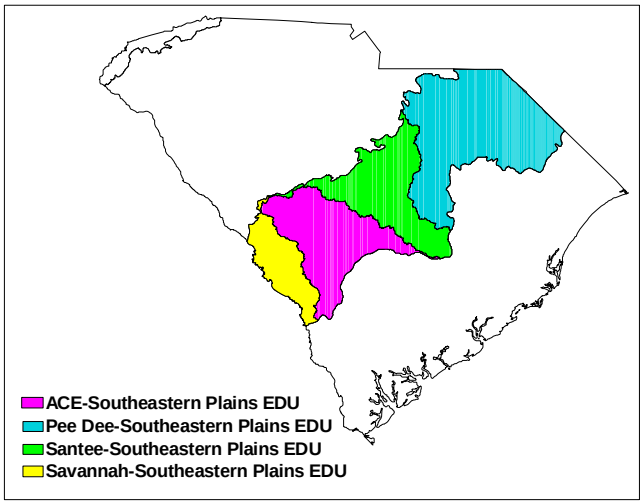
Southeastern Plains Ecoregion Aquatic Habitats

Description and Location



The Southeastern Plains Ecoregion is sandwiched between the piedmont to the north and the coastal plain to the south. It extends northwest from the Savannah River to the Pee Dee River. The southeastern plains encompass portions of 24 counties and 9,106 square miles. Just below the fall line, the ecoregion is dominated by sandy soils with scrub vegetation on moderate sloping lands. This area is known as the sandhills and varies in elevation from 250 to 450 feet above mean sea level. Moving toward the coast, the topography is reduced to gentle sloping to nearly level lands with elevations of 25 to 450 feet.

Savannah–Southeastern Plains Ecobasin

The Savannah-Southeastern Plains Ecobasin extends from the southern portions of Edgefield County south to the southern portion of Allendale County. It includes about 85 miles of the Savannah River as it meanders toward the coastal plain and ultimately the Atlantic Ocean. Major South Carolina tributaries to the Savannah River in the ecobasin include Horse Creek, Hollow Creek, Upper Three Runs Creek and Lower Three Runs Creek. The ecobasin encompasses most of six watersheds and parts of ten others in its 980 square miles. A large portion (31 percent) of the ecobasin is protected by federal, private and state entities. Most of this protected land (303 square miles) is included in the Savannah River Site. Other significant protected areas include the Hitchcock Woods Conservation Easement (1,955 acres), the Henderson Heritage Preserve (441 acres) and the Redcliffe State Historic Site (340 acres). Two other Heritage Preserves (Bear Branch and Gopher Branch) encompass 186 acres. The ecobasin contains 979 miles of lotic habitat and 6,425 acres of lentic habitat, primarily impoundments. A small portion of the lentic habitat is comprised of Carolina bays. The largest impoundment in the ecobasin is Par Pond (2,953 acres) on the Savannah River Site property. The next largest reservoir is Langley Pond (301 acres) near Langley, South Carolina. Other impoundments in the ecobasin are less than 150 acres.

Primary conservation targets in the ecobasin include the mainstem Savannah River in Aiken and Allendale Counties, Upper Three Runs Creek and its tributaries in Aiken and Barnwell Counties, and Brier Creek system in Allendale County (Smith et al. 2000). The mainstem of the Savannah River within the ecobasin contains several aquatic animals on South Carolina's Priority Species List including shortnose sturgeon and robust redhorse, as well as several mussel species (pod lance and Savannah lilliput). Priority fish species in Upper Three Runs Creek and its tributaries include the Savannah darter and turquoise darter. The Savannah darter and bluebarred pygmy sunfish inhabit the Brier Creek system.

ACE–Southeastern Plains Ecobasin

The ACE–Southeastern Plains Ecobasin is the only ecobasin in the state to originate entirely in the Southeastern Plains Ecoregion. The headwaters of the North and South Forks of the Edisto River originate in the extreme southern portion of Edgefield and Lexington Counties. The headwaters of the Salkehatchie River originate in Barnwell County. Major tributaries to the North Fork Edisto River in the ecobasin include Black Creek, Bull Swamp Creek and Caw Caw Swamp. Major tributaries to the South Fork Edisto River include Shaw Creek, Dean Swamp Creek, Little River and Roberts Swamp. The ecobasin includes portions of 27 watersheds and covers 2,219 square miles. Very little (0.7 percent) of the land is protected by federal, state and private entities. The largest area of protected land (3,455 acres) occurs on the Savannah River Site. Other significant protected areas include Clemson University's Edisto Research and Education Facility (2,300 acres), the Aiken Gopher Tortoise Heritage Preserve (1,391 acres) and the Aiken State Natural Area (1,153 acres). The ecobasin contains approximately 2,117 miles of lotic habitat and 9,047 acres of lentic habitats. There are no major reservoirs within in the ecobasin and largest lentic areas (more than 75 acres) are primarily Carolina bays.

