# Ecoregions of North Carolina and South Carolina

Ecoregions denote areas of general similarity in ecosystems and in the type, quality, and quantity of environmental resources. They are designed to serve as a spatial framework for the research, assessment, management, and monitoring of ecosystems and ecosystem components. By recognizing the spatial differences in the capacities and potentials of ecosystems, ecoregions stratify the environment by its probable response to disturbance (Bryce and others, 1999). These general purpose regions are critical for structuring and implementing ecosystem management strategies across federal agencies, state agencies, and nongovernment organizations that are responsible for different types of resources within the same geographical areas (Omernik and others, 2000).

The approach used to compile this map is based on the premise that ecological regions are hierarchical and can be identified through the analysis of the spatial patterns and the composition of biotic and abiotic phenomena that affect or reflect differences in ecosystem quality and integrity (Wiken 1986; Omernik 1987, 1995). These phenomena include geology, physiography, vegetation, climate, soils, land use, wildlife, and hydrology. The relative importance of each characteristic varies from one ecological region to another regardless of the hierarchical level. A Roman numeral hierarchical scheme has been adopted for different levels of ecological regions. Level I is the coarsest level, dividing North America into 15 ecological regions. Level II divides the continent into 52 regions (Commission for Environmental Cooperation Working Group 1997). At level III, the continental United States contains 104 ecoregions and the conterminous United States has 84 ecoregions (United States Environmental Protection Agency [USEPA] 2002). Level IV is a further subdivision of level III ecoregions. Explanations of the methods used to define the USEPA's ecoregions are given in Omernik (1995), Omernik and others (2000), and Gallant and others (1989).

Ecological and biological diversity of the Carolinas is enormous. The two states contain barrier islands and coastal lowlands, large river floodplain forests, rolling

The level III and IV ecoregions on this poster were compiled at a scale of 1:250,000 and depict revisions and subdivisions of earlier level III ecoregions that were originally compiled at a smaller scale (USEPA 2002; Omernik 1987). This poster is part of a collaborative project primarily between USEPA Region IV, USEPA National Health and Environmental Effects Research Laboratory (Corvallis, Oregon), North Carolina Department of Environment and Natural Resources (NCDENR), South Carolina Department of Health and Environmental Control (SCDHEC), and the United States Department of Agriculture-Natural Resources Conservation Service (NRCS). Collaboration and consultation also occurred with the United States Department of Agriculture-Forest Service (USFS), United States Department of the Interior-Geological Survey (USGS)-Earth Resources Observation Systems (EROS) Data Center, and with other State of North Carolina and State of South Carolina agencies.

The project is associated with an interagency effort to develop a common framework of ecological regions (McMahon and others, 2001). Reaching that objective requires recognition of the differences in the conceptual approaches and mapping methodologies applied to develop the most common ecoregion-type frameworks, including those developed by the USFS (Bailey and others, 1994), the USEPA (Omernik 1987, 1995), and the NRCS (U.S. Department of Agriculture-Soil Conservation Service, 1981). As each of these frameworks is further refined, their differences are becoming less discernible. Regional collaborative projects such as these in North and South Carolina, where some agreement has been reached among multiple resource management agencies, are a step toward attaining consensus and consistency in ecoregion frameworks for the entire nation.



plains and plateaus, forested mountains, and a variety of aquatic habitats. There are 5 level III ecoregions and 29 level IV ecoregions in North and South Carolina and most continue into ecologically similar parts of adjacent states.

