

Black Scenic River Management Plan



Front and back photos by Van Marshall

Black Scenic River Management Plan

Prepared by
The South Carolina Department of Natural Resources
in partnership with
The Black Scenic River Advisory Council

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Land, Water and Conservation Division
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Photo by Dana Beach

Summary

A 75-mile segment of the Black River was designated a State Scenic River under the South Carolina Scenic Rivers Act by the South Carolina General Assembly in 2001. The Scenic Rivers Act provides for a voluntary, cooperative river management program to be administered by the South Carolina Department of Natural Resources (SCDNR); this program and the Black Scenic River Project provide an opportunity for citizens to work with their state and local government agencies to promote responsible use and stewardship of the Black River.

The Black Scenic River Advisory Council was formed in 2001 with members representing river-bordering landowners, river users, and community interests. Its purpose under the Scenic Rivers Act is to assist and advise the SCDNR in the protection and management of the river. The adopted mission of the advisory council is to be an advocate for the river and to promote ongoing stewardship that protects and conserves the natural, cultural, and recreational resource values of the Black River. Providing a management plan for the river is a key objective of the advisory council.

The original efforts to complete a Black Scenic River Management Plan were stalled in 2008 when economic recession and related State budget constraints reduced SCDNR staffing and programs, and activities of the advisory council went dormant soon thereafter. However, in 2018, with the guidance of SCDNR staff, a group of residents reactivated the Black Scenic River Advisory Council, re-engaging several of the original members. Because the writing of a Black Scenic River Management Plan, which had started in 2004, remained unfinished; the reactivated advisory council agreed to use a 2009 draft management plan as the base document to update, revise, and finalize for publication.

This Black Scenic River Management Plan (management plan) of 2020 outlines a community vision for the Black Scenic River, it reflects public values and aspirations for the river, and it offers ideas and information to address river issues of public interest and concern. The ideas of the plan come from the local community, from landowners, river users, and community leaders who acknowledge the legacy of excellent stewardship provided by many generations of landowners along the Black River, and who wish to see that legacy continued. The plan does not impose regulations, nor does it mandate new regulatory restrictions. Instead, as the future will surely bring changes and choices to affect the river for better or worse, this plan is intended to provide information to promote better choices for stewardship of the river.

The first section of this plan provides an introduction to the Black Scenic River Project. The remaining sections form the core of the management plan and are organized under five resource categories. In these sections the significant resources

of the river and related management issues are described, and goals and recommendations to address river stewardship are presented. The following paragraphs address the five resource categories and present a summary of information contained in the respective sections of this management plan:

History and Cultural Resources – The distinctive character of the Black River region is tied to its local history, historic places, rural landscapes, and the scenic river. The plan highlights two primary objectives: to increase knowledge and understanding of the local history and cultural resource heritage of the Black River corridor and to promote the stewardship of cultural resources among local governments, community development organizations, and property owners. The plan also provides a narrative describing selected aspects of human history with the Black River.

Land Use – The incremental increase of residential and commercial development pressures on the Black River and its watershed will present an ongoing challenge to conserving the natural, cultural, and scenic qualities of the river. The management plan describes land use and population conditions and presents related issues and concerns. Plan recommendations present strategies for working within the local community to establish land use practices that will protect and conserve natural, undeveloped areas on the landscape which are needed to protect the river, its water quality, and wildlife habitats.

Wildlife Resources – Descriptions of the natural plant communities, wildlife, and fish of the Black River corridor are provided. Related issues of concern are also presented. Plan recommendations emphasize the importance of establishing land use and development practices that will protect and conserve natural habitats on the surrounding landscape. Of particular

importance to the river is managing land uses in riparian (stream-bordering) areas and floodplains.

Water Quality and Streamflow – Existing water quality and streamflow conditions of the Black River are described, as well as related water uses and issues. The plan promotes community involvement and personal responsibility in efforts to protect and enhance healthy water quality conditions of the Black River to include participating in public planning and permitting activities affecting water use and withdrawals. Attention to managing land use and development practices in floodplains and riparian areas (riparian buffer protection) is emphasized as essential to protecting water quality.

Recreation and Public Access – Recreational uses of the Black River, public access sites on the river, and related issues are presented. The potential for misuse of the river and public landings is a concern. The plan goal is to allow the Black Scenic River to be reasonably accessible for responsible recreational use and enjoyment while encouraging low-impact uses and development of low-impact access facilities compatible with the larger goals of protecting the river and its natural resources values.

The final section of the management plan is about Implementation; it presents strategies for moving the plan forward. Central to implementation is the intent of the Black Scenic River Advisory Council to pursue the plan goals and recommendations, communicate the vision captured in the plan, and build local support and partnerships committed to better stewardship of the river and its natural and cultural resources.

The advisory council meets regularly to share information and determine actions needed to advance their conservation mission for the Black Scenic River.

Acknowledgements

In 2009, original SCDNR staff with the Black Scenic River Project included Mary Crockett, Deanna Ruth, and Scott Lamprecht, and these staff expressed the following thanks and appreciations to various people and organizations whose support and involvement led to the formation of this management plan:

The members of the Black Scenic River Advisory Council (Members of 2009, listed in Table 1) are to be commended for their commitment of time and service to developing the plan. Thanks to Steve Wall, Dan Scheffing, Matt Nespeca, Deanna Ruth, Amanda Ley, and Frances McClary for their help with writing the document.

Thanks to the Santee Cooperative Electric Company, Williamsburg Historical Society Museum, Brown's BBQ and the USDA Service Center for providing facilities for meetings of the advisory council and its committees. The Town of Kingstree and SCDNR provided canoes and kayaks for the advisory council river outings.

Committees of the advisory council involved many individuals who contributed their knowledge and time to sharing information and recommending strategies for the plan. These people deserve recognition for their efforts and are listed in Table 2.

In 2020, as this management plan has been refurbished and completed, thanks and appreciation are extended to Michelle Lewis for her initiative in reactivating and rebuilding the advisory council in 2018 and providing ongoing leadership and coordination for the council and their activities. The Black Scenic River Advisory Council members of 2020 are listed in Table 1.

SCDNR staff contributions in 2020 included the following: Bill Marshall served as project manager and content editor to develop and refine information and graphics throughout the plan document. Keith Bradley, Meg Gaillard, Levi Kaczka, Michael Kendrick, Morgan Kern, Kevin Kubach, Joe Lemeris, Lorianne Riggan, Bill Post, and Amy Tegeler provided review and input on technical aspects of the plan. Tanner Arrington and Robert Clark developed maps in the plan. Retired SCDNR staff, Ann Nolte, provided proofreading support. The graphic design and layout of this document is the work of Brock Henderson.

Other SCDNR personnel who have made this management plan possible include current staff, Ken Rentiers, Deputy Director of the Land, Water and Conservation Division and retired staff, Freddy Vang, Steve de Kozlowski, Barry Beasley, and Mary Crockett. Through the various transitions in their respective tenures with the agency, these staff were consistent supporters of the Black Scenic River Project.

Photographs in this plan are provided by individuals and organizations acknowledged on or near the pages where their photos are presented.



Photo by Michaele Duke

Black Scenic River Project



Introduction

South Carolina's rivers are an invaluable resource, forming a central part of our rich natural and cultural heritage. Rivers provide numerous benefits to people such as water for drinking, essential fish and wildlife habitat, channels for floodwaters, and assimilation of wastes. In many places rivers harbor rare plants and animals as well as relics of our past. As the population and economy of South Carolina continue to expand, our demands on rivers will increase, along with our dependency upon these resources.

Rivers are dynamic; their physical, chemical, and biological characteristics are directly affected by activities on the lands they drain. Any human development that proceeds without regard to conservation of a river's resources threatens the ecological goods and services provided by our rivers as well as the natural and cultural heritage associated with them. Within South Carolina there are over 30,000 miles of flowing rivers and streams.

In recognition of our dependence on these resources and the need to protect outstanding river values, the Scenic Rivers Act of 1989 provides a process to recognize and conserve South Carolina's unique and outstanding rivers for the benefit of present and future generations. SCDNR is charged to administer the provisions of this act. Currently, approximately 400 miles on ten river sections (Figure 1) are designated as South Carolina State Scenic Rivers.

*Photos by Bill Marshall
(pp. 2, 3 lower, and 8),
Mac Stone (p. 3 upper),
and Gates Roll (p. 5)*



The Black River is a blackwater river, meaning its water has a dark but transparent color resembling tea or coffee caused by tannins leached into the water from plant material in the surrounding swamps and wetlands; additionally, blackwater rivers are formed within the Coastal Plain and carry less sediment load than alluvial rivers that flow from the mountains and Piedmont (Wharton, 1982). The Black River begins its journey below the town of Bishopville in Lee County. It flows in a southeastern direction through the Coastal Plain region of South Carolina for 150 miles to its junction with the Great Pee Dee River near Georgetown.

Along its course, the Black River travels through a rural landscape of mostly forests and farmlands, and it passes under 19 road crossings and near to just a few towns, the largest being Kingstree and Andrews. In part, its isolation from development, use pressures, and a lack of road access as well as its distance from major metropolitan areas have helped to protect the Black River. However, as the outlying, but growing, cities of Myrtle Beach, Georgetown, and Manning expand, the Black River corridor will see an increase in recreational activities such as boating, fishing, and picnicking, as well as increasing residential development pressures.

This management plan, which is a community-based, voluntarily-implemented land and water stewardship plan, will help to conserve the Black Scenic River and its natural, cultural, and recreational resource values for future generations.

The Scenic Rivers Program

The purpose of the Scenic Rivers Program as determined by the South Carolina Scenic Rivers Act of 1989 is to protect unique and outstanding river resources throughout South Carolina. To accomplish this goal, a voluntary, cooperative management program was created which allows landowners, river users, community interests, and the SCDNR to work together toward common river conservation goals.



Designating a State Scenic River requires legislative action by the South Carolina General Assembly. However, the designation process begins at the local level and draws upon the support of local citizens, landowners, and elected officials. The steps in the designation process are as follows:

- ◆ First, a local request for scenic river designation is made, and then the SCDNR conducts a scenic river eligibility study.
- ◆ Second, riparian landowners and the general public are notified of the proposal and invited to public meetings to ask questions and offer input.
- ◆ Third, each county council of the river-bordering counties is notified and asked to offer a resolution of support for the scenic river proposal.

Finally, after the SCDNR Board reviews and approves the proposal, a bill is introduced in the General Assembly, and if and when it passes and the Governor signs the bill, then a State Scenic River is officially designated.

After the designation is completed, the SCDNR establishes a local scenic river advisory council made up of six to ten members, the majority of whom are river-bordering landowners, with additional ex officio members representing a wide range of river interests. The

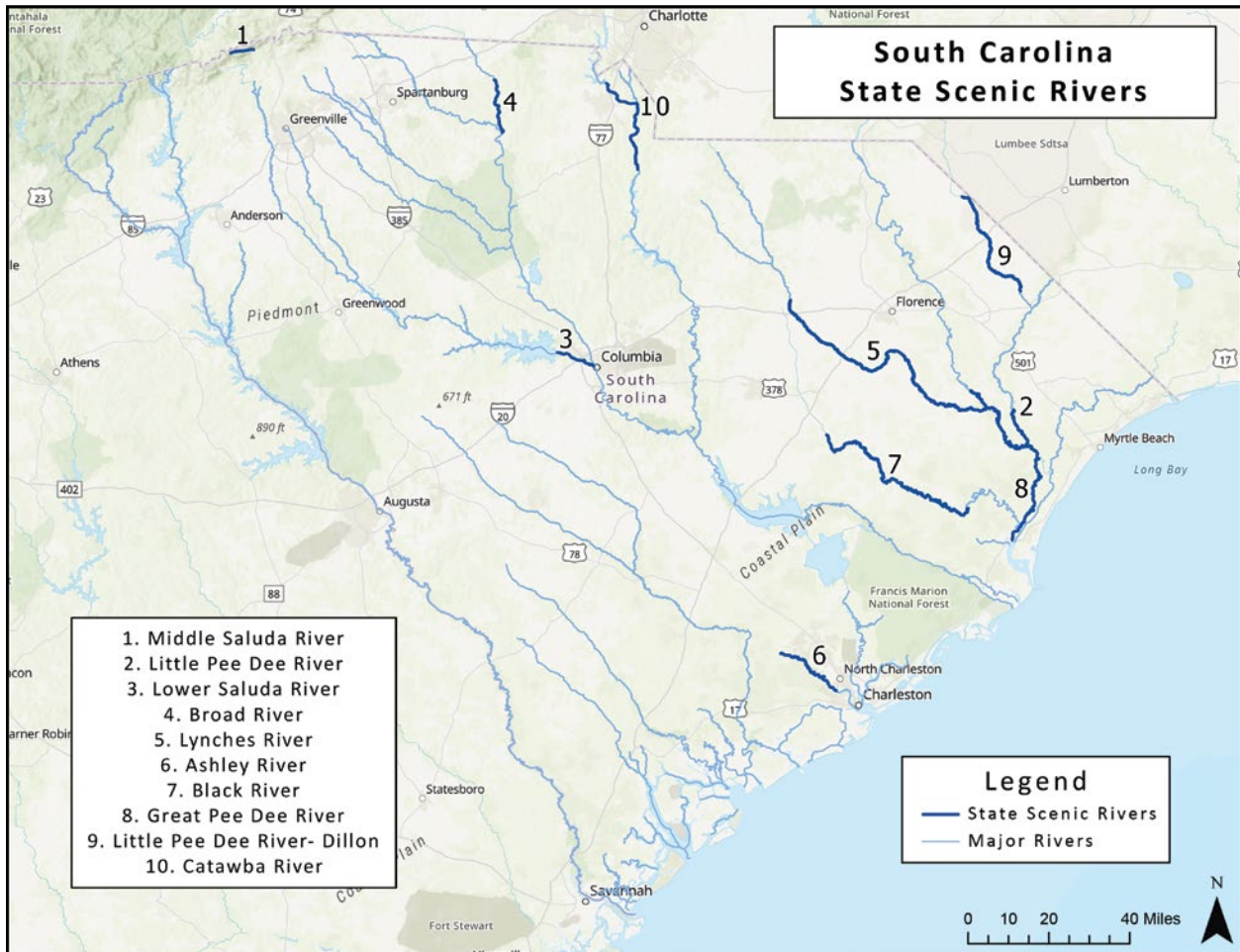


Figure 1. South Carolina State Scenic Rivers Map.

advisory council, which includes the membership and assistance of SCDNR staff, is responsible for developing a river management plan.