Primary conservation targets in the ecobasin include the upper portion of the South Fork Edisto River in Aiken, Barnwell and Orangeburg Counties, the mainstem of the lower North Fork Edisto River in Orangeburg County and Black Creek, a tributary to the North Fork Edisto River in Lexington County (Smith et al. 2000). Priority fish species in the upper South Fork Edisto River include the "broadtail" madtom, Savannah darter, turquoise darter and blackbanded sunfish. The lower North Fork Edisto River and its tributaries provide habitat for the "broadtail" madtom, bluebarred pygmy sunfish and Savannah darter as well as the federally endangered shortnose sturgeon.

Santee–Southeastern Plains Ecobasin

The upper extent of the Santee-Southeastern Plains Ecobasin is the fall line, which runs through central Lexington, Richland and Kershaw Counties. The ecobasin extends southeasterly to the upper portion of Berkeley County and includes three major rivers. The Congaree and Wateree merge to form the Santee River southeast of Columbia. Major tributaries to the Congaree River include Congaree Creek, Gills Creek and Cedar Creek. Major tributaries to the Wateree River include Five and Twenty Mile Creek, Big Pine Tree Creek, Colonel's Creek and Beech Creek. The ecobasin contains all of 17 watersheds and portions of 30 others, and covers 2,064 square miles. Approximately 162 square miles of land within the ecobasin are protected by federal and state entities. The largest protected areas include Fort Jackson (82 square miles), Congaree Swamp National Park (23 square miles) and Santee National Wildlife Refuge (20 square miles). Other significant protected areas include Manchester State Forest (8 square miles) and Santee State Park (4 square miles). The ecobasin contains approximately 2,230 miles of lotic habitat and 146 square miles of lentic habitat, most of which is contained in Lake Marion (136 square miles). Big Pine Tree Creek near Camden South Carolina is a primary conservation target in the ecobasin as it holds one of very few known Carolina pygmy sunfish populations.

Pee Dee–Southeastern Plains Ecobasin

The Pee Dee-Southeastern Plains Ecobasin is located in the northeast corner of the state, originating in Chesterfield, Marlboro, and Dillon Counties and flowing through parts or all of Kershaw, Darlington, Florence, Lee, Marion, Sumter and Clarendon Counties. The ecobasin contains three major rivers including the Lynches, Pee Dee and Little Pee Dee as well as the headwaters of the Black River. The Lynches River originates just north of South Carolina in the piedmont of North Carolina. It flows about 21 miles through the South Carolina piedmont before entering the Pee Dee-Southeastern Plains Ecobasin, then flows another 71 miles until it enters the coastal plain, picking up inputs from two major tributaries, Buffalo Creek and the Little Lynches River, along the way. The Pee Dee River originates in the southern portion of the North Carolina piedmont and southeastern plains. Within the Pee Dee-Southeastern Plains Ecobasin, the Pee Dee River flows about 92 miles before entering the coastal plain. Major tributaries to the Pee Dee River include Thompson Creek, Crooked Creek, Black Creek and Jefferies Creek. The Little Pee Dee River originates in the southeastern plains of North Carolina and flows approximately 74 miles through the Pee Dee-Southeastern Plains Ecobasin before entering the coastal plain of South Carolina. The primary tributary is Buck Swamp. Pocataligo River and Black River Swamp are the main tributaries of the Black River. Both originate within the ecobasin and flow southeast before entering the coastal plain and merging to form the Black River. The ecobasin contains all of 11 watersheds and parts of 46 others, and covers 3,830 square miles. There are approximately 194 square miles of land within the ecobasin protected by federal, state and private entities. The South Carolina Forestry Commission manages the largest amount of protected land (about 78 square miles) within the ecobasin, including Sandhills State Forest (73 square miles) and Manchester State Forest (5 square miles). The next largest protected area includes nearly 70 square miles of Carolina Sandhills National Wildlife Refuge. Other significant protected areas include Cheraw State Recreation Area (12 square miles), Great Pee Dee Heritage Preserve (4.5 square miles) and Lee State Natural Area (4.4 square miles). There are about 4,591 miles of lotic habitat and 37 square miles of lentic habitat. There are no major reservoirs within the ecobasin. The largest lentic areas are Big Bay (2,476 acres), a Carolina bay, and Lake Robinson (2,058 acres), an impoundment on Black Creek.