Literature Cited:

- Bailey, R.G., Avers, P.E., King, T., and McNab, W.H., eds., 1994, Ecoregions and subregions of the United States (map) (supplementary table of map unit descriptions compiled and edited by McNab, W.H. and Bailey, R.G.): Washington, D.C., U.S. Department of Agriculture-Forest Service, scale 1:7,500,000.
- Brvce, S.A., Omernik, J.M., and Larsen, D.P., 1999, Ecoregions a geographic framework to guide risk characterization and ecosystem management: Environmental Practice, v. 1, no. 3, p. 141-155. Commission for Environmental Cooperation Working Group, 1997, Ecological regions of
- North America toward a common perspective: Montreal, Quebec, Commission for Environmental Cooperation, 71 p. Gallant, A.L., Whittier, T.R., Larsen, D.P., Omernik, J.M., and Hughes, R.M., 1989, Regionalization as a tool for managing environmental resources: Corvallis, Oregon, U.S.
- Environmental Protection Agency, EPA/600/3-89/060, 152 p. McMahon, G., Gregonis, S.M., Waltman, S.W., Omernik, J.M., Thorson, T.D., Freeouf, J.A., Rorick, A.H., and Keys, J.E., 2001, Developing a spatial framework of common ecological regions for the conterminous United States: Environmental Management, v. 28, no. 3, p. 293-316.
- Omernik, J.M., 1987, Ecoregions of the conterminous United States (map supplement): Annals of the Association of American Geographers, v. 77, no. 1, p. 118-125, scale 1:7,500,000.
- Omernik, J.M., 1995, Ecoregions a spatial framework for environmental management, in Davis, W.S., and Simon, T.P., eds., Biological assessment and criteria-tools for water resource planning and decision making: Boca Raton, Florida, Lewis Publishers, p. 49-62. Omernik, J.M., Chapman, S.S., Lillie, R.A., and Dumke, R.T., 2000, Ecoregions of Wisconsin: Fransactions of the Wisconsin Academy of Sciences, Arts and Letters, v. 88, no. 2000,
- p. 77-103. U.S. Department of Agriculture-Soil Conservation Service, 1981, Land resource regions and major land resource areas of the United States: Agriculture Handbook 296, 156 p.
- U.S. Environmental Protection Agency, 2002, Level III ecoregions of the continental United States (revision of Omernik, 1987): Corvallis, Oregon, U.S. Environmental Protection Agency-National Health and Environmental Effects Research Laboratory, Map M-1, various Wiken, E., 1986, Terrestrial ecozones of Canada: Ottawa, Environment Canada, Ecological
- Land Classification Series no. 19, 26 p.



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Hotel and residential developments are common on many of the barrier islands in Ecoregion 63,

productive ecosystems crucial to the reproduction of fish and shellfish, but their health is often

Saltmarsh cordgrass (Spartina alterniflora) in the coastal marshes of Ecoregion 63g. The roots of

When the grass dies back in the fall, bacteria and fungi break it down into detritus, the base of the

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e Carolina coastal plain, long with smaller.

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mosaic of cropland, pasture,

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prests. Today, a landscap

prested riparian areas is a

sparting grass help hold the marsh soil and provide a footing for oysters and ribbed mussels.

in turn are food for fish, shellfish, birds, and mammals

but are vulnerable to erosion and flooding. The salt marshes behind the barrier islands are



and 45c. The rolling to hilly well-dissected upland contains mostly gneiss and schist macroinvertebrate species. bedrock that is covered with clayey and micaceous saprolite. It is warmer than 45e to the north, and contains thermic soils rather than 45e's mesic soils. The region is now mostly forested, with major forest types of oak-pine and oak-hickory, and less loblolly-shortleaf pine forest than 45b. Open areas are mostly in pasture, although there are some small areas of cropland. The Southern Outer Piedmont ecoregion has lower elevations, less relief, the Virginia pine and shortleaf pine found in the Piedmont to the west, but it also

and less precipitation than 45a. The landform class is mostly irregular plains contains local concentrations of mountain disjunct plant species. At the eastern rather than the plains with hills of 45a and 45e. Pine (mostly loblolly and shortleaf) boundary, the Fall Line is a broad transition zone where Piedmont rocks occur on the dominates on old field sites and pine plantations, while mixed oak forest is found in same landscape with Coastal Plain sediments. Some areas near this boundary have less heavily altered areas. Gneiss, schist, and granite are typical rock types, covered metavolcanic and metasedimentary rocks similar to 45c. with deep saprolite and mostly red, clayey subsoils. Kanhapludults are common soils, such as the Cecil, Appling, and Madison series. Some areas within this region have more alkaline soils, such as the Iredell series, formed over diabase, diorite, or gabbro, and may be associated with areas once known as blackjack oak prairies.