A State Scenic River designation implies the continual commitment of SCDNR to promote the conservation of the scenic river in partnership with the local community. The benefits of the Scenic Rivers Program can be numerous and tailored to meet the needs of the community by addressing issues of local interest such as recreation, economic, or human health concerns.

Black Scenic River Designation

In 1999, the Williamsburg Hometown Chamber Quality of Place Committee requested SCDNR to consider the Black River for inclusion in the State Scenic River Program. In the spring of

2000, SCDNR staff initiated an eligibility study of the Black River in Clarendon, Williamsburg, and Georgetown counties (SCDNR, 2000). Public meetings were held in September and October 2000, which revealed a significant local interest for conserving the unique and outstanding resources of the Black River. The Williamsburg, Clarendon, and Georgetown County Councils adopted resolutions of support for the designation. The next step in the process was to gain the approval of the South Carolina General Assembly and then the Governor.

On June 5, 2001, Governor James Hodges signed the Black Scenic River bill, which officially designated the 75-mile stretch of the Black River (Figure 2) as the state's seventh State Scenic River. This scenic river segment begins at Clarendon County Road 40 (June Burn Road)

and extends southeast through Williamsburg County to Pea House Landing at the end of Georgetown County Road 38.

The Advisory Council

The Black Scenic River Advisory Council was established in October of 2001 and was created according to the Scenic Rivers Act to assist and advise the SCDNR in protection and management of the scenic river. The leadership for all South Carolina scenic river projects comes from a local advisory council. For the Black River, letters soliciting advisory council participation were sent from the SCDNR in 2001 to river landowners and interested community members (approx. 500 people). Those interested in participating on the advisory council were asked to complete and return a nomination form. Nominations were received and members were selected and invited by SCDNR to join the Black Scenic River Advisory Council (see Table 1). This council was augmented to include ex-officio and committee members (see Table 2), who were asked to serve by virtue of technical expertise or by a position held in the surrounding river community. These additional members represent local and state government and various interests in the river to include business, environmental, recreational, and landowner interests.



The advisory council held its first meeting on October 30, 2001, at the Kingstree City Council Chambers in the Town of Kingstree and met regularly at various locations to discuss issues affecting the Black River and topics to be addressed in the management plan.

An important step for unifying the council and communicating their purpose and intentions to the larger community is their adoption of a mission statement, which follows:

The mission of the Black Scenic River Advisory Council is to be an advocate for the river, to promote ongoing stewardship that protects and conserves the natural, cultural, and recreational resource values of the Black River.

To pursue its mission, the advisory council will seek to foster open, fact-based communication with members of the community to encourage planning and commitment to conservation and sustainable management practices needed to protect the resource values of the Black River.

As previously mentioned, the economic recession of 2008 led to an extended period when the advisory council was not active. However, in November of 2017, staff of Winyah Rivers Foundation reached out to SCDNR staff to contact the advisory council members about a local issue. SCDNR offered to assist in reactivating the council if there was interest. A Winyah Rivers board member and landowner on the Black River, Michelle Lewis, was interested in taking the lead and began communication with SCDNR. In March of 2018, SCDNR staff sent a letter to the existing list of council members, asking about their interest and introducing Michelle as the possible co-chair to restart the council. The advisory council met

on May 2, 2018, with six of the ten attendees being original members. This reactivated advisory council along with new members took up the original draft management plan, revised and redeveloped it with new and updated information, and approved the final draft on November 9, 2020.

Public Process in Creating this Management Plan

South Carolina's process of designating and managing State Scenic Rivers is grounded in local support and public participation. Through

a citizen-based process, the local community takes the lead in producing and implementing the plan. The role of the SCDNR and other government agencies is to provide support and technical assistance. The primary means of producing and implementing the plan is through the participation and work of the advisory council whose members represent local citizens with various interests in the river.

After its formation in 2001, the advisory council held a series of meetings from January 2002 through May 2003 to become informed on river issues and unified in their purpose. Then, in

Table 1: Black Scenic River Advisory Council

Members 2020

Chairs:

Michelle Lewis, *Williamsburg County River-bordering Landowner*

Bill Marshall, *SCDNR*

Mike Tisdale, *Williamsburg County River-bordering Landowner*

Frances McClary, *Williamsburg County Landowner*

Dan Scheffing, *Georgetown County River-bordering Landowner*

Steve Jones, *Georgetown County River-bordering Landowner*

Gates Roll, *Black River Cypress Preserve, River-bordering Landowner*

Dr. Louis Drucker, *Community Recreation Interest*

William Freeman, *Main Street Kingstree*

Berry Coggeshall, *Williamsburg County River-bordering Landowner*

Lyles Cooper Lyles, *Pee Dee Land Trust*

Ashton Lamb, *Lowcountry Land Trust*

Erin Pate, *Black River Cypress Preserve*

Members 2009

Chairs:

Mary Crockett, *SCDNR*

Deanna Ruth, *SCDNR*

Vice Chair:

Mike Tisdale, *Williamsburg County Landowner*

Frances McClary, *Historic Expertise/ Williamsburg Landowner*

Bobby Reardon, *Clarendon County Landowner*

Eileen Thompson Maness, *Clarendon County Community*

Jessie Dale McCollough, *Williamsburg County Landowner*

Bobby Thornell, *Georgetown County*

Duane Shuler, *Community Interest and Landowner*

Stephanie Evans, *Community Interest, Quality of Place Committee*

Dan Scheffing, *Corporate/Community Interest-MeadWestvaco*

Nicky Kellahan, *Corporate/Community Interest*

Scott Lamprecht, *SCDNR*

Leslee Spivey, *Williamsburg Chamber*

Table 2: Black Scenic River Committee Members**Historic and Cultural Resources**

Francis McClary, <i>Black River Landowner</i> Bill Chandler, <i>Historian</i>	2020 contributor: Bill Marshall, <i>SCDNR</i>
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Land Use

Mike Tisdale, <i>Black River Landowner</i> Dan Scheffing, <i>MeadWestvaco</i> Richard Treme, <i>Williamsburg County Council</i>	Mike Ney, <i>S.C. Forestry Commission</i> Joe Watkins, <i>Community Interest</i> 2020 contributor: Bill Marshall, <i>SCDNR</i>
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Wildlife Resources

Nick Roark, <i>Black River Landowner</i> Scott Lamprecht, <i>SCDNR</i> Deanna Ruth, <i>SCDNR</i> Mark Page, <i>SCDNR</i> Reginal Hall, <i>USDA-Natural Resource Conservation Service</i>	Trinette Vereen, <i>USDA- Natural Resource Conservation Service</i> 2020 contributor: Levi Kaczka, <i>SCDNR</i> Keith Bradley, <i>SCDNR</i>
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Water Quality and Streamflow

Mark Giffin, <i>S.C. Department Of Health and Environmental Control</i> Richelle Tolton, <i>S.C. Department Of Health and Environmental Control</i> Amanda Ley, <i>S.C. Department Of Health and Environmental Control</i> Steve Wall, <i>S.C. Department of Health and Environmental Control</i>	Williamsburg County Public Works Georgetown County Public Works Colton Bowles, <i>U.S. Army Corps of Engineers</i> 2020 contributor: Bill Marshall, <i>SCDNR</i>
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Recreational Use and Access

Mary Crockett, <i>SCDNR</i> Dr. Louis Drucker, <i>Community Recreation Interest</i> Louis Nexsen, <i>Community Recreation Interest</i>	Mark Page, <i>SCDNR</i> 2020 contributor: Bill Marshall, <i>SCDNR</i>
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Education/ Stewardship and Community Involvement

Stephanie Evans, <i>Williamsburg Hometown Chamber</i> Matt Nespeca, <i>The Nature Conservancy</i>	Barbara Lewis, <i>Williamsburg County Alternate</i> Edward Harrington, <i>Technical Expertise</i>
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May 2003, the advisory council hosted a series of community input meetings, which were conducted in partnership with Clemson Extension and SCDNR. The community input meetings included six sessions held over a three-day period and involved approximately 80 local citizens who provided comments and ideas to address values, concerns, and desires for the Black River. A range of topics emerged from the meetings regarding what issues need to be addressed in the management plan and how the plan can be accomplished.



The advisory council used information from the community input meetings to focus on analysis of issues and ideas and development of management goals and recommendations. This effort was facilitated by six committees (see Table 2), which included additional interested people from the river community. The committees were formed around categories of river management issues and chapters for the management plan, as envisioned at that time. The committees met between 2004 and 2008 and were tasked with providing chapter outlines to SCDNR staff who in-turn drafted chapters of the management plan for review and revision by the advisory council.

As mentioned before, the process of developing the management plan, which had started in 2004, remained unfinished until being resumed in 2018 by the reactivated advisory council. The earlier work, compiled in a 2009 draft, was revised and redeveloped in 2018-2020 to reflect current river management issues and needs.

The outcome of this process is the management plan you now hold in your hands. This plan outlines a community vision for the Black Scenic River, and it offers ideas and information to address river issues of public interest and concern. The plan does not impose new regulations, nor does it mandate new regulatory restrictions. Instead, the plan provides a guide to inform individuals and organizations about choices to improve their stewardship of the river.

It is hoped that implementing the management plan will continue to unite the Black River community to keep the river and its adjacent lands as a valued, healthy, and rural natural resource area for the enjoyment of present and future generations.



Project Area

The geographic area targeted by this management plan is the 75-mile long corridor of the Black Scenic River (Figure 2), the designated river segment from Clarendon County Road 40 (June Burn Road) crossing downstream to Pea House Landing at the end of Georgetown

County Road 38. In cross section, the “river corridor” includes the river channel, river floodplain, and adjacent bluff with upland fringe areas. The upland fringe areas of the river corridor include a mix of upland forest and agricultural fields and a few developed areas in residential and commercial use. The Black River corridor can be seen in aerial images; at its core it presents a green band of forestlands on the river floodplain. Measuring the width of this river corridor, to include the floodplain and its upland fringe areas, the distances range from approximately 2 to 2.5 miles across.

While the interests and concerns addressed by this management plan are focused on the river

corridor, they are not limited to the corridor but extend to the watershed and areas upstream and downstream of the scenic river section. For example: 1) Protecting and enhancing water quality in the scenic river will require attention to the watershed, especially to upstream activities affecting the flow of water and materials in tributaries connected to the scenic river section. 2) Maintaining healthy fish and wildlife habitat within the scenic river corridor will require keeping functional habitat connections to areas beyond the scenic river; thus there is interest in regional land conservation efforts and protection of the aquatic habitat connections to upstream tributaries and downstream to Winyah Bay and the Atlantic Ocean.

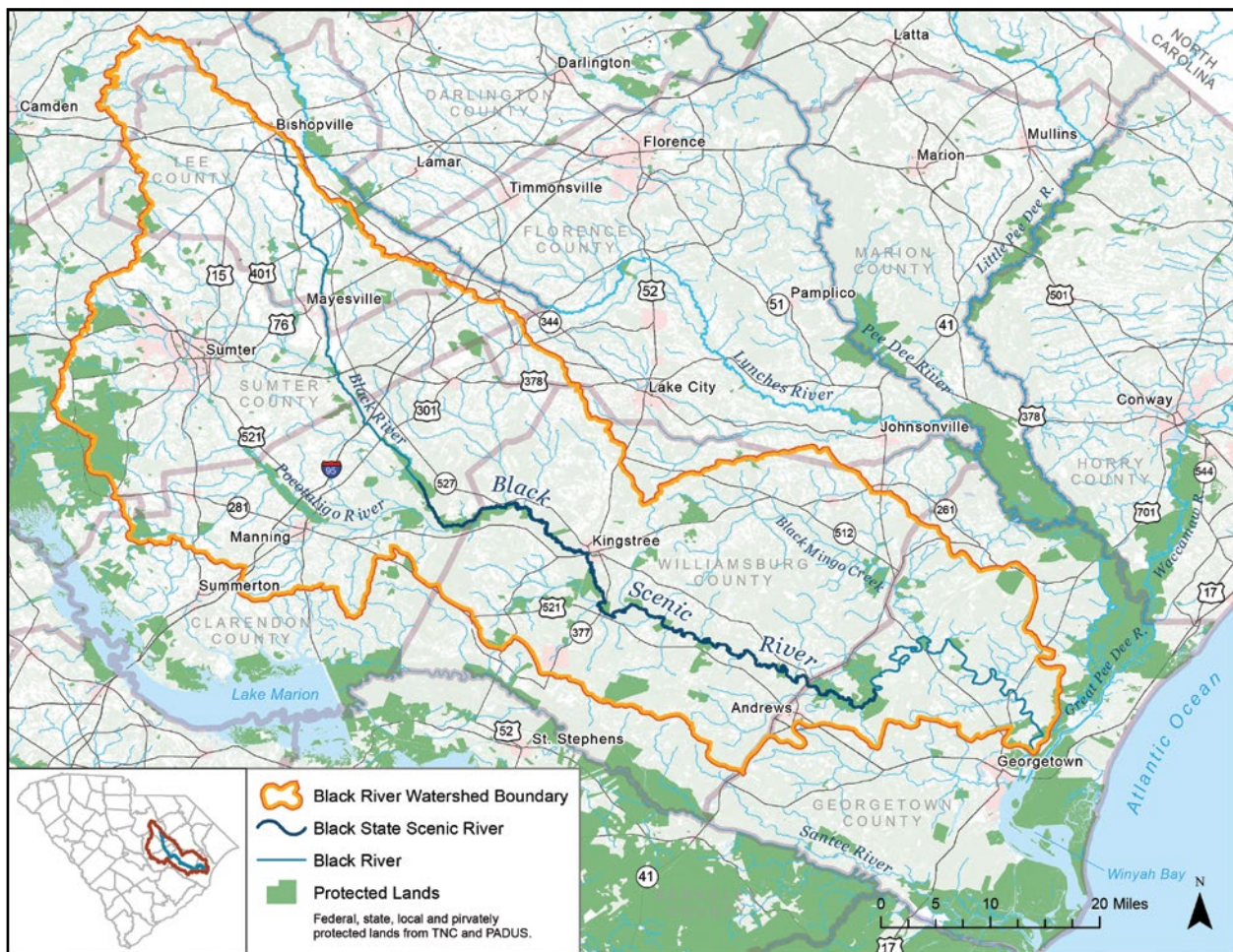


Figure 2. Black Scenic River and Black River Watershed Map.