Areas of primary conservation concern include the upper Lynches River and its sandhills tributaries in Chesterfield, Kershaw, Lee and Darlington Counties; upper Pee Dee River between Marlboro and Chesterfield Counties; and sandhills tributaries to the Little Pee Dee River along the border of South Carolina and North Carolina in Marlboro and Dillon Counties (Smith et al. 2000). The upper Lynches River is home to several aquatic priority species including fish (sandhills chub, “thinlip” chub and “broadtail” madtom) and mussels (brook floater, creeper, notched rainbow and the federally endangered Carolina heelsplitter). The mainstem of the upper Pee Dee River contains several fish (“Carolina” redhorse, robust redhorse and the federally endangered shortnose sturgeon) and mussel (yellow lampmussel and Roanoke slabshell) priority species. Sandhills tributaries to the Little Pee Dee River contain sandhills chub and once harbored populations of pinewoods darter that may now be extirpated from the state.

General Condition

Savannah–Southeastern Plains Ecobasin

Water quality was impaired at 17 of 40 sites (43 percent) sampled by the South Carolina Department of Health and Environmental Control (SCDHEC 2003). Aquatic life uses were not supported at two sites due to a lack of invertebrate diversity or abnormal pH. Recreational uses were not supported at eight sites due to the presence of high fecal coliform bacteria concentration. Fish consumption advisories were listed for several areas due to mercury contamination, including Flat Rock Pond, Langley Pond, Vaucluse Pond and the Savannah River. No streams within the ecobasin are considered outstanding resource waters by SCDHEC.

ACE–Southeastern Plains Ecobasin

Water quality was impaired at 33 of 77 sites (33 percent) sampled by SCDHEC (SCDHEC 1998, SCDHEC 2003). Aquatic life uses were not supported at 13 sites due to lack of invertebrate diversity (seven sites), low dissolved oxygen concentrations (four sites) and abnormal pH values (two sites). Recreational uses were not supported at 15 sites due the presence of high fecal coliform bacteria concentrations. Fish consumption advisories were listed for the Salkehatchie River below US 301, South Fork Edisto River below Aiken State Park and the Orangeburg County portion of the North Fork Edisto River. No streams within the ecobasin are considered outstanding resource waters by the SCDHEC.

Santee–Southeastern Plains Ecobasin

Water quality was impaired at 50 of 127 sites (39 percent) sampled by SCDHEC (SCDHEC 1998; SCDHEC 1999[a]; SCDHEC 1999[b]). Aquatic life uses were not supported at 14 sites primarily due to a lack of invertebrate diversity (four sites) and low dissolved oxygen (five sites). One site was contaminated with tin. Recreational uses were not supported at 24 sites due the presence of high concentrations of fecal coliform bacteria. Fish consumptions advisories were listed for 12 sites, primarily due to the presence of mercury (11 sites). Fish consumption advisories have been listed for the Congaree River from Columbia to the Santee River, the Wateree River along its entire length within the ecobasin, Lake Marion, Cary's Lake, Windsor Lake and Sesquicentennial State Park.

Pee Dee–Southeastern Plains Ecobasin

Water quality was impaired at 57 of 134 sites (43 percent) sampled by SCDHEC (SCDHEC 2000). Aquatic life uses were not supported at 28 sites due to low dissolved oxygen concentrations (17 sites), copper contamination (four sites), abnormal pH values (four sites), and lack of invertebrate diversity (three sites). Recreational uses were not supported at 19 sites due to the presence of high concentrations of fecal coliform bacteria. Fish consumption advisories were listed for 10 sites due to mercury contamination including every major river within the ecobasin (Pocotaligo River, Lynches River, Great Pee Dee River and Little Pee Dee River) and two small impoundments: Louthers Lake and Lake Robinson.