The Carolina Slate Belt extends from southern Virginia, across the Carolinas, that cross the region tend to widen. Soils tend to be clayey with low permeability, and and into Georgia. The mineral-rich metavolcanic and metasedimentary rocks streams have low base flows. The clay has a high shrink-swell potential that can with slatey cleavage are finer-grained and less metamorphosed than most Piedmont hinder construction; it is also utilized by many brick makers in the region. A mosaic regions. Some parts are rugged, such as the Uwharrie Mountains, and many areas are of mixed and deciduous forest, pasture, cropland, and urban land cover occurs here. distinguished by trellised drainage patterns. Silty and silty clay soils, such as the Georgeville and Herndon series, are typical. Streams tend to dry up and water yields to wells are low as this region contains some of the lowest water-yielding rock units in metavolcanic rocks. Aluminum-rich quartz-sericite schist is common. Th

Similar to 45a, the rolling to hilly Northern Inner Piedmont has higher contain an unusual variety of mineral deposits. Mining strongly influenced the early and now rare fish sometimes a popular recreation activity of the large lakes or reservoirs of elevations, more rugged topography, and more monadnocks or mountain development of the region, including an iron industry in the late 1700's to late 1800's, found in the fall line area of Ecoregions 45 and Ecoregion 45. Almost all of the major rivers outliers than other areas of the Piedmont. It has colder temperatures, more snowfall, and later production of marble, lime, gold, lead, silver, pyrite, lithium, mica, feldspar, stream valley bluffs and on a few scattered granitic domes and flatrocks. Rare plants and animals and a shorter growing season than in 45a, b, c, and f, and it has mostly mesic soils silica, and clay. Soils are often a very fine sandy to silty texture, similar to 45c. The rather than the thermic soils that cover other regions of the Carolina Piedmont. The region is covered with oak-hickory-pine forest, and Virginia pine is common.

the Carolinas.



63. Middle Atlantic Coastal Plain Ecoregion 63 is found primarily in the Carolinas and other states to the north, and has a broad transitional boundary with Ecoregion 75 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 (75). Its low terraces, marshes, dunes, barrier islands, and beaches are underlain by unconsolidated sediments. Poorly drained soils are common, and the region has a mix of coarse and finer textured soils compared to the mostly coarse soils in the majority of Ecoregion 75. Ecoregion 63 is typically lower, flatter, more poorly drained, and more marshy than Ecoregion 65. Pine plantations for pulpwood and lumber are typical, with some areas of cropland. **63b** The **Chesapeake-Pamlico Lowlands and Tidal Marshes** occur on the lowest marine terrace with elevations ranging from sea level to about 25 feet. The peanuts, and cotton are typical crops. Although similar to 63h, the Mid-Atlantic