Photo by Mac Stone

An aerial photograph of a winding river flowing through a dense forest. The scene is captured during sunset or sunrise, with the sky glowing in shades of orange and yellow. The river's path is clearly visible, curving through the dark green trees. The overall atmosphere is serene and natural.

Black Scenic River Management Plan

History and Cultural Resources

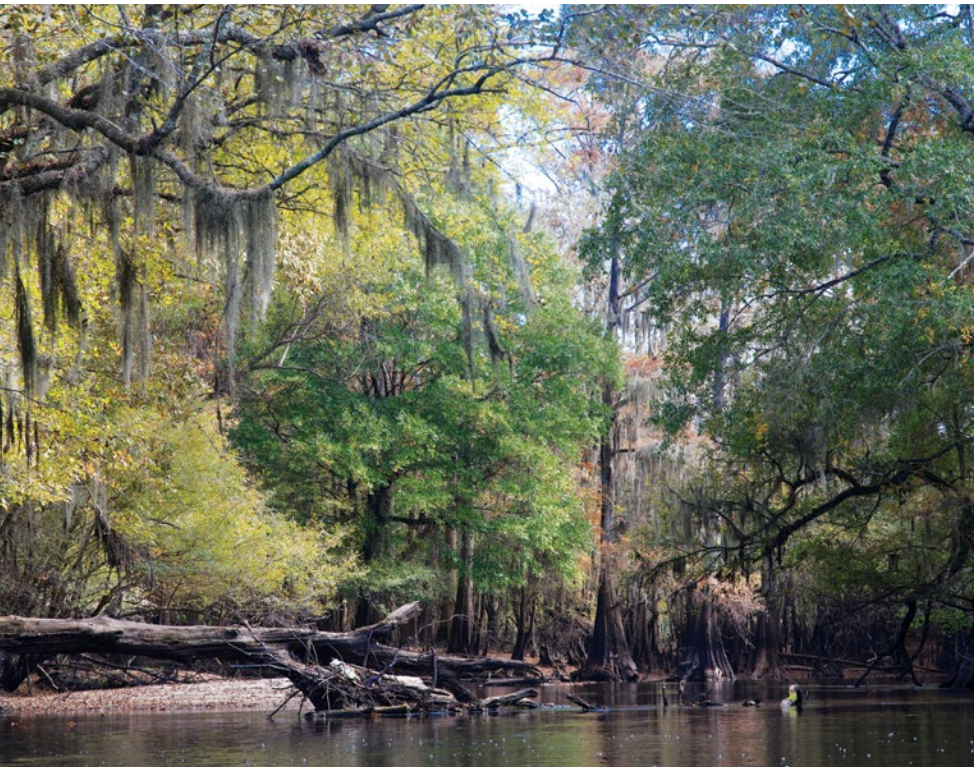
Over the course of time the Black River has played various roles in its relationship to human life and culture. The river has been a source of water, a place to find food and materials, a route for travel and commerce, as well as a barrier to travel and commerce, a place of refuge, and a place of rest and recreation. The people of the river have included the prehistoric Eastern Woodland culture, the Winyah tribe, Europeans, Africans and Caribbeans, and the mix of residents we find today. The cultural resources of the river include the landscapes, structures, and artifacts left behind by the people who once lived along its banks.

This section of the scenic river management plan presents selected aspects of human history associated with the Black River and describes known cultural resources related to or in close proximity to the river; these include historic sites, historic structures, and archaeological sites. Also presented are issues and recommendations for stewardship. Most of the information presented in this section was added during the update and revisions of 2020 to provide greater substance and completion to what the Historic and Cultural Resources Committee (of Table 2) had started: an outline of human history with the Black River.

Photos provided by Dana Beach (p. 12), Michaele Duke (pp. 13, 18, and 22), B.A. Bowen Photography (p. 14), Louis Drucker (p. 15), Frances McClary (pp. 17 and 19 lower), Univ. of South Carolina (pp. 19 upper and 20), and Mac Stone (p. 23)

Known archaeological sites located within one mile of the Black Scenic River number 45 ranging in time from the Early Archaic period (~10,000 ago) to early settlement by Europeans (SCDNR, 2020). Archaeological evidence indicates that prehistoric inhabitants utilized the river corridor for hunting, foraging or cultivating, and permanent living sites were on adjacent uplands. Historical accounts describe the natives as living in settlements along the rivers sometimes in “towns” or scattered “plantations,” subsisting on seasonal hunting, gathering of forest products, and agriculture (South, 1972).

When Europeans first began to explore and settle in South Carolina (1500s-1600s), the Black River region was already inhabited by several small tribes of American Indians. The tribes included the Winyaw/Winyah, Santee, Pedee/



Peedee, Waccamaw, Sewee, and Wenee/Weenee (South, 1972 and Mills, 1826). These names have been preserved in some of the rivers, creeks, and towns of the region. Most of these tribes are reported to have been hospitable to the early explorers and settlers, and became trading partners with the settlers. However, over a period of about 200 years, beginning with Spanish contact and exploration in the mid-1500s and continuing with English exploration and colonization, by 1750 the population among these tribes declined to only a few remnants of native people living in the region. Primary causes of the demise and extirpation of these native people were smallpox and other diseases brought from Europe, war with the colonial settlers (Yamasee War of 1715-1717), and being forced out as settlement expanded inland from the coast (South, 1972).



settling the township. The family of James Witherspoon accepted the offer and moved to South Carolina from Ireland in 1734, and with the family was six-year-old Robert, who wrote a memoir of the experience half a century later in 1780. The following excerpts from the Memoir of Robert Witherspoon (National Humanities Center, 2008) provide a glimpse into the life of the early settlers:

Three weeks before Christmas we landed in Charleston... There were four of us children, David, Robt., John, and Sarah. Sarah died in Charleston and was the first person buried at the Scotch Meeting House Graveyard... The inhabitants were very kind and we remained in town until after Christmas.

We were then put on board an open boat with tools and a year's provision and one still mill for each family. They allowed each person over sixteen one ax, a broad ax, one narrow hoe. Our provisions consisted of indian corn, rice, wheaten flour, beef, pork, rum and salt.... They brought us up as far as Potatoe Ferry on Black River, about twenty miles from Georgetown and turned us on shore where we lay in Samuel Commander's barn for some time while the boat wrought her way up as far as the king's tree with the goods and provision — which was the first time a boat ever came up so high.

As early as 1710, European people, mostly English, were living on the eastern end of Black River near its junction with Black Mingo Creek, and by 1720 others, many of them French, were entering the Black River area from the south across the Santee (Boddie, 1923). In the 1730's, the Black River became a focus area for inland settlement of the South Carolina colony when the English governor, Robert Johnson, proposed a "Township Plan" with purposes to extend settled areas from the coast to the backcountry, increase the white population, and provide a buffer of protection for coastal settlers from potential enemy attack. On Black River, the township of Williamsburg was established and laid out as a 20,000-acre square plot to be portioned among new settlers. Today, the town of Kingstree is located at the center of the plot that was Williamsburg Township.

To support his township plan, the South Carolina governor extended to Scots-Irish immigrants an offer of land, money, tools, and provisions for a year, if they would settle in the backcountry at Williamsburg. In 1732, the Scots-Irish began

On the first of Feb 1735, when we came to the Bluff three miles below the King's Tree my mother and us children were still in expectation that we were coming to an agreeable place — but when we arrived and found nothing but a wilderness, and instead of a comfortable home, no other than a very mean dirt house our spirits quite sank... As evening came on the wolves began to howl on all sides, we then feared being devoured by wild beasts, having neither gun nor dog, not even a door to our house — how be it we set to work and gathered fuel and made a good fire and so passed the first night.

As the winter season advanced there was but a short time for preparing land for planting — but the people were strong and healthy. All that could do anything wrought diligently and continued clearing and planting as long as the season would admit. So they made provisions for that year. Their beasts were few and as the range was good there was no need of feeding creatures for some time to come.

The Indians when they came to hunt in the spring they were great in numbers and in all places like the Egyptian locust but they were not hurtful. Besides these things we had a great deal of trouble and hardships in our first settling, but the few inhabitants were favored with health and strength. We were also much oppressed with fear on divers other accounts, especially of being massacred by the Indians, or bit by snakes, or torn by wild beasts, or of being lost and perishing in the woods, of whom there were three persons who were never found.

James Witherspoon eventually settled at a location south/west of Black River near the crossing at Lower Bridge (current Highway

377) and in 1749 he built the plantation home named Thorntree. Today, the Thorntree house, approaching three-centuries in age, remains intact and is available for public viewing in the Town of Kingstree, where it was moved in 1969 from its original location and restored by the Williamsburgh Historical Society. Thorntree is listed in the National Register of Historic Places (SCDAH, 1970).

The “King’s Tree” on Black River is said to have been a tall white pine claimed by the King of England for potential use as a mast for ships of the Royal Navy and the tree was located near the head/end of navigation on the river within the place of settlement that is today’s Town of Kingstree (Boddie, 1923). As reported by Henry Edwards Davis, The King’s Tree was probably *Pinus glabra*, the pine species known as Walter’s pine (Davis, 2010), also called spruce pine.

While the Township Plan for South Carolina led to the creation of 13 towns by 1765 and attracted over ten thousand settlers to the colony, only Williamsburg and Orangeburg lasted through the period of the American Revolution (Towels, 2016). At Williamsburg, the Black River served as a transportation route to support the success of the township, bringing settlers and supplies up from the Winyah Bay area and, as commerce emerged, taking agricultural and forest products and other goods down to market in Georgetown, which became an official port of entry in 1732.



The American Revolutionary War, or War of Independence, began in 1775 and many places in South Carolina played host to the war, which ended in 1783. In 1780, after the fall of Charles Town to the British, the nucleus of the American Patriot militia that became “Marion’s Brigade” was formed in the region of Williamsburg Township and served with Brigadier General Francis Marion, the Swamp Fox, in many skirmishes and battles of 1780 through 1782 that helped the Patriots win the war for independence from the British. Marion’s highly mobile force, largely on horseback, was composed of men who knew the forests, canebrakes, rivers, and swamps; they introduced a type of guerrilla warfare that often foiled the tactics of British commanders.

One noted battle on Black River at Lower Bridge (current Highway 377) occurred in March 1781 when Francis Marion and his men repelled a British force advancing from the west intending to cross the river with the purpose of crushing Marion’s Brigade. The British plan was thwarted by Marion’s men who burned the bridge, ambushed the British troops, and defeated their repeated attempts to cross the river. A South Carolina Historical Marker highlights this battle and is located at the S.C. Highway 377 Bridge.

Captain William Henry Mouzon was a prominent militia officer from Williamsburg who served with Francis Marion. During the war, in 1780 the British burned Mouzon’s plantation home located at Puddling Swamp on the Black River, and Mouzon was severely wounded in battle at Black Mingo Creek. Years later (early 1800s), a toll bridge across Black River near Mouzon’s plantation and bearing his name was in operation and vested with his family. Mouzon is remembered with a South Carolina Historical Marker on the roadside of S.C. Highway 527 near the family cemetery.

In 1775, a remarkable map was developed by Henry Mouzon and others with the title: “An Accurate Map of North and South Carolina with their Indian Frontiers, Shewing in a distinct manner all the Mountains, Rivers,

Swamps, Marshes, Bays, Creeks, Harbours, Sandbanks and Soundings on the Coasts; with The Roads and Indian Paths; as well as The Boundary or Provincial Lines, The Several Townships and other divisions of the Land In Both The Provinces.” Despite its long title and large geographic scope, the Mouzon map presents many Black River details (see Figure 3) including its tributaries, Williamsburg Township, roads, named family settlement locations, and two crossings of Black River are named: “Lower Bridge” and “Potatoe Ferry.” (Note, the identity of Henry Mouzon, the mapmaker, is confused because there were two Henry Mouzons (first cousins) living in South Carolina at the same time: Captain Henry Mouzon of Williamsburg and Henry Mouzon of St. Stephen’s Parish; historical evidence indicates the latter Mouzon was the mapmaker (Cummings Map Society, 2013).)



For the early white settlers along the Black River, economic success with export products is largely attributed to growing and processing indigo in the upper portion of the river and rice



Figure 3. Mouzon Map of 1775, detail of the Black River region of South Carolina.

production on the lower portion. Other products such as deerskins, pork, flax, timber, and naval stores were also marketed to the world through the Georgetown port. Transporting these goods by water on the Black River was important to the local economy and supported by both colonial and state government to keep the river open for navigation. For example, in 1738 there was “An act for clearing, cleaning and making navigable Black River from the ‘Narrows’ to the western boundary of Williamsburg Township, inclusive” (Boddie, 1923). The act created a taxation district for raising the necessary funds for the clearing. Another act of 1791 addressed all residents within six miles of the river as being liable to work for the opening and improving of navigation on the river; and another act of 1822 called for all male inhabitants ages 16 to 50 years within six miles of the

Black River to be made to work six days per year on clearing the river (McCord, 1841).

Navigation on the Black River during the 1700s and 1800s involved various types of vessels ranging from cypress log canoes and periaugers to steamboats. If snags in the river were cleared, larger vessels could navigate upstream to Kingstree, while smaller craft navigated to what was Lowry’s Bridge, 12 miles above Kingstree near Pudding Swamp (USACE, 1977).

The Browns Ferry Vessel is an artifact of Black River travel from colonial times and is on display in the Rice Museum in Georgetown, S.C. The vessel is a 50-foot schooner-rigged flat-bottom commercial cargo boat built in the early 1700’s, and it was recovered in 1976 from the bottom of the Black River near Browns Ferry

Landing in Georgetown County. The boat provides a rare example of commercial shipbuilding design and technology from colonial times in South Carolina (SCDAH, 1979). Another vessel, a dugout canoe made from a single 20-foot cypress log, is on display at the Williamsburgh Historical Museum in Kingstree where the boat is described as crafted in the late 1700's or early 1800's and used in that period as a commercial vessel to transport commodities from remote inland areas to commercial centers such as Georgetown.