Major Classifications

Wadeable Streams

Wadeable streams are the dominant aquatic habitat in the Southeastern Plains Ecoregion and provide most of the habitat for aquatic animals on South Carolina's Priority Species List. Wadeable streams those with Strahler stream orders of 0 to 3; generally, streams that can be waded comfortably throughout most of the year. These streams are often bordered with pond-like backwaters and swamps. Wadeable streams in the southeastern plains are mostly low gradient, although some near the fall line have swifter flows. In moderate flowing areas, the substrate is chiefly clean shifting sand; with the absence of rocks in most streams, logs and debris jams provide habitat for aquatic fauna. In slow flowing areas, substrate is comprised of finer materials such as mud, clay, silt and fine detritus. Most southeastern plains streams that receive ample sunlight are well vegetated with aquatic macrophytes. The streams that flow through the ecoregion are often termed "blackwater" due to their tannin-stained waters.

Navigable Streams

Navigable streams are less common in the southeastern plains, but provide habitat for many priority species. These streams are generally defined as large enough to operate watercraft, if only a canoe and are usually too deep to be waded throughout most of the year. The Pee Dee River, Lynches River and Edisto River are examples of navigable streams in the southeastern plains. These lazy meandering streams have substrates of mostly shifting sand in the flowing areas while finer materials (silt, clay and detritus) are deposited in the pools. As with the smaller streams in the ecobasin the navigable streams are also "blackwater," stained by the decomposition of organic materials.

Carolina Bays

The lower portion of the southeastern plains, known as the Atlantic Southern Loam Plains, contains the highest concentration of Carolina bays in the state. Carolina Bays are shallow elliptical depressions of unknown origin, many of which contain water throughout the year. The waters in Carolina bays are highly acidic, which limits the number of fish species. However, some sunfish and minnow species populate these depressions. Carolina bays may be important habitat for some rare crayfish species, as several have been observed in these formations. However, data on the crayfishes associated with Carolina bays is particularly lacking; more surveys are needed in order to determine the importance of these depressions as crayfish habitat.

Priority Species Associations

The Southeastern Plains Ecoregion contains the greatest number of imperiled fish species in the state. There are 32 priority fish species within the ecoregion including 11 of the highest conservation need; this represents 92 percent of the fish species of highest conservation need in South Carolina. There are 15 priority mussel species (or species complexes), 11 priority crayfish species, and 2 priority snail species in the ecoregion.

Common Name	Scientific Name	Ecobasin			
		ACE	Pee Dee	Santee	Savannah
Highest Priority					
Fishes					
“Thinlip” chub	*Cyprinella sp. (c.f. zanema)*		X		
Bridle shiner	*Notropis bifrenatus*			X	
Sandhills chub	*Semotilus lumbee*		X	X	
Highfin carpsucker	*Carpiodes sp.*			X	X
Robust redhorse	*Moxostoma robustum*		X		X
Carolina pygmy sunfish	*Elassoma boehlkei*		X	X	
Bluebarred pygmy sunfish	*Elassoma okatie*				X
Savannah darter	*Etheostoma fricksium*	X			X
Christmas darter	*Etheostoma hopkinsi*				X
Saluda darter	*Etheostoma saludae*			X	
“Broadtail” madtom	*Noturus spp. (c.f. insignis)*	X	X		
Mussels					
Southern rainbow	*Villosa vibex*	X			
Yellow lampmussel	*Lampsilis cariosa*		X	X	X
Savannah lilliput	*Toxolasma pullus*			X	X
Brook floater	*Alasmidonta varicosa*		X		
Barrel floater	*Anodonta couperiana*	X	X		X
Crayfish					
A crayfish	*Procambarus echinatus*	X			
A crayfish	*Cambarus reflexus*				X
Snails					
Ridged lioplax	*Lioplax subcarinata*		X		
High Priority					
Fishes					
Bannerfin shiner	*Notropis leedsi*	X			X
Quillback	*Carpiodes cyprinus*			X	X
Blackbanded sunfish	*Enneacanthus chaetodon*	X	X	X	X
Turquoise darter	*Etheostoma inscriptum*	X			X
Pinewoods darter	*Etheostoma mariae*		X		
Seagreen darter	*Etheostoma thalassinum*			X	
Piedmont darter	*Percina crassa*		X	X	
Mussels					
Roanoke slabshell	*Elliptio roanokensis*		X	X	X
Rayed pink fatmucket/ Eastern lampmussel	*Lampsilis splendida/radiata*			X	X
Eastern pondmussel	*Ligumia nasuta*			X	
Crayfish					
Sandhills crayfish	*Procambarus pearsei*		X		
Pee Dee lotic crayfish	*Procambarus lepidodactylus*	X	X	X	