western boundary of 63b generally occurs at the Suffolk Scarp. The region is Flatwoods historically had a lower frequency of fire, less longleaf pine, and a different characterized by nearly level plains with some broad shallow valleys, seasonally wet mix of grasses than in 63h. There are fewer Carolina Bays, and the region tends to be soils (Aquults), brackish and fresh streams, and broad estuaries affected by wind tides. biologically less diverse than 63h in terms of plants and aquatic macroinvertebrates. It is flatter and lower in elevation than 63e, with a slightly longer growing season than 63e and 65m. Some major areas of cropland are found in the region, growing corn, 83e and 65m. Some major areas of cropland are found in the region, growing corn, 85e and 65m. Some major areas of cropland are found in the region, growing corn, 85e and 65m. Some major areas of cropland are found in the region, growing corn, 85e and 65m. Some major areas of cropland are found in the region, growing corn, 85e and 65m. Some major areas of cropland are found in the region, growing corn, 85e and 65m. Some major areas of cropland are found in the region, growing corn, 85e and 65m. Some major areas of cropland are found in the region, growing corn, 85e and 85m. Some major areas of cropland are found in the region, growing corn, 85e and 85m. Some major areas of cropland are found in the region, growing corn, 85e and 85m. Some major areas of cropland are found in the region, growing corn, 85e and 85m. Some major areas of cropland are found in the region, growing corn, 85e and 85m. Some major areas of cropland are found in the region growing corn, 85e and 85m. Some major areas of cropland are found in the region growing corn, 85e and 85m. Some major areas of cropland are found in the region growing corn, 85e and 85m. Some major areas of cropland are found in the region growing corn, 85e and wheat, soybeans, and potatoes. Lake Mattamuskeet, the largest natural lake in North Myrtle Beach, South Carolina in the south. Similar to 63d, the region contains Carolina, provides valuable wintering areas for geese, swans, ducks, and other birds. Nonriverine Swamps and Peatlands are flat, poorly drained areas containing wetter. In the north, the boundary with 63d is transitional, and there is a high diversity

organic soils of peat and muck. The dark reddish-brown to black soils, acidic of vegetation in the maritime forests in the boundary area where northern and and nutrient-poor, often contain logs, stumps, and other woody matter from bald southern maritime forests overlap, such as at Nags Head Woods. The maritime forests cypress and Atlantic white cedar trees. Pocosin lakes occur in some areas. The include live oak, laurel oak, loblolly pine, red cedar, yaupon holly, wax myrtle, dwarf vegetation of the high and low pocosins contains a dense shrub layer, along with palmetto, with cabbage palm (Sabal palmetto) in the south. Pamlico Sound is a stunted pond pine, swamp red bay, and sweet bay. Swamp forests are dominated by shallow estuary supporting an important nursery for 90 percent of all the comme swamp tupelo, bald cypress, and Atlantic white cedar. Fire during drought periods, seafood species caught in North Carolina, as well as vast recreational fisheries. logging, and construction of drainage ditches have affected natural vegetation patterns. Several areas of mineral and shallow organic soils have been drained and upland surfaces, and larger areas of poorly drained soils than the adjacent. cultivated for crops of corn, soybeans, and wheat.

63d Virginian Barrier Islands and Coastal Marshes occur in the northeast Pleistocene, the resultant terraces and shoreline-related landforms are covered corner of North Carolina and contain salt, brackish, and freshwater marshes, typically by fine-loamy and coarse-loamy soils, with periodically high water tables. replaced by other species. Photo: Ted Borg, dunes, beaches, and barrier islands that enclose Currituck Sound. The Quaternary-age Other areas have clayey, sandy, or organic soils, contributing to the region's plant deposits of unconsolidated sand, silt, and clay form dynamic landscapes affected by diversity. Carolina bays and pocosins are abundant in some areas. The region is a ocean wave, tide, wind, and river energy. The nearshore ocean water, influenced by significant center of endemic biota, with more biological diversity and rare species the longshore Virginia Current, tends to be colder than in most of 63g, especially compared to 63e. Pine flatwoods, pine savannas, freshwater marshes, pond pine south of Cape Hatteras, where warmer Gulf Stream waters occur. On the barrier woodlands, pocosins, and some sandhill communities were once common. Loblolly islands, northern beach grass and deciduous oaks are typical, compared to the sea oats pine plantations are now widespread with an active forest industry. Artificial drainage and evergreen live oak more commonly found to the south in 63g. Salt marshes are for forestry and agriculture is common. North Carolina's blueberry industry is dominated by saltmarsh and saltmeadow cordgrasses and black needlerush, while the concentrated on some of the sandy, acidic soils of the region. freshwater marshes of upper Currituck Sound contain bulrush, cattail, sawgrass, and big cordgrass. The marshes provide wintering habitat for geese, ducks, and wading of the riverine Ecoregion 65p, although a few floodplains mapped in this birds. Piping plover and loggerhead sea turtles occasionally nest along the beaches. **63** The **Mid-Atlantic Flatwoods** occupies the middle portion of the coastal plain oxbow lakes, and alluvial deposits with abrupt textural changes characterize 63n.