A notable feature marking the landscape of Black River is the presence of roughly five thousand acres of former rice fields found in the freshwater tidal-wetland areas of the river below Pea House Landing in Georgetown County. Most of the rice fields with their associated dikes and canals were built over 200 years ago. The method of rice cultivation in early-1700s South Carolina evolved from dry ground to managed wetland practices, and by 1750 great success was occurring in tidal rivers, and this led to a boom of Carolina rice production that lasted for about 100 years, until the end of the Civil War. The large-scale rice cultivation that was practiced along tidal rivers like the lower Black required large amounts of capital and labor first to clear the cypress-tupelo forested swamps and build the dikes and canals, and then to grow the crops successfully, and it was African enslaved labor that made this possible. Thousands of enslaved people were brought to the area to build and manage the rice fields of these plantations. (Coclanis, 2016)

An example of a former rice-producing plantation on the lower Black River is Mansfield, which is reported to be largely intact today and listed in the National Register of Historic Places (SCDAH, 1977). The origins of Mansfield Plantation can be traced to an early 1700s royal grant of 500 acres along the Black River. The plantation house, avenue of oaks, rice fields, and outbuildings together reflect the region's rice-growing culture of the 1800s. This property is located 35 river miles below the scenic river section and is accessible to the public by reservation and/or appointment.

While Mansfield reflects historic elements of plantation life on the lower river, Salters Plantation House may reflect similarly for the upper river. Salters Plantation House is listed in the National Register of Historic Places. The house was built around the year 1830 by William Salters, a planter who owned over 4,000 acres at that time. Multiple generations of Salters have successfully worked plantation lands in the area producing a variety of products to include cotton, rice and livestock through the 1880s, followed by tobacco after 1900 and then a gradual shift to managed timber (SCDAH, 2000). Salters Plantation eventually came to include the town of Salters with the arrival of the railroad.



In 1856, the Northeastern Railway was opened after being built from Charleston to Kingstree (passing near the Salters house) and on to Florence, where it connected to rail lines running further north. The arrival of rail transport caused a major change in the patterns of commerce around the Black River because on the railway the planters could ship their produce and go themselves in a few hours over the same distance that had previously required several days. In just a few years, the primary route of commercial shipping turned away from the Black River to the railroad, and the destination of business trade turned from Georgetown to Charleston (Boddie, 1923).

White farmers of the Williamsburg District depended heavily on enslaved labor during the 1800s, and records from 1830 indicate blacks outnumbered whites by a margin of three to one (Pierce, 2016). The American Civil War, 1861-1865, put an end to the slavery system with its low-cost labor and began a period of social and economic change for the region of the Black River. One fairly rapid change was the collapse of the rice culture on the lower river in Georgetown County. Another, much slower change involved the struggle for freed black people to obtain equitable rights of citizenship and economic opportunity in the post-Civil-War South.

Historic side note: During the civil rights movement of the 1950s and 60s, Clarendon County was the origin of the *Briggs v. Elliot* federal court case that forced South Carolina to provide equal state funding for the education of black children. The *Briggs* case formed part of the larger *Brown v. Board of Education* decision in 1954, in which the U.S. Supreme Court unanimously struck down racial segregation in the public schools.

By 1881, commercial navigation on the upper Black River, above Potatoe Ferry, was judged to be practically non-existent according to a U.S. Army Corps of Engineers (USACE) navigation assessment (USACE, 1882). The USACE reported river conditions and navigational use

for three sections of the river: 1) From its mouth to Pine Tree Landing, the river is reported as “deep and navigable”, “free of obstructions”, “steamers run regularly upon this portion of the river and no improvement seems necessary.” 2) Above Pine Tree Landing to Potatoe Ferry, the river is described as “crooked and shoal.” The USACE report says, “This portion of the river is occasionally navigated by light-draught steamers... the river bottom is mostly rock ... an immense expense would be involved in attempting to excavate a channel... and would not be warranted by the present importance of navigation in the river.” 3) Above Potatoe Ferry to Kingstree, the report states, “there is literally no navigation, the river being almost continuous shoal with less than one foot of water at low stages. Nor does it appear that, if this portion of the river were opened to navigation, much use would be made of the increased facilities for transportation.”



The Kingstree Historic District is listed in the National Register of Historic Places and contains 48 properties in the commercial area of downtown Kingstree. Most notable is Williamsburg Courthouse built in 1823 to serve the area of Williamsburg District and later Williamsburg County. The Courthouse was designed by Robert Mills, a nationally known architect who was the first to be trained in America, and a native of South Carolina. The location of the Courthouse is on a site formerly used as the parade and muster ground for the local militia

during colonial and Revolutionary War times (Boddie, 1923). Most of the other buildings in Kingstree's historic district were constructed between 1900 and 1920 for commercial purposes and the district reflects a period when Kingstree prospered as a major tobacco marketing center (SCDAH, 1982).

Forest products have been a continual source of livelihood for people around the Black River. For two centuries, 1700-1900, lumber and naval stores (the pine-tree products of turpentine, resin, tar, and pitch) would draw income to the local economy, but their contribution was usually smaller compared to agriculture. Following the Civil War, there has been a gradual expansion of forest industry and its economic role. From 1870 to 1900 the naval stores industry boomed around the Black River but eventually faded away completely (Boddie, 1923 and Tuten, 2016). In 1899, the Atlantic Coast Lumber Company was established in Georgetown and introduced an industrial timber market for trees of the Black River region. Later and more significantly, the wood-pulp paper mill of International Paper Company was established in Georgetown during the 1930s, providing jobs and economic support to the region during the Great Depression and continuing on to the present (Tuten, 2016). Currently, the effects of an expanded forest-products industry can be seen in the patterns of land use around the Black River where managed timberlands may be favored over annual crops, and many large tracts of land are held in corporate ownership.

Additional note on land use: Today, the Black River runs through a land of forests and farms where the total area of land within the river's watershed is equally portioned in thirds as wetland forest, upland forest, and agricultural land.

Historical information about river recreation is rare, but for the Black River there exists the



unique work of W.R. Pritchett (1944), "There is a River: Black River," which presents details of geography, history, and stories of outdoor ventures along the river from 1917 to the early 1940s. Pritchett explored the entire length of the Black River and his writings record names and location descriptions for hundreds of places along the river to include several dozen landings and nearly as many fishing holes. One example is "Sturgeon Hole Landing" upstream of Clapp Swamp, where a man once jumped astride and wrestled a five-foot sturgeon, according to Pritchett. For at least half of the places mentioned by Pritchett, landings most notably, there is little or no trace of them found on current maps. Prominent in his writing are many enthusiastic expressions of enjoyment, value, and respect for the Black River and its recreational and aesthetic attributes. A sample of excerpts from Pritchett (1944) follows:



“To me there is but one Black River – there is no other river like it.” “...living in the counties through which Black River flows, and enjoying the hospitality of its people and the contents of its waters, it has become to me The River.” “Its course forms no county boundaries, but as a great common Benefactor it unites many peoples who inhabit its banks and are often seen sitting there with a fishing pole in their hands waiting for a bite.” “From Home Lake to Georgetown, there is no other stream like it. Nor has any other stream become more famous from a historical standpoint, or of value to lumbermen, the fishermen and the lover of nature.” “Black River is not only a drainage for some of the finest farming land of the state, but it is a health and pleasure giving stream.”

Pritchett reflects a time when most people around the Black River were well connected with the outdoors, a connection that has been loosened over time by various factors including

television, air conditioning, migration to cities from farms, and the Internet. That said, there still remains a community of people who value and respect *The River*, and evidence of this can be seen in the light-hand of demands placed on the river today: little is being required in terms of water withdrawals or wastewater discharge, and some who build and reside on the banks will conserve habitat and scenery by keeping the trees. Most who know the Black River of today will acknowledge its value in natural beauty, fish and wildlife resources, and related outdoor recreational benefits; thankfully a few are working to protect and conserve the Black River and its assets for generations to come.

Locations and Features of Historic Significance

Repeating and adding to places and events mentioned above, the following is a list of selected historical places and features within one mile of the Black Scenic River:



Historic Markers

- ◆ Battle of Lower Bridge
S.C. Highway 377 crossing of Black River
- ◆ Battle of Kingstree
S.C. Highway 527 west of Kingstree
- ◆ Old Muster Ground and Courthouse
W. Main Street in Kingstree
- ◆ Early Settlers and Potatoe Ferry
near S.C. Highway 41 crossing of
Black River
- ◆ Williamsburg Church
N. Academy Street in Kingstree
- ◆ Captain William Henry Mouzon
S.C. Highway 527 west of Kingstree
- ◆ Stephen A. Swails House
Main Street and E. Brooks Street
in Kingstree
- ◆ Burrow's Service Station and Cooper's
Country Store
S.C. Highway 377 and U.S. Highway 521
- ◆ St. Alban's Episcopal Church
E. Church Street in Kingstree
- ◆ Midway Church
S.C. Highway 527 near June Burn Road
- ◆ Dissenter Meeting House and Cemetery
Pump House Landing Road east
of Andrews

National Register of Historic Places

- ◆ Colonel John Pressley House
N. Academy Street in Kingstree
- ◆ Kingstree Historic District
Main, Hampton, and Academy Streets
in Kingstree
- ◆ M.F. Heller House
N. Academy Street in Kingstree
- ◆ Scott House
Live Oak Street in Kingstree
- ◆ Thorntree
S.C. Highway 527 in Kingstree

Issues and Opportunities

- ◆ Local history, historic places, and archaeological sites combined with the Scenic River and rural landscapes contribute to the distinct and special character of the Black River region.
- ◆ Knowledge of local history and cultural resources can influence the way citizens think of their community. History and historic places can provide a sense of connection or belonging and a focus of community pride and identity, all of which can support better interactions among the citizens.
- ◆ Cultural resources, particularly historic places, can be economic assets that promote heritage tourism, downtown revitalization, and economic development in small towns and rural communities.
- ◆ Sources of threats to cultural resources include: 1) Unplanned and insensitive development, 2) Economic stagnation in rural areas, and 3) Failure of citizens to understand the benefits of cultural resources in their own communities (SCDAH, 2007).
- ◆ Some citizens and property owners have a limited knowledge of local history, historic places, and archaeological sites and why they are important. This lack of knowledge can lead to the loss of cultural resources and lost opportunity to understand and conserve what makes up the unique character and identity of the Black River region.
- ◆ There may be significant historical and cultural sites that have yet to be documented with interpretive signage and/or in other ways to present a more complete and inclusive account of history. American Indians, African Americans, and other ethnic groups have lived along the Black River, and the stories of life for all people need to be told.
- ◆ Historic and archaeological site information must be carefully managed, as the information can be used to disturb or vandalize these fragile and non-renewable resources.



Thorntree: The house of James Witherspoon built in 1749, as relocated and refurbished in Kingstree, S.C.

- ◆ Most of the historic and archaeological sites of the Black Scenic River corridor are located on private property.
- ◆ State and federal laws are in-place to protect cultural resources and can be found at the websites of the SCDNR Heritage Trust Program (SCDNR, 2020b) and the S.C. Department of Archive and History (SCHA, 2020).

Management Goals for Cultural Resources

Increase knowledge and understanding of the local history and cultural resource heritage of the Black River corridor; advance the stewardship of cultural resources among local governments, community development organizations, and property owners. Stewardship of cultural resources will involve survey and documentation, protection, and interpretation.

Recommendations

- ◆ To advance the management goal, seek guidance and technical assistance available from existing government and/or non-profit service organizations with expertise in cultural resources stewardship.
 - Sources of assistance include these organizations: State Historic Preservation Office of S.C. Department of Archives and History, S.C. Institute of Archaeology and Anthropology, S.C. Heritage Trust Program of SCDNR, S.C. Humanities Council, S.C. Federation of Museums, National Trust for Historic Preservation, Association of State and Local History, and local historical societies.
 - The State Historic Preservation Office promotes cultural resource protection through the survey of historic properties,

nominations to the National Register of Historic Places, tax incentives programs, grants, assistance to local governments, S.C. Historical Markers, and information and training.

- Consultation with these organizations is advised to further define the needs and opportunities to improve stewardship of cultural resources along the Black River.
- ◆ Initiate community education and outreach events to increase knowledge and understanding of 1) local history and cultural heritage, and 2) current best practices for stewardship of cultural resources.
- ◆ Increase awareness of private land conservation options provided by local land trusts with conservation easements, which are effective in protecting significant cultural sites and providing tax benefits to landowners.
- ◆ Encourage and assist with improvements to historic and cultural resource interpretation on public sites.
- ◆ Seek opportunities for grant funding to support these goals and objectives for cultural resources of the Black River corridor.



Land Use

Humans have used the world's river systems for thousands of years because rivers support life. Rivers are a source of water, a place to find food, and a route for transportation. Rivers support an abundance of wildlife from fish, reptiles, and amphibians to numerous types of birds and mammals and diverse vegetation including grasses, reeds, and trees, which thrive in rich soils found on river floodplain lands. Because of these and other natural-resource benefits, human settlement throughout history has depended largely upon its proximity to rivers.

The use of fertile land along South Carolina's coastal rivers drove European commerce through the rice culture and into the timber era. Water for the rice culture and transport of the grain to markets meant that settlement and commerce became inextricably linked to the rivers. Timber along the Black River provided naval stores, lumber for homes and ships, furnish for paper production and later for export. In more recent times, use of the Black River has shifted to recreation pursuits ranging from boating and floating to fishing and hunting as the river continues to provide a high-quality recreational experience.

Photos provided by Michelle Lewis (pp. 24 and 29), The News - Kingstree (p. 25 lower), Louis Drucker (p. 25 upper and 27), and Michael Duke (p. 28)

A river's character can often undergo dramatic changes both seasonally and daily as the flow of water is affected by rain patterns and events ranging from extended

droughts with low stream flows and water shortages to tropical storms with major flooding events. It is the flooding events that have perhaps taught humans the harshest lessons about land use practices adjacent to rivers, as river flooding has resulted in major losses of life and property.

Population

According to the U.S. Census Bureau, the 2019 population estimates for the Black Scenic River watershed are 33,745 in Clarendon County, 30,368 in Williamsburg County, and 62,680 in Georgetown County. The population centers within the watershed include Bishopville (3,100), Sumter (40,000), Manning (4,000),



Kingstree (3,100) and Andrews (2,900). Other smaller towns located in the watershed include Elliott, Maysville, Sardinia, Greeleyville, Lane, and Salters.

