Description and Location

Sandhill pine woodland is a variation of pine woodland composed of species adapted to xeric, sandy soils. The type occurs principally in the sandhills but also on sand ridges in the coastal plain. Absent frequent fire, a canopy of longleaf pine and a subcanopy of turkey oak prevail, interspersed with scrub oak species and scrub-shrub cover. Frequent burning leads to development of longleaf pine-wiregrass communities.

Associated Species

Highest Priority: American Kestrel, Bachman's Sparrow, Brown-headed Nuthatch, Eastern Wood Pewee, Northern Bobwhite, Red-cockaded Woodpecker, Wood Thrush, Coral Snake, Gopher Tortoise, Pine Snake, Southern Hognose Snake
High Priority: Pine Woods Snake
Moderate Priority: Eastern woodrat, Eastern Fox Squirrel

Upland Forest

General Description and Location

Vegetation composition of upland forest is similar to that of oak-hickory forest in the piedmont, where it is a major vegetation type. Upland forest is rare in the coastal plain, typically occurring on fire-suppressed upland slopes near river floodplains or between rivers and tributaries. It

intergrades with river slope communities. Representative canopy trees include white oak (*Quercus alba*), black oak (*Quercus velutina*), post oak (*Quercus stellata*), mockernut hickory (*Carya tomentosa*), pignut hickory (*Carya glabra*), loblolly pine (*Pinus taeda*), flowering dogwood (*Cornus florida*) and black gum (*Nyssa sylvatica*). See the Piedmont Habitat Account for a more complete description.

Associated Species

Highest Priority: Eastern Wood Pewee, Kentucky Warbler, Rusty Blackbird, Swainson's Warbler, Swallow-tailed Kite, Wood Thrush, Worm-eating Warbler, Chamberlain's Dwarf Salamander, Black Bear, Northern Yellow Bat
High Priority: Acadian Flycatcher, Bald Eagle, Southeastern Bat, Star-nosed Mole
Moderate Priority: Louisiana Waterthrush, Eastern Woodrat, Eastern Fox Squirrel, Southern Dusky Salamander

Grassland and Early Successional Habitats

General Description and Location

A variety of open-land habitats occupy a considerable portion of upland sites in the piedmont, sandhills and coastal plain, including agricultural land, recently abandoned farmland, recently cleared land and a matrix of managed open pine forest and grassland. Golf courses, urban yards and open spaces are also included in this habitat type. Potential vegetation on most sites is pine woodland and oak-hickory forest, although many sites are maintained in early successional stages. Agricultural lands with surrounding forest edge habitat occur widely throughout the region and represent the prevailing cover type in the "agriculture belt" that composes most of the inner coastal plain.

Associated Species

Highest Priority: Common Ground-dove, Eastern Meadowlark, Field Sparrow, Grasshopper Sparrow, Loggerhead Shrike, Northern Bobwhite, Painted Bunting
High Priority: Barn Owl
Moderate Priority: American Woodcock, Bewick's Wren, Meadow Vole, Eastern Woodrat

Ponds and Depressions

General Description and Location

Topographic depressions in the coastal plain support a variety of permanently and semi-permanently flooded isolated freshwater wetlands that have open or closed canopy forest cover. Vegetation cover varies with hydrology, substrate and fire frequency. Depression meadows, pond cypress ponds, swamp tupelo ponds, pocosins and limestone sinks are also included in this habitat type. Landforms include natural and artificial ponds dominated by cypress and/or swamp tupelo, limestone sinks, and Carolina bays. Shrub-dominated pocosins or grass-sedge-herb-dominated depression meadows occur on peat- or clay-based substrates, typically in Carolina bays. Absent fire, vegetation in most of these habitats reverts to mixed floodplain hardwood and cypress-tupelo dominated forest. Upslope from these lowland habitats, the transition to well-drained uplands supporting pine woodland is often abrupt.

Associated Species

- Highest Priority: Little Blue Heron, Yellow-crowned Night-Heron, Flatwoods Salamander, Tiger Salamander, Carolina Gopher Frog, Broad-striped Dwarf Siren, Chamberlain's Dwarf Salamander
- High Priority: Black Swamp Snake, Chicken Turtle, Florida Cooter, Florida Green Watersnake, Florida Softshell Turtle, Gulf Coast Mud Salamander, Yellowbelly Turtle, Upland Chorus Frog, Mink, Southeastern Bat
- Moderate Priority: Great Blue Heron, Great Egret, Common Snapping Turtle, Spotted Turtle, Southern Dusky Salamander, Northern Cricket Frog