in northern North Carolina and southern Virginia. Upland surfaces are wider, Brownwater floodplains originate in or cross the Piedmont (45) and the sediments Carolinas. marsh food web. The detritus is eaten by crabs, snails, mussels, oysters, clams, and worms, which lower in elevation, with less local relief, and have more poorly drained soils compared contain more weatherable minerals than the blackwater floodplains that have their to Ecoregion 65m. Soils such as Aquults and some Udults formed in the mostly watersheds entirely within the coastal plain. Cypress-gum swamps are common, along Pleistocene-age clays and sands. With slow natural subsurface drainage, except near with bottomland hardwoods of wetland oaks, green ash, red maple, and hickories.



areas of oak-hickory-pine. On some moist sites, especially in the far south near Florida, Southern mixed forest occurred with beech, sweetgum, southern magnolia, laurel and live oaks, and various pines. The Cretaceous or Tertiary-age sands, silts, and clays of the region contrast geologically with the older metamorphic and igneous rocks of the Blue Ridge (66) and Piedmont (45). Elevations and relief are greater than in the Southern Coastal Plain (75), but generally less than in much of the Piedmont. Streams in this area are relatively low-gradient and sandy-bottomed. The Sand Hills are a rolling to hilly region composed primarily of sandy rims. Carolina bays not drained for agriculture often contain rare or endangered

Cretaceous-age marine sands and clays, capped in places with Tertiary sands, plant and animal species. deposited over the crystalline and metamorphic rocks of the Piedmont (45). Many of the droughty, low-nutrient soils formed in thick beds of sand, although some soils **65**m contain more loamy and clayey horizons. Some upland areas are underlain by plinthite, and sideslopes tend to have fragipans that perch water and cause lateral flow grazing, agriculture, and fire and seepage. Stream flow is consistent; streams seldom flood or dry up because of the large infiltration capacity of the sandy soil and the great ground-water storage capability of the sand aquifer. On drier sites, turkey oak and blackjack oak grow with longleaf pine and a wiregrass ground cover. Shortleaf-loblolly pine forests and other oak-pine forests are now more widespread due to fire suppression and logging. The Sand Hills are a center of rare plant diversity in the Carolinas. The region is also f the Southeastern Plains known for its peach orchards, golf courses, and horse farms.

**651** The Atlantic Southern Loam Plains ecoregion is lower, flatter, more gently rolling, with finer-textured soils than 65c. It is a major agricultural zone, with deep, well-drained soils, and more cropland than 65c or 63h. The flora is varied due to the variety of edaphic conditions, but is generally more mesic than found in 65c, and more xeric than in 63h. The region has the highest concentration of Carolina bays. These are shallow, elliptical depressions, often swampy or wet in the middle with dry



**65p** diverse than the coastal plain regions 651 and 63h to the south. **Southeastern Floodplains and Low Terraces** comprise a riverine ecoregion