Snails

Moderate Priority					
Fishes					
Satinfin shiner	*Cyprinella analostana*		X		
Greenfin shiner	*Cyprinella chloristia*		X	X	
Fieryblack shiner	*Cyprinella pyrrhomelas*		X	X	
Highback chub	*Hybopsis hypsinotus*		X	X	
Comely shiner	*Notropis amoenus*		X		
Redlip shiner	*Notropis chiliticus*		X		
Lowland shiner	*Pteronotropis stonei*	X	X	X	X
Notchlip redhorse	*Moxostoma collapsum*		X	X	
Snail bullhead	*Ameiurus abrunneus*	X	X	X	X
White catfish	*Ameiurus catus*	X	X	X	X
Flat bullhead	*Ameiurus platycephalus*	X	X	X	X
Striped bass	*Morone saxatilis*		X	X	
Pugnose minnow	*Opsopoeodus emiliae*	X			X
Mud sunfish	*Acantharchus pomotis*	X	X	X	X
Mussels					
Carolina lance	*Elliptio angustata*	X	X	X	
Carolina slabshell	*Elliptio congarea*	X	X	X	X
Eastern elliptio	*Elliptio complanata* complex		X	X	
Variable spike	*Elliptio icterina* complex	X	X	X	
Pod lance	*Elliptio folliculata*		X		
Atlantic spike	*Elliptio producta*	X	X		
Eastern creekshell	*Villosa delumbis*	X	X		X
Crayfish					
Ditch fencing crayfish	*Faxonella clypeata*				
Edisto crayfish	*Procambarus ancylus*	X	X	X	
Santee crayfish	*Procambarus blandingii*		X	X	
A crayfish	*Procambarus chacei**	X		X	X
A crayfish	*Procambarus enoplosternum**			X	X
A crayfish	*Procambarus hirsutus**		X	?	X
A crayfish	*Procambarus pubescens** *because of difficulty in obtaining information on these species, the level of priority is undetermined				X
Snails					
A snail	*Physa sp. "A"*				X

Region-wide Challenges

Challenges to conservation of aquatic fauna in the Southeastern Plains Ecoregion are similar to other ecobasins in the state and primarily include impacts associated with impoundments, nonpoint source pollution, point source pollution, poorly planned development and introduction of non-native species.

There is only one major impoundment (Lake Marion) in the southeastern plains; however, dams still have a significant impact on aquatic resources within the ecoregion. With more than 1,000 dams impounding 550 miles of streams, there are more dams in the Southeastern Plains Ecoregion than any other; the density of dams within the ecoregion is second only to the Blue Ridge. Dams result in a loss of connectivity and negatively affect aquatic biota both above and below the impoundment (Doeg and Koehn 1994; Kanehl et al. 1997; Tiemann et al. 2004). Impoundments affect native aquatic fauna through direct loss of habitat as lotic habitat is converted to lentic habitat; the latter favors competitive and often predacious species like largemouth bass and other centrarchids. In addition, impoundments often negatively affect unimpounded downstream reaches by altering hydrologic and thermal regimes (Cushman 1985), modifying stream channel morphology, increasing erosion and sedimentation (Waters 1995) and ultimately reducing suitable habitat for native aquatic fauna (Helfrich et al. 1999; Tiemann et al. 2004). Dams also prevent migrations of native anadromous fish (shad species, striped bass and sturgeon) to their historic spawning grounds.

Forest clearing, soil tilling and channelization in the vicinity of southeastern plains streams have resulted in streams that are heavily silted. Modern soil conservation practices and lower potential for channelization have reduced those impacts, but sedimentation from nonpoint and point sources remains a significant detriment to streams. Development activities, agriculture and silviculture are primary sources of erosion that lead to sedimentation in streams. Corporate and private timber managers that fail to follow best management practices (BMPs) contribute to siltation and other nonpoint source pollution within the ecoregion. Stream bank erosion due to loss of riparian areas, livestock grazing and altered hydrology also contribute to sedimentation in streams. During the past century, many streams in the southeastern plains were channelized to improve drainage of croplands. Channelized streams lead to increased erosion of cropland and increased sedimentation of the receiving streams (Etnier and Starnes 1993). The result of channelization was changing many streams into straight shallow ditches with severely depressed populations of aquatic fauna.