Several larger urban areas are in close proximity to the watershed. The city of Florence is located 30 miles northwest of the Black River and supports an area population of about 200,000 people. Approximately the same distance to the southeast is Myrtle Beach and the Grand Strand, one of the major recreation and resort areas on the East Coast. This area supports a year-round population of roughly 450,000 people. To the west is Columbia and to the southeast is Charleston, both are large urban areas, which support roughly 800,000 and 700,000 people, respectively.

As of 2019 U.S. Census estimates, South Carolina is the 23rd most populous state with 5.1 million people. This state is projected to add another 1 million people by 2035, according to the S.C. Revenue and Fiscal Affairs Office. This growth, with the accompanied expansion of building and land development, is affecting our state's natural landscape and has already affected the lower portions of the Black River with increasing densities of residential and commercial development.



Land Uses

The Black River meanders through a wide river corridor and is bordered by a ribbon of land that is largely undeveloped and in a natural forested condition. A major portion of the adjacent land is in floodplain and swamps which tend to limit development and provide good quality habitat for a variety of native wildlife.

Much of the riparian (river-bordering) land along the scenic river section of the Black River has been owned and managed by the same families for generations and the same companies for years and the land use has been for traditional uses of forestry, agriculture, and recreation. Agriculture and forestry have remained the principal uses since European settlement times and more recently recreational use in the form of houses for vacation/recreation use and leasing lands for recreational hunting and fishing has developed in popularity. Housing adjacent to the river has mainly been concentrated in areas where high banks or bluffs border the river with access to public roads, and these areas are limited in number due to the broad floodplain and swamps which border most of this waterway.

Taking a larger view: The Black River watershed/basin (hydrologic unit 03040205), as described by SCDHEC (2016), includes 2,143 miles of streams, and it encompasses 2,061 square miles (1.3 million acres) in portions of

seven counties extending from the Sandhills of Kershaw County to the Coastal Zone at Georgetown. (Note, the terms *watershed* and *basin* are used synonymously.) The 1.3 million acres of the Black River basin include land use and land cover percentages as follows:

- ◆ 31.4% forested wetland
- ◆ 29.6% forested upland
- ◆ 29.6% agricultural land
- ◆ 6.6% urban land (most is associated with the City of Sumter)
- ◆ 2.2% nonforested wetland
- ◆ 0.1% barren land
- ◆ 0.5% water

Figure 4 presents a map of recent land use and land cover conditions in the Black River basin adjacent to the scenic river section. Additionally, the current land use and land cover conditions of the Black River corridor are presented in a series of aerial photo images (Figures 8 through 15) featured in the Recreation section.

Land Conservation

As of 2020, land conservation activities along the 75-mile Black Scenic River corridor have resulted in the protection of over 27,000 acres of lands within two-miles of the scenic river and most of this acreage is under private land protection through conservation easements. The application of conservation easements as a land protection tool has increased in recent decades and

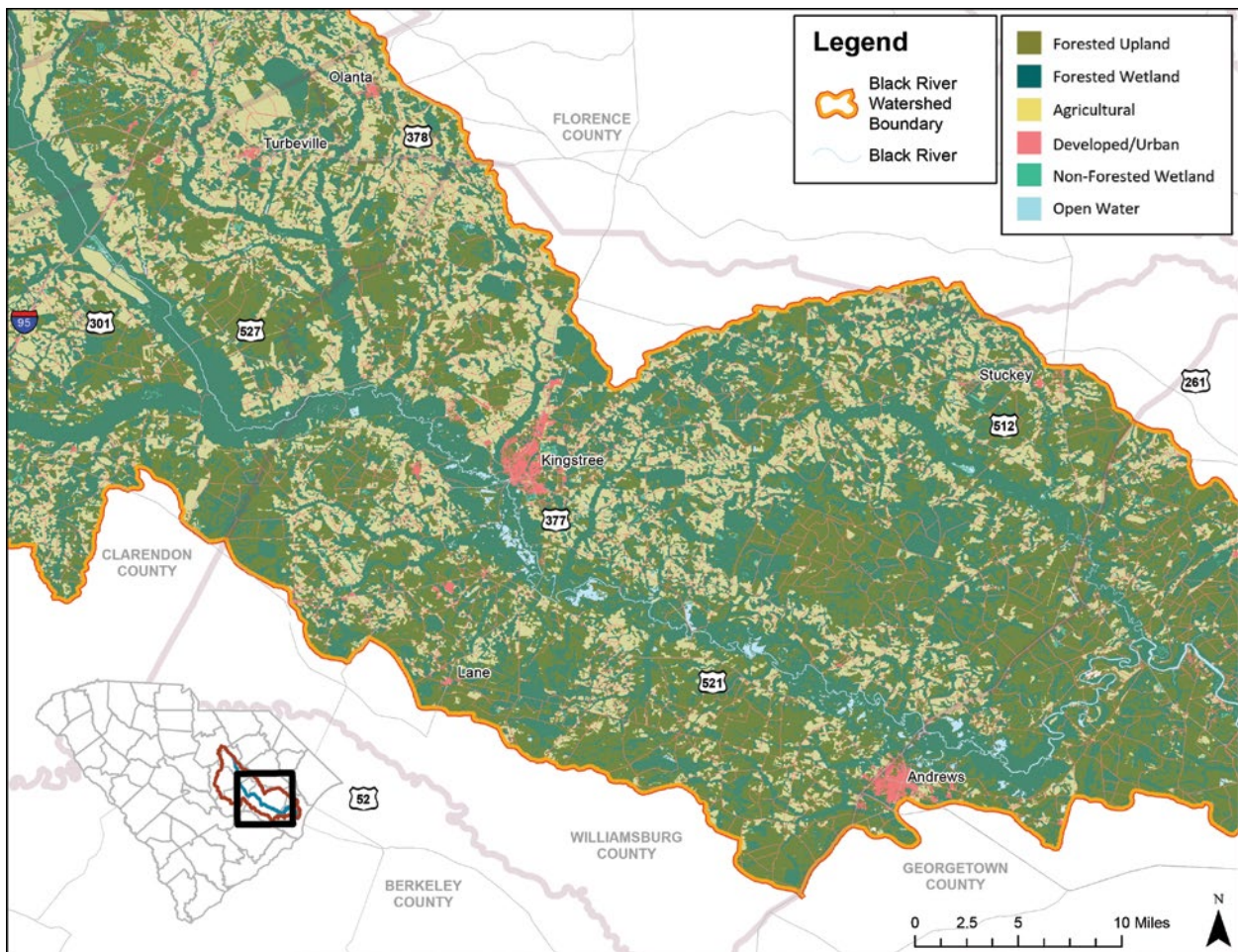


Figure 4. Black Scenic River Land Use Land Cover Map.
Source: USGS National Land Cover Database 2016.

has enabled landowners to permanently protect natural resources on their property (which provide environmental benefits to the public) and continue using their property for forestry, agriculture, and/or recreational purposes.



Organizations involved in land conservation on the Black River, holding either easements or fee simple ownership, include the following: Butler Conservation Fund, Congaree Land Trust, Ducks Unlimited, Lowcountry Land Trust, North American Land Trust, Open Space Institute, Pee Dee Land Trust, The Nature Conservancy, and U.S. Natural Resources Conservation Service (NRCS).

Issues

Land use issues and concerns are associated with increased residential and commercial development and related impacts to natural resources in and adjacent to the river and within the watershed. Concerns include the following:

- ◆ The traditional, primary land uses of agriculture, timber, and wildlife management within the river corridor may disappear over time.
- ◆ Population growth and expansion of Myrtle Beach, Florence, Manning, and Georgetown in the coastal corridor will drive increased land development and changes to the rural character of the Black River watershed.

- ◆ Development of large private properties and timberlands, which lie within the scenic river corridor, will change the natural and aesthetic aspects of the land.
- ◆ Developers may continue to build on sites close to the river or in floodplain areas, which can have negative effects on the natural habitat and scenic qualities of the river and become a public liability during major flood events.
- ◆ Increased population in the watershed will increase the challenge of managing wastewater (sewage) in the region. It should be noted that Andrews has recently connected with the Georgetown County Water and Sewer Authority and the town's sanitary sewage is currently treated in Georgetown.

From the above-listed concerns, the potential negative effects to the Black River and its watershed include: 1) loss and fragmentation of forestlands and farmlands in the watershed and related losses of wildlife habitat, 2) increased paved and built-over surfaces and resulting polluted runoff, 3) increased wastewater (sewage) disposal needs and potential pollution to the river, 4) increased development along the river and resulting degradations to wildlife habitat and scenic qualities of the river.

Management Goal for Land Use

Ensure land use and development within the scenic river corridor and watershed of the Black River is conducted in a manner that will respect, maintain and enhance the natural, cultural, and scenic attributes of the river and its surrounding landscape.

Recommendations

- ◆ By proactive interaction with state, county and municipal regulatory groups in concert with other stakeholders, work to influence laws, ordinances and regulations to advance this management goal for land use and the mission of the Black Scenic River Advisory Council.



- ◆ Encourage, promote, and conduct land stewardship and conservation easement workshops that inform the property owners of alternative land use and development practices, illustrate good conservation design, and identify the benefits and financial incentives with land conservation alternatives.
- ◆ Encourage and support development of comprehensive plans at the state, regional, county, and local level that address options and best practices that limit the negative environmental effects of land-development and promote conservation of existing agricultural and forestry uses and protection of natural resources within the scenic river corridor and region.
- ◆ Careful consideration should be given to regulations needed to restrict development within the floodplain of the river. As portions of three counties and two towns encompass the scenic portion of the Black, it is recommended that a coordinated approach between the various entities be pursued in order to assure that reasonable regulations are crafted and enforced.
- ◆ Support and promote the use of conservation easements with land trust organizations to protect scenic, natural, and cultural resources of the Black River and its watershed.
- ◆ Encourage land managers and owners to protect a riparian (streamside) buffer of natural forest vegetation with a minimum buffer zone of 100 feet from the Black Scenic River and 50 feet from its tributaries.
- ◆ Encourage landowners to landscape, re-vegetate, and restore areas of the riparian zone. Seek funding or find programs that provide incentives for improving or planting vegetative buffers along the river.

Development recommendations:

- ◆ Residential, commercial, and industrial development should be limited to areas outside the 100-year flood zone and swamp wetlands to avoid flood damages to property and allow floodplains to provide the natural service of floodwater storage and conveyance.
- ◆ New developments within view of the river should implement the following to minimize impacts to the natural and scenic qualities of the river:
 - Reconsider site design and building locations to minimize visual impacts on views from the river and surrounding lands.
 - Limit the size and height of buildings and choose colors of sidings and roof materials to blend with the surrounding native trees and vegetative cover.
 - Conserve and/or plant native trees and shrubs on developed sites between buildings and the river to promote a natural visual environment.
- When subdividing river-bordering property into lots for residential development, consider a set back from the river on all lots in order to provide a conservation area (or common area) along the river frontage to be managed as a riparian buffer of natural forest vegetation to conserve the natural scenic views from the water and provide habitat for wildlife.
- For any new public recreational development projects proposed within the scenic river corridor, the advisory council should seek out and be given opportunities to provide input during the planning stages, and review and comment on proposed project plans. The interests of the advisory council are to limit negative impacts to the river and promote conservative development designs with controlled entrances.



Wildlife Resources

The wildlife resources of the Black Scenic River corridor can be defined by the natural habitats and vegetative communities and associated aquatic and terrestrial species that occur across the landscape from the Black River channel through the floodplains and into the adjacent uplands throughout the length of the river corridor.

Natural Communities

The Black Scenic River corridor contains three broad groups of natural habitats based primarily on morphology and relative position to the Black River: riverine habitats, bottomland forest habitats, and adjacent upland habitats. Riverine habitats are associated with the river channel, proper, and adjacent riverbanks. Bottomland forest habitats encompass the river floodplain between the river channel and nearby uplands. Upland habitats of various types occur along the edge of the floodplain. Within each of these broad habitat groups are specific types of plant communities, which further define the habitat. A characterization of natural communities of South Carolina (Nelson, 1986) describes at least 12 natural communities expected to occur within the Black River corridor. Prominent natural communities within the scenic river corridor include bottomland hardwoods, bald cypress-tupelo gum swamp, bay forest, levee, and shoal/stream bar; these communities are described below.

Photos provided by U.S. Fish & Wildlife Service (pp 30 and 32 upper), Dana Beach (p. 31 upper, 34 lower, and 35 right), Bill Marshall (p. 31 lower), Louis Drucker (p. 32 left), N.C. Botanical Garden (p. 32 lower), Alabama Coop. Extension Service (p. 33), and Michaele Duke (p. 37)



Bottomland Hardwoods are the dominant natural community of the floodplain of the Black River corridor. Bottomland hardwoods segregate into several specific communities based on environmental factors such as topography, physiography, moisture regime, and soils. The timing and duration of flooding or soil saturation are keys to the development and succession of bottomland hardwood forest vegetation. Most bottomland communities are flooded during the wet portions of the year (winter through spring); however, they are dry during most of the growing season. Bottomland hardwoods are a mosaic of discernable plant communities that are all adapted

to flooding to some degree, and are typically distinguished based on topography and degree of flooding. Schafale (2012) defines “High” and “Low” subtypes of blackwater bottomland hardwood forests. Common species in the high subtype include loblolly pine, laurel oak, water oak, swamp chestnut oak, and sweetgum. Common species in the low subtype include significant amounts of overcup oak, with laurel oak, swamp bay, American hornbeam, and mayberry.



Bald Cypress-Tupelo Gum Swamp, commonly referred to as cypress-tupelo swamp, is the most deeply flooded of the Black River floodplain communities. They are dominated by bald cypress and water or swamp tupelo. These areas also contain other flood-tolerant species including red maple, sweetgum, green ash, planer tree, and Carolina ash. Cypress-tupelo swamps include sloughs and swales, guts, oxbow lakes, and other backwater areas where water remains throughout much of the year. The deepest of these swamps seldom dry out completely. Tree bases are typically buttressed (swollen at the base), and some of these areas support abundant cypress knees. As depressional areas within the floodplain, these areas often trap fish and aquatic invertebrates as floodplain waters recede, resulting in congregations of food supply for predaceous birds and mammals.