found here. Photo: SCDNR





## 66. Blue Ridge

mostly forested slopes, high-gradient, cool, clear streams, and rugged terrain occur primarily on metamorphic rocks with minor areas of igneous and sedimentary geology. Annual precipitation of over 100 inches can occur in the wettest areas, while dry basins can average as little as 40 inches. The southern Blue Ridge is one of the richest centers of biodiversity in the eastern U.S. It is one of the most floristically diverse ecoregions, and includes Appalachian oak forests, northern hardwoods, and, at the highest elevations in Tennessee and North Carolina, Southeastern spruce-fir forests. Shrub, grass, and heath balds, hemlock, cove hardwoods, and oak-pine communities are also significant. The New River Plateau is a high, hilly plateau with less relief and a different balds are found on some slopes and ridgetops. Northern flying squirrels, Blackburnian land cover mosaic than surrounding Blue Ridge ecoregions. It has less dense warblers, black-capped chickadees, and common ravens are seen in this region. woodland and forest cover, and more land devoted to pasture, orchards, cropland, livestock and dairy farms, and Christmas tree production. Elevations are generally the more mountainous Blue Ridge regions (66g, 66d). It also has less bouldery between 2500-3500 feet, with a few higher peaks. Oak dominates most of the forests, colluvium than those two surrounding regions and more saprolite. The soils are with beech, birch, hemlock, and poplar on more moist sites and pines on drier areas. mostly deep, well-drained, loamy to clayey Ultisols, although there are variations The Southern Crystalline Ridges and Mountains occur primarily on between the uplands, the high and low terraces, and the floodplains. The Asheville Precambrian-age igneous and high-grade metamorphic rocks, in contrast to basin has the lowest annual precipitation amounts in North Carolina, receiving less the sedimentary and metasedimentary rocks of 66e and 66g. The crystalline rock types than 42 inches. Compared to the higher mountainous ecoregions of 66, the Broad

areas of mafic and ultramafic rocks also occur, producing more basic soils. The region shortleaf and Virginia pine, and white, southern red, black, and scarlet oaks. Although has greater relief and higher elevations than 661, 66c, and 66j. Elevations of this some areas of this rolling foothills region are mostly forested, overall it has more ough, dissected region are generally 1200-4500 feet. The southern part of the region pasture, cropland, industrial land uses, and human settlement than other Blue Ridge is wetter than the north. It is mostly forested, with chestnut oak (and formerly ecoregions. Outlines of abandoned fields with pine-hardwood succession are apparent diversity of flora and fauna. Black bear, deer, wild boar, turkey, grouse, songbirds, reptiles, many American chestnut) dominating on most slopes and ridges. There are a few small on many lower slopes. species of amphibians, thousands of species of invertebrates, and a variety of small mammals are areas of pasture, apple orchards, Fraser fir Christmas tree farms, or minor cropland. The Southern Sedimentary Ridges in North Carolina consist of small areas diverse area with many rare species, including some relict and disjunct species near the Tennessee border in western Ashe, Watauga, Mitchell, Yancy, and from areas much further north. The rugged, steeply sloping mountains are composed Madison counties. The disjunct areas contain Cambrian-age sedimentary rocks of of Precambrian amphibolite and gneiss. The amphibolite, a metamorphosed black

> metasandstone occurs, but it is material of very low-grade metamorphism. One of the with layers of mud, sand, and volcanic ash. In some areas this rock weathers to larger areas, in Madison County, is associated with the Hot Springs Window, an produce shallow soils high in calcium and magnesium, and less acidic than most opening where the major thrust sheet was eroded to expose younger, underlying rocks Appalachian soils. Oak forests (formerly American chestnut forests) dominate on such as the Shady Dolomite and Rome Formation shale and siltstone. Slopes of the south, east, and west facing slopes with an understory of Catawba rhododendron, region are typically steep and forested, with elevations ranging from 1500-4900 feet. mountain laurel, flame azalea, and dogwood. Cove forests and northern hardwood **66** The **Southern Metasedimentary Mountains** in North Carolina contain rocks forests are found on north slopes, and include sugar maple, ash, yellow birch, tulip that are not as strongly metamorphosed as the gneisses and schists of 66d. The tree, and basswood. geologic materials are mostly late Pre-Cambrian and include metagraywacke, metasiltstone, metasonglomerate, slate, schist, phyllite, and quartzite.