Excessive contamination by nutrients and other chemicals also negatively affect water quality within the ecoregion. Point source discharges from industrial, municipal and commercial sources add a variety of chemical pollutants to the receiving streams, rivers and lakes. In addition, nonpoint sources discharges from agricultural operations negatively affect water quality. Nationwide, pollution from agricultural sources is the greatest cause of impairment to streams and lakes (SCDHEC 2003). The southeastern plains has the second highest density of permitted discharges within the state and the highest density of Concentrated Animal Feeding Operations (CAFOs) with approximately 6.5 operations per 100 square miles.

Water quantity is also a problem in southeastern plain streams. Water withdrawal for irrigation is a common practice in the ecoregion. During summer months, some streams are completely

dewatered due to uncontrolled irrigation of croplands. Furthermore, many pond-owners will close their drain structures during dry periods in an attempt to maintain esthetic water levels, thereby dewatering the stream below.

Introductions of non-native species have had a significant impact on native aquatic fauna in the Southeastern Plains Ecoregion. Buffalo (fish), common carp, flathead catfish and blue catfish are established in several drainages. Flathead catfish and blue catfish introductions probably pose the greatest direct risks to native fauna. Flathead catfish have been shown to prey on bullheads, darters, shad, suckers and sunfish. Severe declines in native species, particularly bullheads and sunfish, have been observed after the introductions of flathead catfish (Guire et al. 1984; Jenkins and Burkhead 1994; Bart et al. 1994). It is not well known what effects buffalo have on the native community, but it has been suggested that they may be a factor in the decline of some catostomids in the Pee Dee River (Wayne Starnes, pers. comm.). Common carp occur in every South Carolina drainage and are considered a pest; however, their impact on native fauna is not well known. Common carp disrupt aquatic habitats by rooting around in the substrate where they uproot aquatic plants and increase turbidity and siltation. Common carp have also been shown to prey on the eggs of other fish species.

The Asian clam, *Corbicula fluminea*, has been introduced and has widely spread throughout the United States, including South Carolina. The effects of *Corbicula* on native species are not particularly well understood. According to a review of the literature on interactions between *Corbicula* and native mussels (Dillon 2000), most field studies failed to find any significant negative effects on negative mussels, although a few detected reductions in growth. Three invasive snail species (*Viviparus georgianus, V. purpureus,* and *Bellamya/Cipangopaludina japonica)* are present in Lakes Marion and Lake Moultrie but their impact on native fauna is not known.

The red swamp crayfish has been introduced to South Carolina and has been observed at several locations in the southeastern plains and coastal plain, but it is unclear how widespread it is in the state. The lack of survey work since its introduction and the difficulty distinguishing the red swamp crayfish from one of the native species have made it particularly difficult to determine the extent of its introduced range. In North Carolina, it has become established in all drainages in the coastal plain and eastern piedmont plateau and appears to have extirpated all the native crayfish at one location (Cooper 2003). Introduced crayfish are thought to be the biggest threat to native crayfish species (Lodge et al. 2000 a,b); the risk to our native species is great if further introductions or extensive spread of the red swamp crayfish occur.

Sand mining operations have been initiated or are ongoing in the mainstem or riparian areas of many southeastern plains rivers. Instream sand mining is a significant threat to aquatic resources within the ecoregion. Sand mining not only causes bank stability problems and loss of riparian areas at the mining site; within the stream, this activity adversely affects physical and chemical habitat and can negatively affect biological communities (Nelson 1993) and recreational uses (Hartfield 1993). Physical impacts on instream habitat include increasing bedload materials and turbidity, changing substrate type and stability and altering stream morphology (Nelson 1993). Physical habitat alterations associated with sand mining can adversely affect the biological community by decreasing reproduction and survival of fishes (Stuart 1953; Newport and Moyer

1974) and distribution, composition and reproduction of other aquatic organisms (Buck 1956; Trautman 1957; Newport and Moyer 1974).

Savannah–Southeastern Plains Ecobasin

Approximately 54 miles of streams have been impounded in the ecobasin. Nearly 90 dams are present in the ecobasin, ten of which impound navigable streams, forming small reservoirs. Most of the dams occur in the Horse Creek (34 dams) and Hollow Creek (26) watersheds.

There is comparatively little agricultural activity within the ecobasin, with only six active permitted agricultural operations. However, point source discharges are abundant. The ecobasin has the highest density of point source discharges in the state with more than six per 100 square miles. Most of those discharges (5.5 per 100 square miles) are from industrial sources, giving the ecobasin the highest density of industrial discharges in the state.