Bay Forest is a heavily forested community type within or at the periphery of the Black River floodplain that is dominated by evergreen bay species. These communities may also occur on tributary drainage ways away from the floodplain. Bay forests are dominated by loblolly bay, swamp bay, and sweet bay, with minor amounts of water tolerant hardwoods. These areas are often very dense, with a tangled shrub layer of evergreen shrubs and vines. Some bay forests are thought to succeed from Atlantic white cedar swamps and other depressional areas in the absence of fire.

Levee is a natural community formed along the riverfront and found intermittently running parallel to the Black River channel. The dominant forest vegetation in these communities includes river birch, planer tree, American elm, mayhaw, chestnut oak, water oak, and sweetgum. Greater availability of light in these communities allows for greater diversity of shrubs and herbaceous plants. The soil in these areas is generally fertile and less saturated. There is considerable variation in width, relation to the river channel, and species composition. Some of the

higher elevation communities within the floodplain may actually be remnant levee forests that were formed along the river's edge as the river meandered across the floodplain.

Shoal/stream Bar, also referred to as sand bars or point bars, is a sandy, alluvial area within the Black River. There is considerable variation in the size and persistence of these areas. Trees and shrubs are usually not allowed to reach large sizes in these areas due to the flooding dynamics of the river. Common plant species occurring in these habitats where less frequently flooded are tag alder, river birch, willows, black haw, planer tree, mayhaw, and saplings of canopy species such as American sycamore. Shoals that are exposed only in summer at low water levels support a diverse, but short-lived community of annual herbs and graminoids (grasses).



Swamp Tupelo Pond, also known as gum ponds, are round, oval, or irregularly-shaped depressions in the floodplain of the Black River, and within major tributaries. The dominant canopy species is swamp tupelo, with lesser amounts of cypress, red maple, and sweetgum. These areas often have a well-developed shrub layer consisting of buttonbush, blueberries, myrtle holly, fetterbush, and wax myrtle. These areas often hold water for extended periods throughout the growing season. As depressional areas within the floodplain, these ponds often trap fish and aquatic invertebrates as floodplain waters recede, resulting in congregations of food supply for predaceous birds and mammals.

Rare Plant Species



The Black River floodplain and lands immediately adjacent to it contain populations of at least 16 rare plant species (Appendix A). These rare species are listed under the U.S. Endangered Species Act or are tracked as Critically Imperiled, Imperiled, or Rare by SCDNR. These species occupy a variety of habitats including the river channel itself, sandy shoals along the river channel exposed during low water conditions, riverside levees, bay forests, bald cypress-tupelo gum swamp, and in adjacent uplands including mixed hardwood forests, longleaf pine savannas, and disturbed lands.



Two species listed as Federally Endangered have been found in, or within 0.5 miles of, the river floodplain: Chaffseed and Canby's Cowbane. Chaffseed is dependent on frequently burned longleaf pine savannas and was known from several colonies just south of the river. Canby's

Cowbane is restricted to depressional herbaceous wetlands, especially clay-based Carolina Bays, and was formerly known from a cypress-gum pond just west of Kingtree. Carolina Birds-in-a-Nest, a Federal At-Risk species, has been found at several locations along the river on the edge of its floodplain, generally in areas with seepage from adjacent uplands.

Invasive Plant Species

Exotic invasive plant species pose a major threat to native plant communities along the Black River. Habitats within the river floodplain are particularly susceptible to invasions because of regular natural disturbances, and the transport of seed or propagules from upstream. The most problematic invasive plant species currently found in undisturbed habitats along the Black River are listed in Appendix A. The listing identifies a classification of threat by the South Carolina Exotic Pest Plant Council (SCEPPC), and those that are prohibited by the SCDNR Aquatic Nuisance Species Program. Additional exotic species (more than those listed) are expected to be found along the Black River, and other species will eventually disperse into the watershed from other areas.



Currently, the most problematic species is Chinese privet. This is an extremely aggressive shrub that forms dense, impenetrable thickets that can shade out the herbaceous

layer altering the native species composition and community structure in forested wetland areas. The small fruits are consumed by birds and other wildlife and are spread to new areas. Control of Chinese privet is best accomplished with herbicide (foliar, basal-bark, or cut stump treatments), especially of mature plants and large populations.

Japanese stilt-grass is also an aggressive invader along the Black River. This annual grass forms a dense groundcover in forested wetlands, and, like Chinese-privet, can be transported from upstream and is well adapted to natural disturbances. Once established control is unlikely to be successful unless treated aggressively with foliar application of herbicide over a period of many years, depleting the seed bank that can persist for up to seven years.

Aquatic invasive plants, such as water hyacinth may be found in the river channel or with larger populations protected from river flows in side channels, isolated oxbows, and adjacent impoundments. Contact the SCDNR Aquatic Nuisance Species Program to report and address the control of aquatic invasive plants found within the river.

Game Species

The Black Scenic River corridor provides valuable habitat for many species of wildlife to include an assemblage of game and non-game species typical of coastal plain river corridors throughout the state. Common game species include large game such as whitetail deer, hogs, and wild turkey, small game including squirrels, rabbits, raccoons and opossum, and game birds such as ducks, quail, mourning doves, and the underutilized snipe and woodcock. Game species are an important wildlife component, as they are responsible directly or indirectly for significant economic input to the region. Hunting in the Black River corridor has been a way of life since the area was first settled and continues to be an important recreational activity within the region.



Mammals

Mammals are well represented in the Black Scenic River corridor. Common aquatic mammals of the Black River, proper, include beaver, otter, mink, and muskrat. The Black River floodplain, as a transitional zone between aquatic and terrestrial systems, is utilized by both the aquatic species of mammals common to the river, and upland species such as raccoons, opossums, bobcat, squirrels, red and gray fox, coyote, marsh rabbit, cotton mouse, and wood rat. Several small fossorial mammal predators are common within the scenic river corridor, including the southeastern shrew and eastern mole. The river corridor also harbors several species of bats such as the big brown bat, tri-colored bat (formerly known as eastern pipistrelle), red bat, and the rare/endangered Rafinesque's big-eared bat.

Birds

The Black Scenic River corridor, as with other large river corridors, provides ideal habitat for birds within the coastal plain of South Carolina. The combination of riverine, floodplain, mesic and hydric forest, closed canopy, and agriculture edge within the corridor contributes to the relatively high diversity and numbers of birds. Typical bird groups include colonial

wading birds, migratory and resident waterfowl, songbirds, birds of prey, and woodpeckers.

The colonial wading birds are best represented by the great blue heron, American and snowy egret, white ibis, American bittern, little blue and green herons; in addition, even the rare wood stork is found along the Black River. The most common waterfowl species in the Black River corridor is undoubtedly the wood duck, which is a year-round resident. However, wintering species such as mallards, pintails, blue- and green-winged teal, and black ducks utilize the flooded swamps

and riverine areas extensively.

The forested wetlands, pine woodlands, and other upland habitats provide valuable habitat for a variety of songbirds including northern cardinal, painted bunting, eastern bluebird, Acadian flycatcher, Carolina wren, Carolina chickadee, tufted titmouse, blue-grey gnatcatcher and several species of warblers, vireos, nuthatches and finches.



The most conspicuous birds of prey in the Black River corridor are the red-tailed hawk, northern harrier, barred owl, and great-horned owl; however, sharp-shinned hawk, red-shouldered hawk, barn owl, screech owl, bald eagle, Coopers hawk, kestrels, osprey, and swallow-tailed and Mississippi kites also occur within the corridor.



Other birds of interest that are common within the Black Scenic River corridor are belted kingfisher, American crow, a variety of woodpeckers including the endangered red-cockaded woodpecker, northern flicker, and yellow-bellied sapsucker, nocturnal species such as whip-poor-will and common nighthawks, and flocking species such as cedar waxwing, common grackle, and a few species of blackbirds.

Amphibians and Reptiles

Common amphibians associated with the Black River, proper, include the two-toed amphiuma, and the greater siren. Amphibians commonly associated with the adjacent floodplain and forested wetlands include the dusky salamander, southern cricket frog, little grass frog, and southern toad. Shallow depressions within the river floodplain and in the adjacent upland pine flatwoods are very important habitats for herptiles. As surface water is necessary for the reproduction of all amphibians and some reptiles, these habitats are critical to the maintenance of amphibian and reptile populations within the watershed.



Reptiles inhabiting the Black River corridor are more numerous and more conspicuous than amphibians, which are typically very secretive. The river cooter, yellow-bellied slider, spiny soft-shell, snapping turtle, mud turtle, brown water snake, and banded water snake are common residents of the Black River. Reptiles common to the adjacent forested river floodplain include eastern cottonmouth, black racer, southern ringneck snake, copperhead, eastern glass lizard, green anole, and brown-headed skink. Amphibians and reptiles inhabiting the Black River corridor are both riverine and floodplain species, as well as other typically terrestrial species that intrude into these habitats during low water periods. Because of the alternating cycles of flooding and dryness, numbers and diversity of herptiles are relatively high in river floodplains.

Fishes

The Black River fish community is typical of South Carolina coastal plain rivers. In addition to a resident fish population, diadromous fish like the American eel, American shad, blueback herring, and Atlantic and shortnose sturgeon uses the river for an essential part of their life cycle. The productivity and health of the Black River fishery is highly dependent on annual inundation (flooding) and healthy (natural) functioning of the floodplain and riparian zone.

The forested riparian zone is essential to the Black River's fishery. Shading of the river helps maintain water temperatures at acceptable levels. Trees stabilize the stream channel, preventing erosion. Woody debris from the forest provides critical spawning and nursery habitat for fish. The major energy source for the river comes from the annual leaf fall, which is eaten and broken down by invertebrates that are preyed on by other organisms or directly by fish. An important portion of this cycle takes place during spring flooding, when the river overflows its banks and fills the floodplain for weeks and even months, bringing that productivity back to the river when levels subside.



Shortnose sturgeon (*Acipenser brevirostrum*)



Atlantic sturgeon (*Acipenser oxyrinchus*)

Cool, unpolluted water is essential to the survival and reproduction of the Black River's fish community. A total of 67 native and exotic fish species are listed by the SCDNR to be found and expected in the Black River, including its side channels, backwaters, and larger tributaries (see Appendix A). The endangered shortnose sturgeon, and Atlantic sturgeon that inhabit coastal rivers of South Carolina utilize the Black River.

The recent establishment of the exotic and highly piscivorous flathead catfish within the Black River has the potential to negatively impact the traditional redbreast sunfish fishery. Additionally, an established population of the exotic blue catfish now also occupies a significant portion of the river and competes with native fish.

Aquatic invertebrates found in the Black River basin include the black mottled crayfish, Pee Dee lotic crayfish, cedar creek crayfish, the coastal plain crayfish, Santee crayfish, and the invasive red swamp crayfish, and the freshwater mussels, Carolina slabshell, eastern elliptio, variable spike, Carolina lance, eastern pond-horn, and pond lance.

Issues and Concerns

- ◆ Protection of the riparian zone and associated natural habitats is important. The greatest threat to the Black River is the degradation and loss of habitats caused by insufficient awareness of responsible development practices, particularly in the riparian zone and its adjacent floodplain.
- ◆ Adjust the public misconception that fish stocking is a cure-all for perceived poor fishing success. This misconception de-emphasizes the critical importance of habitat protection.
- ◆ Exotic (non-native) invasive plant species pose a significant threat to wildlife habitats and native plant communities along the Black River. These plants can spread rapidly through the environment and may alter entire landscapes within the span of one to three growing seasons.
- ◆ Exotic fish species, such as the flathead catfish and blue catfish, have negatively affected native fish populations in the Black River and should be removed at every opportunity.
- ◆ Methylmercury contamination of fish and potential health concerns for those who eat the fish is a known problem in the Black River. Public education is essential to maintaining healthy use of the river's fish.
- ◆ Increase law enforcement presence on the river to curb litter, game, and fish violations.
- ◆ Additional investigation of fish and aquatic animal communities occurring in the watershed is needed.

Management Goal for Wildlife Resources

Maintain and enhance botanical, fish and wildlife habitats through public education; particularly of the importance of riparian and upland land uses to the health of the river.

Recommendations

- ◆ Educate and inform the Black River community about the best practices of land use and development that will minimize environmental impacts and protect natural resources of the Black River. Best practices will be based on the most current scientific research and understanding. See Appendix B for related information.
- ◆ Inform land managers and owners about the importance of natural habitats in riparian (streamside) and floodplain areas. Encourage protection of a riparian buffer of natural forest vegetation with a minimum-width buffer zone of 100 feet from the Black River and 50 feet from its tributaries.
- ◆ Avoid development within the river floodplain and associated impacts to natural habitats.
- ◆ Encourage the use of conservation easements with land trust organizations to protect riparian lands and wildlife habitats along the river.
- ◆ Prevent the spread of invasive and non-native species and eliminate them where possible. Start by increasing awareness among landowners and the public about the threats posed by invasive plants. Encourage landowners to take steps to control and/or eradicate these plants to prevent their further spread.
- ◆ Encourage measures aimed at maximizing harvest of flathead catfish and blue catfish; angler education may be needed to demonstrate the more effective techniques for catching these fish.
- ◆ Encourage and support SCDNR in managing botanical, fish, and wildlife populations in the Black River corridor; and utilize the information and strategies provided in the State Wildlife Action Plan (SCDNR, 2015).
- ◆ Encourage and support SCDNR Law Enforcement in dealing with litter, fish, and game violations.
- ◆ Encourage additional species research along the Black River.



Water Quality and Streamflow

Both the quality and flow of waters in the Black Scenic River are essential to its character and to what the public values in the river. Clear, dark waters and seasonally changing flows form a natural environment with diverse fish and wild-life habitats, scenic beauty, and recreation opportunities. This chapter provides information to address water quality and flow conditions of the Black, issues of interest and concern, and related state programs.

As previously mentioned, the Black River is a blackwater river, meaning the waters are relatively clear but highly colored (coffee-colored) due to the presence of tannins (humic substances) derived from plant material in swamps that drain into the river. Additionally, blackwater rivers are formed within the Coastal Plain and carry less sediment load than alluvial rivers that flow from the mountains and Piedmont (Wharton, 1982).