These are steep, dissected, biologically-diverse mountains that are densely forested. Piedmont influences. The region includes the Brushy Mountains to the north and the The Appalachian oak forests and, at higher elevations, the northern hardwoods forests South Mountains to the south. Covered with mixed oak and oak-hickory-pine forests, include a variety of oaks and pines, as well as silverbell, hemlock, yellow poplar, these mountains tend to be slightly drier and warmer than most of Ecoregion 66. The basswood, buckeye, yellow birch, and beech. Much of the region is public land South Mountains contain forested areas that harbor many uncommon or rare plant managed by the National Park Service or U.S. Forest Service. The **High Mountains** ecoregion includes several disjunct high-elevation areas

soils rather than mesic soils. Evergreen red spruce and Fraser fir forests are found at monadnocks or inselbergs, these isolated mountain outliers are formed in part by their the higher elevations, and red oak forests and northern hardwood forests with beech, caps of erosion-resistant quartzite. The region has both Piedmont and Blue Ridge Streams in the Blue Ridge are often highyellow birch, yellow buckeye, and sugar maple are common. The spruce-fir forests vegetation communities: mostly oak and oak-pine forests with some Canadian and have been affected by the balsam wooly adelgid, a non-native insect that kills mature Carolina hemlock in moist areas. Other mountain flora found here include streams eventually supply drinking water for public lands of the Blue Ridge. Fraser firs, and some forest growth declines are possibly linked to air pollutants. rhododendron, azalea, galax, mountain laurel, pitch pine, table mountain pine, and nearby communities, as well as for major cities Heath balds dominated by evergreen rhododendron and mountain laurel, and grassy various ferns.

## 75. Southern Coastal Plain The Southern Coastal Plain extends from South Carolina and Georgia, through much of central Florida, and along the Gulf coast lowlands of the Florida Panhandle, Alabama,

swampy lowlands along the Gulf and Atlantic coasts. In Florida, an area of discontinuous highlands contains numerous lakes. This ecoregion is generally lower in elevation with less relief and wetter soils than Ecoregion 65. It is warmer and has a different mix of vegetation than Ecoregion 63. Once covered by a variety of forest communities that included trees of longleaf pine, slash pine, pond pine, beech, sweetgum, southern magnolia, white oak, and laurel oak, land cover in the ecoregion as a whole is now mostly slash and loblolly pine with oak-gum-cypress forest in some low lying areas, citrus groves in Florida, pasture for beef cattle, and urban. **75i** Floodplains and Low Terraces are a continuation of the riverine 65p coregion across the Southern Coastal Plain. Similar to 63n, the broad **75j** The Sea Islands/Coastal Marsh region contains the lowest elevations in South Carolina and is a highly dynamic environment affected by ocean wave, floodplains and terraces of major rivers, such as the Savannah in South Carolina, wind, and river action. Mostly sandy soils are found on the barrier islands, while comprise the region. Composed of stream alluvium and terrace deposits of sand, silt, organic and clayey soils often occur in the freshwater, brackish, and salt marshes. clay, and gravel, along with some organic muck and swamp deposits, the region Maritime forests of live oak, red cedar, slash pine, and cabbage palmetto grow on Spanish moss often hangs from live oak trees includes large sluggish rivers and backwaters with ponds, swamps, and oxbow lakes. parts of the sea islands, and various species of cordgrass, saltgrass, and rushes are spiders, and snakes make use of it for nests, River swamp forests of bald cypress and water tupelo and oak-dominated bottomland dominant in the marshes. The coastal marshes are important nursery areas for fish, bedding, or shelter. hardwood forests provide important wildlife habitat. olerant of salt spray, dry sandy soils, or saturated conditions, cabbage palms (*Sabal palmetto*) are uniquely adapted to in the 1700's and 1800's, a plantation agriculture economy dominated the region,

coastal environment. Flexible trunks and shredded, divided leaves bend but tend not to break in hurricanes. Seen

here at Bull Island, SC, ocean currents bring them as far north as Bald Head Island, NC. Photo: Allen Sharpe, SCETV



intruded by granitic plutons, and veneered with saprolite. It is lithologically distinct from the adjacent Piedmont regions 45c and 45g, as well as from the younger unconsolidated sediments of 65m. Rocks and soils are similar to 45b, but 45f is cooler with a shorter growing season. The region contains more loblolly pine compared to