There is moderate growth potential in the ecobasin. Residential and commercial growth in the vicinity of North Augusta and Aiken is expected and will have negative affects on aquatic environments if those developments are not carefully planned.

ACE–Southeastern Plains Ecobasin

Three hundred and sixty-eight dams impound approximately 109 miles streams within the ecobasin, but none of them impound navigable streams.

On a statewide basis, the ecobasin contains a moderate number of point source discharges. There are 57 active discharges permitted by SCDHEC within the ecobasin, 28 of which are from industrial sources, 19 from municipal sources and 10 from community sources. The ecobasin has the second highest density of agricultural operations in the state with nearly 11 operations per 100 square miles. There are 244 permitted active agricultural operations within the ecobasin, most of which are poultry farms (42 large, 129 medium, and 32 small). Other significant agricultural operations include swine farms (17), dairy farms (13) and peach orchards (6). The highest concentration of agricultural operations occurs in the upper portion of the North Fork Edisto River drainage, where 113 permitted farms are located in the Chinquapin Creek/ Lightwood Knot Creek and Black Creek watersheds.

Development throughout most of the ecobasin is not a major concern. There is low potential for growth in most areas. The Caw Caw Swamp watershed and North Fork Edisto River watershed may be negatively affected by development in the vicinity of Orangeburg. There is high potential for commercial development in the Shaw Creek watershed northeast of Aiken, near the intersection of I-20 and US 1.

Santee–Southeastern Plains Ecobasin

There are 235 miles of impounded streams in the ecobasin, most of which (148 miles) results from the impoundment of Santee River to form Lake Marion. There are 295 dams permitted by SCDHEC within the ecobasin. Hydroelectric peaking operations on rivers (Saluda, Broad and

Wateree) located in the piedmont have had significant negative impacts on the integrity of the Congaree and Wateree rivers in the southeastern plains. Rapidly fluctuating flows associated with hydroelectric peaking have lead to decreased bank stability, allowing the banks to slough-off into the rivers, increasing sedimentation.

Excessive nutrients and other chemical inputs from both point and nonpoint sources are a serious threat to water quality within the ecobasin. The ecobasin has the second highest density of active discharges permitted by SCDHEC with more than six discharges per 100 square miles. There are 128 active discharges permitted by SCDHEC within the ecobasin; 80 of which are from industrial sources, 33 from community sources and 14 from municipal sources. There are 114 active agricultural operations within the ecobasin; most are poultry and turkey farms (14 large, 45 medium and 4 small). Other significant agricultural operations include 33 manure brokers and nine swine farms (two medium-sized and seven small).

Residential, industrial and commercial development in the northern portion of the ecobasin poses a significant threat to aquatic habitats. Significant growth is occurring in the West Columbia, Columbia and northeast Columbia areas, threatening water quality and aquatic habitats in the Congaree River, Congaree Creek and Gills Creek watersheds. Development pressure is also great in the Wateree River watersheds near Camden and Lugoff. The Spears Creek watershed can also expect moderate to high residential, commercial and industrial growth.

Pee Dee–Southeastern Plains Ecobasin

The 291 dams located in the ecobasin impound 150 miles of streams. Sixteen of those dams impound navigable streams.

There are 128 active discharges permitted by SCDHEC within the ecobasin, including 76 industrial discharges, 40 municipal discharges and 12 community discharges. The highest concentration of those discharges (28) occurs in the Pocotaligo River watershed near Shaw Air Force Base and the town of Sumter. There are 226 agricultural facilities permitted by SCDHEC within the ecobasin, primarily poultry and turkey farms (15 small, 126 medium, and 18 large) and swine farms (22 small, 19 medium and 19 large).

The construction of a proposed new interstate highway (I-73) running from Michigan to Myrtle Beach has the potential to result in significant impacts to the aquatic resources of this ecobasin. The final route for the highway has not been established so it is unknown which resources will be impacted.

Development pressure is expected to be high in the Black Creek and Jeffries Creek watersheds. Those watersheds encompass Hartsville, Darlington and Florence. Major industrial expansion is expected beyond the several large industrial parks that are already located along the western side of Florence. Increased water withdrawals and point source discharges that accompany development could potentially have severe impacts on aquatic habitats in the mainstem of the Pee Dee River.