Hardwood Slopes and Stream Bottoms

General Description and Location

A complex of hardwood and hardwood-pine communities occupy the floodplains of small streams, mesic bluffs and infrequently flooded flats in association with streams or rivers. Fire is infrequent, due either to the sheltered locations of these communities on bluffs or their isolation within a floodplain. Several mixed mesophytic subtypes characterized by the presence of American beech (*Fagus grandifolia*) occur in sheltered sites with moist soils, particularly on north-facing river bluffs and on slopes of drains and creeks. On upland flats within floodplains (hammocks), southern magnolia (*Magnolia grandiflora*) frequently shares dominance with American beech. The calcareous cliff and marl forest subtype occurs on circumneutral soils derived from limestone or unconsolidated calcareous substrates such as marl. Forest structure of all subtypes is diverse, with understory, shrub and herbaceous species varying according to soil moisture and chemistry. All subtypes intergrade with blackwater stream forest or river bottom forest on lowland sides and with upland forest on upland sides.

Associated Species

- Highest Priority: Black-throated Green Warbler, Eastern Wood Pewee, Kentucky Warbler, Rusty Blackbird, Swainson's Warbler, Swallow-tailed Kite, Wood Thrush, Worm-eating Warbler, Chamberlain's Dwarf Salamander, Black Bear, Northern Yellow Bat
- High Priority: Acadian Flycatcher, Bald Eagle, Southeastern Bat, Star-nosed Mole
- Moderate Priority: Louisiana Waterthrush, Eastern Woodrat, Eastern Fox Squirrel, Southern Dusky Salamander

Blackwater Stream Systems

General Description and Location

Tributary streams rising in the sandhills and coastal plain are commonly known as "blackwater streams" for the color of tannins leaching from decaying vegetation. Forests on the narrow floodplains formed by these streams typically have a canopy dominated by swamp tupelo (*Nyssa biflora*) and red maple (*Acer rubrum*). On broader sites, bald cypress (*Taxodium distichum*) can become an important canopy species. Tulip poplar (*Liriodendron tulipifera*), sweet gum (*Liquidambar styraciflua*), pond pine (*Pinus serotina*), loblolly pine (*Pinus taeda*) and laurel oak (*Quercus laurifolia*) are important associates. The shrub layer is open in areas subjected to the most flooding, or it can be fairly dense and pocosin-like in areas subject to infrequent flooding.

Headwaters and wet flats immediately above the floodplain can support dense, pocosin-like shrub thickets or, under suitable fire conditions, pure stands of Atlantic white cedar (*Chamaecyperus thyoides*).

Associated Species

Highest Priority: Kentucky Warbler, Eastern Wood Pewee, Rusty Blackbird, Swainson's Warbler, Wood Thrush, Yellow-crowned Night Heron
High Priority: Acadian Flycatcher, Black Swamp Snake, Spiny Softshell Turtle, Mink, Rafinesque's Big-eared Bat, Southeastern Bat
Moderate Priority: American Woodcock, Louisiana Waterthrush, Wood Duck, Spotted Turtle

River Bottoms

General Description and Location

River bottoms, or "bottomland forests" consist of hardwood-dominated woodlands with moist soils that are usually associated with the broad floodplains of major rivers rising in the piedmont or Blue Ridge. Locally, the floodplains of major coastal plain rivers are significant components of the landscape. Characteristic trees include sweetgum (*Liquidambar styraciflua*), loblolly pine (*Pinus taeda*), water oak (*Quercus nigra*), willow oak (*Quercus phellos*), laurel oak (*Quercus laurifolia*), cherrybark oak (*Quercus pagoda*) and American holly (*Ilex opaca*).

A subtype dominated by bald cypress (*Taxodium distichium*) and water tupelo (*Nyssa aquatica*) occurs on lower elevation sites interspersed and intergrading with oak-dominated woodlands. Dominant trees are bald cypress (*Taxodium distichium*) and water tupelo (*Nyssa aquatica*), swamp gum (*Nyssa biflora*), Carolina ash (*Fraxinus caroliniana*), water elm (*Planera aquatica*) and red maple (*Acer rubrum*).