mudstones, siltstones, and conglomerates. Local relief and elevations are often less sedimentation, and improve water quality. than in surrounding regions, and, with rocks that are easier to erode, stream valleys

metamorphic grade is generally lower than adjacent geologic belts and the rocks

marshes, dunes, beaches, and barrier islands, but it tends to be slightly warmer and

upland surfaces, and larger areas of poorly drained soils than the adjacent, higher elevation Ecoregion 651. Covered by shallow coastal waters during the absence of fire, longleaf pine and its associated hurricanes migrates northwestward to affect

region originate within Ecoregion 63. Large, sluggish rivers, deep-water swamps, The carnivorous Venus fly traps (Dionaea

The dissected **Rolling Coastal Plain** extends south from Virginia and covers much of the northern upper coastal plain of North Carolina. Relief, elevation, and buildings. It can kill trees and other native often spent in the mangroves of Central America stream gradients are generally greater than in Ecoregion 63 to the east, and soils tend vegetation by blocking sunlight. to be better drained. It has a slightly cooler and shorter growing season than 651, but is a productive agricultural region with typical crops of corn, soybeans, tobacco, cotton, sweet potatoes, peanuts, and wheat. The region appears to be biologically less

that provides important wildlife corridors and habitat. Composed of alluvium and terrace deposits of sand, clay, and gravel, the region includes large sluggish rivers and backwaters with ponds, swamps, and oxbow lakes. It includes oak-dominated bottomland hardwood forests, and some river swamp forests of bald cypress and water tupelo. Similar to 63n, the flood-prone region includes brownwater floodplains and of hogs in the U.S. The concentration of hog blackwater floodplains. The brownwater floodplains originate in or cross the factories and associated wastes in Ecoregions amounts in the northern portion of the North Piedmont (45) and the sediments contain more weatherable and mixed minerals than of air, streams, groundwater, and estuaries.



re mostly gneiss and schist, covered by well-drained, acidic, loamy soils. Some small Basins have a mix of oaks and pines more similar to the Piedmont (45), with more

shale, sandstone, siltstone, conglomerate, and dolomite. Some metasiltstone or volcanic rock, formed from lavas that spilled on the floor of a shallow sea, mixing

species, including turkey beard (*Xerophyllum asphodeloides*) on xeric ridges and one of North America's rarest orchids, the small whorled pogonia (*Isotria medeoloides*).

and Mississippi. From a national perspective, it appears to be mostly flat plains, but it is a heterogeneous region also containing barrier islands, coastal lagoons, marshes, and

crabs, shrimp, and other marine species. During the colonial and antebellum periods



crossing the Piedmont have been impounded. 65. A recovery effort is underway to reestablish the species in several Atlantic slope Photo: NC Wildlife Resources Commission Crutchfield, Jr., Carolina Power and Light



und on barrier nd beaches. I

ninated from o-thirds of its

historic range, from

Massachussetts to

U.S. Army Corps of

Floyd dumped more than 15 inches of rain

integral component of many wetland

ecosystems in the southern part of Ecoregion

63. North Carolina is usually considered the

northern extent of its habitat range. Photo.

over an area already saturated by Hurricane









he high-elevation spruce-fir forests of 66i are

Growth declines, insect damage, and air

The long-tailed salamander (Eurycea

population in the world. Photo: Rich Glor

*longicauda*) is often found along streams and











eation activities such as rafting, kayaking gradient with rocks, boulders, and cool, clear hiking, cycling, fishing, hunting, and camping water. Waterfalls are abundant. Many of these are increasingly popular activities on the the



South Carolina including Charleston Harbor, one of the largest container ship ports on the East Coast. The harbor also contains one of the largest commercial shrimp fisheries in the state raising concerns about the health of the estuary, coastal marshes and associated flora and fauna. Photo: Marge Beaver