Photos provided by Michael Duke (pp. 38 and 44), Mary Crockett (pp. 40 and 48 right), Gates Roll (p. 41), Bill Marshall (p. 45), Van Whitehead (p. 46), and WCBD News 2 (p. 48 left)

The Black River drainage area (watershed) includes 2,143 miles of streams and encompasses an area of 2,061 square miles (1.3 million acres). The stream named “Black River” originates near the City of Bishopville and ends at its confluence with the Great Pee Dee River near Georgetown; and along its path the Black accepts drainage from many tributaries to include Rocky Bluff Swamp, Pocotaligo River, Pudding Swamp, Kingtree Swamp Canal, and Black Mingo Creek.



The South Carolina Department of Health and Environmental Control (SCDHEC) is authorized under the South Carolina Pollution Control Act and the Federal Water Pollution Control Act (aka Clean Water Act) to protect and enhance water quality conditions and regulate pollution discharges to public waters of the State. SCDHEC applies a watershed approach to coordinate its management and regulatory activities to include monitoring, problem identification and prioritization, water quality modeling, planning, and permitting. Note, the terms *watershed* and *basin* are synonymous and both refer to drainage areas or geographic areas drained by a common river system.

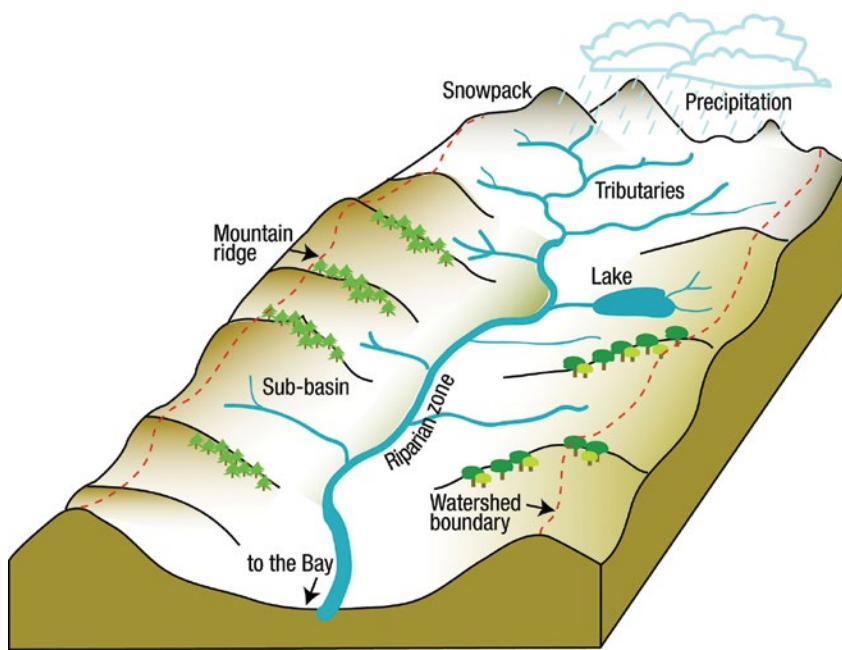


Figure 5: Watershed Schematic

Watershed: a geographic area drained by a common river system, bounded by adjacent topographic ridges, and where all streams flow to a common outlet. Land uses and related development activities in a watershed have a direct effect on the water quality conditions of streams within the watershed as rain runoff, wastewaters, sediments and dissolved materials drain from the land and into the streams.

Monitoring and Reporting Water Quality

SCDHEC classifies the Black River as “Freshwaters” (FW), which has the effect of assigning water quality standards to the river system. The Black River has a site-specific standard for dissolved oxygen (DO) and pH. The classification and standards assigned to Black River are used to determine permit limits for treated wastewater dischargers and any other activities that impact water quality (SCDHEC, 2014). A statewide water-quality monitoring and reporting program is conducted by SCDHEC to determine long-term water quality trends, assess attainment of water quality standards, and identify locations in need of additional attention.

Under its water-quality monitoring program, SCDHEC regularly collects and analyzes water samples from the Black River system to determine whether its classification of FW is being met. Findings are reported in the Watershed Water Quality Assessment: Pee Dee River Basin, in four editions (1997, 2000, 2007, 2015) to describe water quality conditions, changes, and trends through time.

Other sources of reported information on water quality conditions are the bi-annual reports from SCDHEC presenting the “303(d) list of impaired waters,” to identify waterbodies not meeting state water quality standards after application of required controls for pollutants. Drawing on multiple information sources related to state water quality standards, SCDHEC reports its “use support” determinations for aquatic life, recreation, and fish consumption.

Aquatic life use support is assessed by comparing important water quality characteristics and the concentrations of potentially toxic pollutants with standards set by SCDHEC. Parameters that assist in determining whether aquatic life is supported include dissolved oxygen (DO), pH, heavy metals, priority pollutants, chlorine, and ammonia. Biological data are assessed to determine whether aquatic life uses are supported regardless of chemical conditions because the ultimate goal of set standards is “the protection of a balanced indigenous aquatic community.”

Recreational use support is based on the concentration of pathogenic bacteria present in a waterbody. Bacterial standards (for *Escherichia*



Conditions in Black River

Currently, on the Black Scenic River there are two active water-quality monitoring stations where samples are being collected once per month: PD-227 at Mount Vernon Road and PD-359 at Sims Reach Road; that is according to SCDHEC's monitoring strategy of 2020. Water quality data are also available for currently inactive stations on the Black River: PD-116

at June Burn Road, PD-044 at U.S. Highway 52, and PD-045 at S.C. Highway 377.

Several fish-tissue monitoring sites have been located on or near the scenic river section and the currently active stations include PD-626 at Pumphouse Landing and PD-659 at Old Pump Station on the Black River (SCDHEC, 2020a). An inactive station for fish tissue collection on the Black is PD-044 located at the U.S. Highway 52 crossing.

Conditions in most areas of the Black Scenic River are supportive of aquatic life and recreational uses based on SCDHEC water quality reports (see Table 3). As of 2018, aquatic life uses are supported at all stations on the scenic river section except for Station PD-227 at Mount Vernon Road, which is impaired due to dissolved oxygen excursions. Similarly, recreational uses are fully supported along the entire scenic river except for Station PD-116 at June Burn Road, where waters are impaired because of *E. coli* excursions.

Dissolved oxygen (DO) in streams and lakes is essential for the survival and propagation of aquatic organisms. If the DO falls below the minimum requirements for survival, aquatic organisms or their eggs and larvae may die. A severe example is a fish kill. Different forms of pollution can cause declines in DO. Dissolved oxygen in streams and lakes also varies greatly due to natural phenomena, resulting in daily

coli (*E. coli*) bacteria or fecal coliform) address primary contact recreation and potential risks to humans of contracting waterborne illnesses after swimming due to exposure to sewage-related pathogens. All water quality standards are established in South Carolina Regulation 61-68, Water Classifications and Standards.

Fish consumption use support is based on an assessment of health-threat risks posed by human consumption of fish taken from a specific waterbody. The collection of fish for the purpose of tissue analysis is necessary to detect the presence and levels of heavy metals (mercury is now widespread), pesticides, and toxic organic compounds in edible tissue that may concentrate through aquatic food chains and threaten the health of human consumers. Data collected by SCDHEC are used to issue consumption advisories for protection of public health when necessary.

As mentioned, the 303(d) list of impaired waters, prepared by SCDHEC, includes the monitoring sites where water quality standards are not being met. For each of these sites SCDHEC intends to further investigate the problem and develop a Total Maximum Daily Load or TMDL. The goal of a TMDL is to identify potential pollution sources and quantify the needed reduction of those sources in order to meet water quality standards. The TMDL is used develop and implement a plan to reduce sources of pollution within the watershed and restore the full use of the waterbody.

and seasonal cycles of DO. The summer season is typically a low-DO season in the Black River because higher temperatures coincide with lower streamflows. Warmer water dissolves less oxygen than cool water and slow-moving water provides less flushing and reaeration; both conditions contribute to lower levels of DO, and at times the results may be extreme and stressful to aquatic life.

Another cause for concern in the Black River is the elevated mercury levels in fish taken from the river. Mercury contamination of fish is a common problem in waterbodies across South Carolina and the Eastern United States. Much of the mercury in our river systems comes from atmospheric deposition with sources including the burning of coal and other fossil fuels, incineration of certain wastes, and smelting for metals. Mercury, when introduced to surface waters, can be transformed by natural processes to methylmercury, which is absorbed by small organisms that are eaten by fish, and the toxin is accumulated and concentrated as it is passed up the aquatic food chain. Larger fish such as bass and bowfin that eat other fish are more likely to have high mercury levels.

Fish consumption advisories affect the entire Black River system and apply to the following fish: largemouth bass, bowfin (mudfish), blue catfish, black crappie, chain pickerel, warmouth, red-breasted sunfish, redear sunfish, and bluegill. Fishermen should limit their consumption of these types of fish to no more than one-meal a month for bowfin and chain pickerel, one-meal a week for black crappie, blue catfish, bluegill, red-breasted sunfish, redear sunfish, and warmouth, and **DO NOT EAT ANY** largemouth bass. To minimize risks, pregnant women, infants, children, and people with neurological disorders should not eat any fish from the river (SCDHEC, 2018a).

Sources of Water Contamination

The sources of contamination to surface waters (lakes, rivers, and estuaries) are often categorized in two ways: point source and nonpoint source pollution.

Point source pollution occurs when a contaminant enters the water through a distinct point like a pipe. Many companies and industries discharge to our rivers through single points. In the past, many of these discharges contributed large volumes of impurities to our waterways; however, with the enactment of the Clean Water Act, all discharges are regulated according to permits issued by SCDHEC. These permits help control the quality of the discharges and do not allow the discharges to contain pollutant levels that will exceed state standards in the waterway.

Through the issuance of and compliance with permits, water quality has improved. Currently there are two permitted dischargers to the Black River, as listed in Table 4, and both are in the scenic river section. Table 4 also presents four



Table 3: Water Quality of Black Scenic River, Use Support and Impairments by Station.

Monitoring Site	Station	Aquatic Life Use Support	Recreational Use Support	Fish Consumption
Black River at S-14-40, June Burn Rd, Clarendon County	PD-116 Inactive	Support 2014-2018; DO impaired 2008-2012	Ecoli/fecal coli impaired 2008-2018	--
Black River at S-45-35, Mount Vernon Rd, Williamsburg County	PD-227 Active	DO impaired 2016-2018	Support 2016-2018; Ecoli impaired 2014	--
Black River at U.S. Hwy 52 at Kingstree, Williamsburg County	PD-044 Inactive	Support	Support	HG fish impaired in 2014, 2016, 2018
Black River at S.C. Hwy 377 near Bryan Crossroads, Williamsburg County	PD-045 Inactive	Support	Support	--
Black River at S-45-30, Sims Reach Rd, Williamsburg County	PD-359 Active	Support	Support	--
Black River at Pumphouse Landing, Williamsburg County	PD-626 Active	--	--	HG fish impaired in 2014, 2016, 2018
Black River at Old Pump Station, Georgetown County	PD-659 Active	--	--	HG fish impaired in 2014, 2016, 2018

Table information taken from the SCDHEC 303(d) lists of 2014-2018, SCDHEC S.C. Watershed Atlas, and Watershed Water Quality Assessment: Pee Dee River Basin (SCDHEC, 2015). Note, aquatic life uses were impaired at PD-227 by the presence of zinc in 2014.

Table 4. NPDES Permitted Dischargers in and near the Black Scenic River.

NPDES Facility	Receiving Stream	Discharge Type
Town of Kingstree	Black River	Major Domestic
Town of Kingstree / Milliken Site	Black River	Minor Domestic
Martek Biosciences / DMS (Kingstree)	Kingstree Swamp Canal Tributary	Minor Industrial
Trebol USA LLC (Andrews)	Johnson Swamp	Minor Industrial
International Paper / Sampit Lumber	Indian Hut Swamp Tributary	Minor Industrial
Manning Wastewater Treatment Facility	Pocotaligo River	Major Domestic

permitted dischargers with a close proximity to the scenic river section but located in tributary streams. Note additional permitted dischargers are within the Black River watershed but these are far removed from the scenic river section and located upstream in the Pocotaligo River system near the City of Sumter (SCDHEC, 2020b).

Nonpoint Source Water Pollution

Nonpoint source (NPS) water pollution, also known as polluted runoff, generally comes from diffuse and numerous sources. Runoff occurring after a rain event may transport 1) sediment from plowed fields, construction sites or logging operations; 2) pesticides and fertilizers from forests, farms, lawns and golf courses; 3) motor oil, grease, and toxic material deposited on roads and parking lots; or 4) waste containing bacteria from pets, agricultural animal facilities or malfunctioning septic systems. The rain moves the pollutants across the land to the nearest waterbody or storm drain where they may impact the water quality in creeks, rivers, lakes, estuaries, and wetlands. NPS pollution may also impact groundwaters when it is allowed to seep or percolate into aquifers.

The adverse effects of NPS water pollution include physical destruction of aquatic habitat, fish kills, interference with or elimination of recreational uses of a waterbody, closure of shellfish beds, reduced water supply or taste and odor problems in drinking water, and increased potential for flooding because water bodies become choked with sediment.

Strategies to Reduce Nonpoint Source Pollution

Just as there are many sources of NPS water pollution so there are many strategies to reduce the pollution to include a mix of regulatory and voluntary measures targeted to the various sources. Promoting public awareness and personal responsibility for actions to reduce pollution is a key component in reducing NPS pollution. Current regulatory standards, guidelines, and voluntary measures for water quality protection that address the activities of forestry, agriculture, and land developments include the following:

- ♦ Forest landowners and forestry professionals are advised to follow the South Carolina Forestry Best Management Practices (BMPs) produced by the South Carolina Forestry Commission (SCFC, 1994) and call upon Forestry Commission staff for technical assistance.