Associated Species

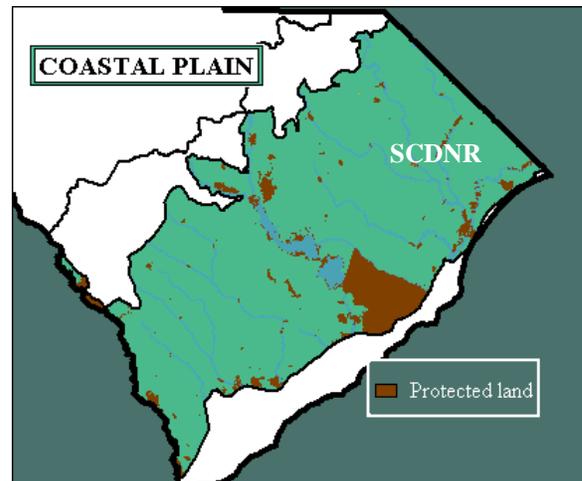
Highest Priority: Black-throated Green Warbler, Kentucky Warbler, Little Blue Heron, Rusty Blackbird, Swainson's Warbler, Yellow-crowned Night Heron, Black Bear, Northern Yellow Bat
High Priority: Acadian Flycatcher, American Alligator, Black Swamp Snake, Gulf Coast Mud Salamander, River Cooter, Spiny Softshell Turtle, Striped Mud Turtle, Mink, Rafinesque's Big-eared Bat, Southeastern Bat, Star-nosed Mole
Moderate Priority: American Woodcock, Great Blue Heron, Great Egret, Louisiana Waterthrush, Wood Duck, Bird-voiced Treefrog, Common Snapping Turtle, Spotted Turtle, Eastern Woodrat, Eastern Fox Squirrel

General Condition of Habitats

The coastal plain has been predominantly used for agricultural purposes since settlement by Europeans in the 18th century. Uplands and the better-drained terraces were cleared for fields at the same time that extensive longleaf pine and swamp hardwood forests on mesic and wet sites were cleared to supply timber. Several cycles of short-rotation pine forest were favored, along with agricultural practices that often provided substantial edge habitat for game species such as quail, but also deep woods or swamp habitat for deer, turkey and waterfowl. By the late 20th

century, economic conditions began to favor consolidation of land into larger holdings and the practice of clean field agriculture, along with shorter rotations of both upland and lowland timber. Extensive holdings in the flatwoods belt were also used as recreational hunting reserves and managed primarily for production of game species with timber production to offset management expenses.

Several large public land holdings and privately held lands or conservation easements are distributed within the coastal plain, covering approximately 5 percent of the region’s land area. By far the largest is the Francis Marion National Forest near the coast. Most public lands in the region have a strong wildlife management focus, including emphasis on threatened and endangered species and other species of concern; for planning purposes the lands are considered protected.



Major Public Holdings and Private Conservation Lands in the Coastal Plain (acres)	
Brookgreen Gardens	2,700
Clemson University	1,844
National Audubon Society	4,461
National Park Service	6,038
Nemours Wildlife Foundation (easement)	983
Other Conservation easements	21,138
South Carolina Department of Natural Resources	26,685
South Carolina Department of Parks, Recreation & Tourism	5,352
South Carolina Forestry Commission	4,171
The Nature Conservancy	6,568
United States Department of Energy	15,445
United States Department of the Navy	1,582
United States Fish & Wildlife Service	16,951
United States Forest Service	97,599
Total	211,519

Region-wide Challenges

Although overall urban growth rates in the coastal plain are not as high as those in the piedmont and coastal zone, there are some local exceptions. The Myrtle Beach area at the easternmost boundary of the region is one of the fastest-growing areas in the country. Two other cities qualify as Metropolitan Statistical Areas (Florence and Sumter). Three cities in the state recently received a new designation from the Census Bureau, known as Micropolitan Statistical Areas (Bennettsville, Dillon and Walterboro). This designation recognizes that, although these areas are small in comparison to the larger Metropolitan Statistical Areas, they still have many characteristics of larger urban areas and are experiencing typical urban growth dynamics. Rural

portions of two counties (Jasper and Beaufort) are also experiencing the leading edges of expansion from rapidly growing coastal cities (Beaufort, South Carolina and Savannah, Georgia).

The South Carolina Exotic Pest Plant Council (2004) lists 13 exotic plant species as posing a “severe threat” or a “significant threat” in the coastal plain. Some species are widespread, such as privet (*Ligustrum sinense*), which is well established on many floodplains.

Pine woodland is likely the most fire-adapted forest in North America. Historically, frequent low-intensity fires were ignited by Native Americans as well as by lightning. Pre-colonial fire frequencies in the southeastern coastal plain have been estimated at 1-to-3 years. As European settlement expanded, features such as roads and plowed fields created incidental firebreaks. By the early 20th century, fire had come to be seen as an agent of destruction and was being actively and effectively suppressed. Reduction in fire frequency to intervals greater than five years leads to elimination of the herb layer in pine woodlands (Frost 1990) and eliminates much of the habitat value of early successional stages.

The benefits of prescribed burns, especially those conducted during spring and summer, are now better appreciated; however, burning is increasingly hampered by liability concerns. Expanding urban areas and proliferating highways mean that the smoke from a prescribed fire often creates extremely dangerous conditions. Keeping smoke away from roads is further complicated by the highly variable nature of the weather during the spring/summer season.

Few if any alternative treatments have been developed that can compete with fire from the standpoint of effectiveness and cost. Chemical applications generally cost about ten times as much per acre as prescribed fire. Mechanical treatments such as disking, chopping or raking are even more expensive.