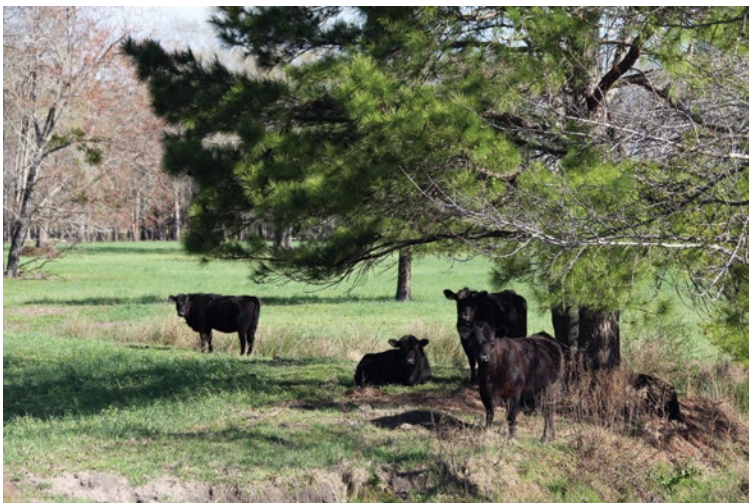
- ◆ Farmers and agricultural professionals should understand and comply with the state laws and regulations affecting agricultural practices to include controlled use of pesticides (S.C. Pesticide Control Act and S.C. Regulation 27-1070 through 27-1092) and requirements for the permitting of agricultural animal facilities and management of related wastes (S.C. Regulation 61-43). Farmers should contact SCDHEC, Clemson Extension Service or the U.S. Department of Agriculture - Natural Resources Conservation Service (NRCS) for case-by-case guidance.
- ◆ Farmers can call upon the NRCS to obtain guidance on land management issues and receive technical and financial assistance to install or implement structural BMPs to control pollution sources and protect water quality in adjacent streams.
- ◆ Developers of land for residential, commercial or industrial purposes should understand and comply with the state and local laws and regulations to control stormwater runoff and prevent sedimentation of streams (S.C. Stormwater Management and Sediment Reduction Act and S.C. Regulation



72-300 through 72-316). Developers should consult with SCDHEC and county officials to determine if their proposed land development activities are subject to state or local regulations and permit requirements for storm water management and sediment control. Numerous methods are available to control runoff and prevent erosion and sedimentation; descriptive details of these methods are provided in SCDHEC's Stormwater Management BMP Handbook (SCDHEC, 2005).

- ◆ All property owners with homes and businesses can obtain information from Clemson Cooperative Extension, SCDHEC, and other sources to evaluate how they might contribute to water pollution and take actions to reduce it. Consider the following examples:

- Apply lawn and garden chemicals sparingly or not at all; read and follow directions for applying pesticides and fertilizers.
- Manage all exposed ground surfaces to control soil erosion and stop sediment runoff to streams.
- Maintain proper septic tank and septic system function with inspections and pump-outs every 3-5 years.



- Cleanup pet wastes, litter and debris from yards, parking lots, streets, and storm-drain systems as these typically flow directly into streams.
 - Properly dispose of used oil, antifreeze, paints, and other household chemicals at recycling centers or service stations.
 - Repair automobile leaks and cleanup spilled brake fluid, oil, grease, and anti-freeze. Do not wash spills into streets, as these will drain to streams.
 - Establish and maintain riparian buffers of native vegetation along all streams and lakes.
- ◆ Additionally and complementary to the above-mentioned information, the SCDNR Scenic Rivers Program provides recommended BMPs for riparian landowners (see Appendix B).
- ◆ The width of a buffer is important. For water quality protection, the Statewide Task Force recommends a minimum width of 35 feet, the S.C. Forestry Commission in its best management practices recommends a minimum of 40 feet, and the Scenic Rivers Program in its best management practices recommends a minimum buffer width of 50 to 100 feet dependent on slope. If buffers have greater widths, such as 100 to 300 feet, enhanced benefits for both water quality and wildlife protection may be accomplished.
 - ◆ The type of vegetation in the buffer is also significant. A mix of native vegetation, including trees, shrubs, grasses, and forbs should be included in the buffer. A strictly lawn/grass buffer will not provide the same benefits.
 - ◆ Other factors that contribute to the effectiveness of a riparian buffer include the hydrology (the way and rate water flows over and through the riparian area), soil structure, field slope, type and density of vegetation, and the pollutant load from the adjoining land uses.

Riparian Buffers to Protect Water Quality

A vegetated riparian buffer (usually forested) is a strip of land along a stream that can protect water quality and aquatic habitats by intercepting NPS pollution (e.g., sediments, nutrients, pesticides within water runoff) from adjacent lands, reducing bank erosion, and providing shade, structure, and food for aquatic animals. The South Carolina Statewide Task Force on Riparian Forest Buffers defined riparian forest buffers as “an area of vegetation that is natural or designed and managed, consisting of trees, shrubs, and grasses adjacent to a stream, river, wetland, or shoreline that helps maintain the integrity of water resources” (Center for Environmental Policy, 2002).

For a riparian buffer to be effective in protecting water quality, a few conditions or criteria must be followed.

- ◆ It should be one continuous stretch of vegetated land along a stream (rather than many disjointed sections) to provide adequate



Currently the majority of the Black Scenic River has some type of vegetated buffer. However, as development along the river occurs, care must be taken to ensure an adequate buffer remains in place.

Benefits of a Vegetated Riparian Buffer (Wenger, 1999):

- ◆ Stabilizes stream banks and reduces channel erosion
- ◆ Traps/removes pollutants from runoff including: sediment; nutrients (phosphorus and nitrogen), and pesticides
- ◆ Encourages infiltration of rain and runoff to groundwater
- ◆ Provides natural flood management, storing and conveying flood waters
- ◆ Maintains habitat for fish and other aquatic organisms; shading streams to moderate water temperatures and providing woody debris habitat
- ◆ Provides and protects habitat for terrestrial wildlife
- ◆ Maintains existing good water quality
- ◆ Improves the scenery and aesthetics of stream corridors; enhancing public recreation value and increasing private property values

USGS water-resource monitoring sites describe streamflow conditions of the Black River. Discharge (flow) statistics presented in Table 5 and graphs of Figure 6 describe hydrologic patterns of the river based on 89 years of data collected from the Black River at Kingstree at the USGS gaging station 02136000. The graphs present the annual pattern common to streams where mean/average flows for each day of the year reflect seasonal changes in rainfall and evapotranspiration which allow greater stream flows during the winter and early spring seasons and lower flows during the summer and fall.

The minimum flows reflect low-flow drought conditions, and on average the minimum flows are only 7% of the mean flows (Figure 6), and the summer-time minimum flows are much less.

Maximum flows (not graphed but indicated by highest and maximum flows in Table 5) reflect high-rainfall events, tropical storms and hurricanes, and during such extreme events the maximum flows may be as much as 50 times the corresponding mean or average flow.

Average flow in the Black River at the Kingstree gage, based on the 89-year period of record, is 931 cubic feet per second (cfs), which is equivalent to the stage (or gage height) of 8.1 feet. The median flow at Kingstree is 454 cfs or a stage of 4.9 feet. Flood stage at the Kingstree gage begins at 12 feet, approximately 5,200 cfs, according to the National Weather Service.

Streamflow

Streamflow is of interest because conserving sufficient volumes of water in the river and seasonal variations in flow are essential to fish and wildlife resources and traditional river uses for water supply and recreation. Droughts can produce prolonged low-flow conditions with water shortages and flood events may cause disaster for adjacent communities. River flow conditions need to be understood to inform how water from the river can be used and how adjacent lands may be developed.



Extreme events at Kingstree gage: The highest flows on record occurred on October 6, 2015 with a maximum peak flow of 83,700 cfs, which corresponded to a maximum peak stage of 22.65 feet. The lowest flow on record is 2 cfs, a daily mean flow measured on September 12, 1954.

Withdrawal of water from streams is regulated by SCDHEC under the South Carolina Surface Water Withdrawal, Permitting, Use and Reporting Act. Currently, within the Black River watershed there are no reported withdrawals from the Black River but several agricultural withdrawals for irrigation are registered on upstream tributaries of the Black River at Pudding Swamp and near the Pocatlico River at Ox Swamp, Bear Creek, and Deep Creek (CDM Smith, 2015).

Issues

The following issues are of interest and concern regarding management of the water resources of Black River.

- ◆ During rain events, runoff to the Black River contains a great deal of sediment and other nonpoint source water pollution.
- ◆ The sampling frequency (once per month) employed by SCDHEC may not detect acute water quality problems caused by storm water discharge, septic tank malfunction or rainfall runoff.
- ◆ Where the riparian buffers are narrow and streambank erosion has occurred, there is an increase in sediment runoff.
- ◆ More volunteers are needed for water quality monitoring and litter clean up days.
- ◆ Black River can experience extremely low-flow conditions; and the related potential effects of surface water withdrawals on river flows need to be understood and managed to ensure protection of fish and wildlife resources and the ecological health of the river.
- ◆ The Black River flood event of October 2015 and subsequent, repeated flooding events on other rivers of the Pee Dee River Basin demonstrate the need to manage development within river floodplains.

Table 5. USGS Gage Summary Statistics for Black River at Kingstree, S.C.

Black River at Kingstree - USGS Station 02136000: Period of record 1930-2018	
Drainage area	1,252 sq. mi
Annual mean flow / average flow	931 cfs Approx. stage - 8.1 feet
Highest daily mean flow	78,200 cfs October 6, 2015
Lowest daily mean flow	2 cfs September 12, 1954
Maximum peak flow	83,700 cfs October 6, 2015
Maximum peak stage	22.65 feet October 6, 2015
10% exceeds	2,240 cfs
50% exceeds / median flow	454 cfs Approx. stage - 4.9 feet
90% exceeds	48 cfs



Black River at Kingstree USGS Gage - Daily Streamflow Statistics for Period of Record (1930-2018)

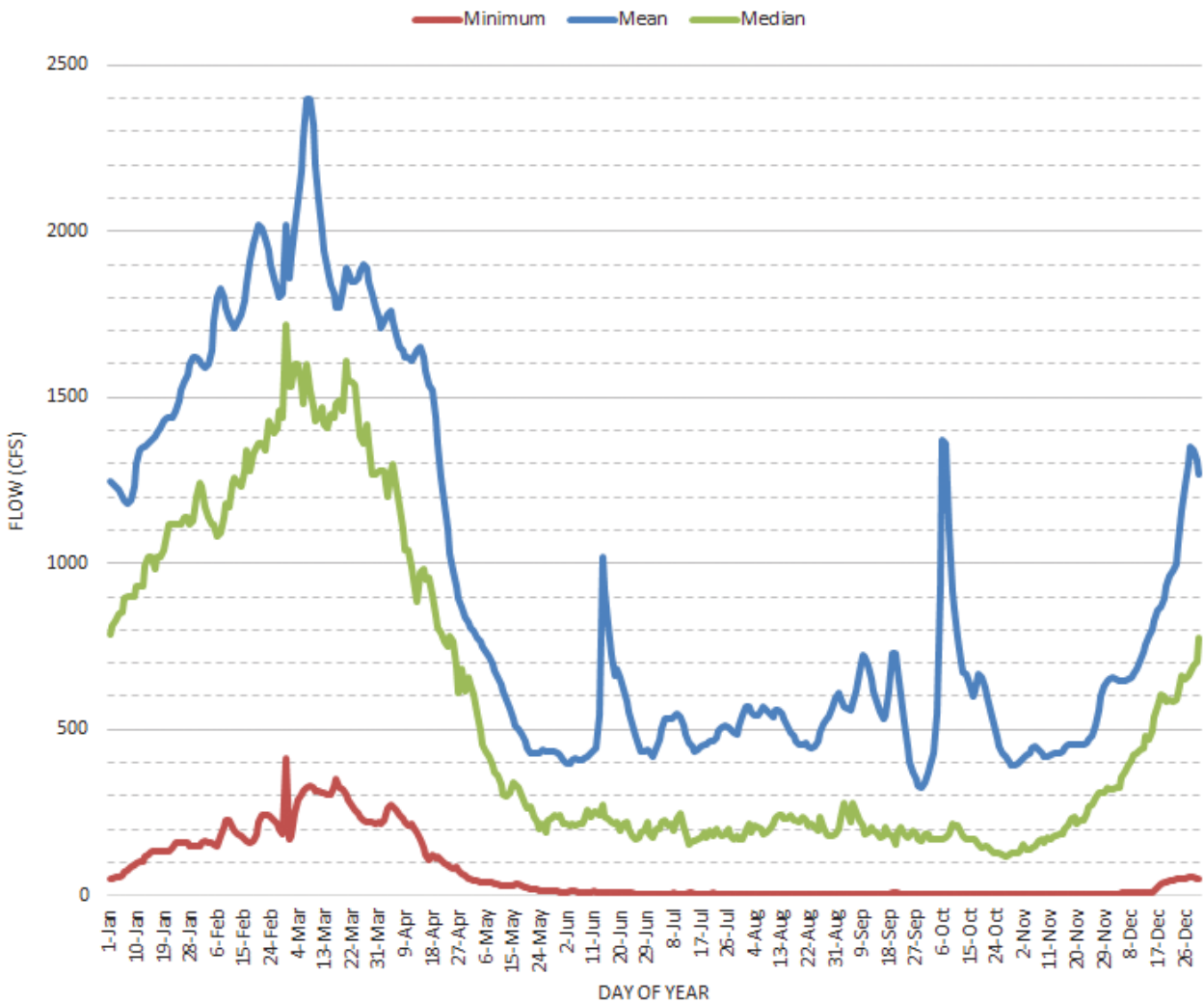


Figure 6. Black River Daily Streamflow Statistics from the USGS Gage at Kingstree.

Management Goals for Water Quality and Streamflow

To provide for the desired river uses of swimming and fishing and protection and propagation of a balanced, indigenous aquatic community, the river should consistently meet or exceed established biological, chemical, and physical standards for the Freshwaters (FW) classification within South Carolina water-quality regulations. Allow the river and its floodplain to continue providing important ecological functions and services (i.e., to receive and transport floodwaters and provide diverse fish and wildlife habitats) as it responds to climatic and seasonal variations in streamflow.

Recommendations and Opportunities

- ◆ The advisory council needs to encourage community involvement in efforts to protect and enhance healthy water quality conditions of the Black River.
 - Promote communication and collaboration among all entities with management responsibilities affecting water use and water quality of the Black River.
 - Establish volunteers to become well informed of the rules and regulations and watch, record, and report issues of concern and potential violations to the appropriate agencies.
- ◆ Track public permitting and planning activities affecting water quality in the river, including wastewater discharge and water withdrawal permits and land uses affecting the river and its floodplain.
 - Provide input to public planning and permitting decisions as appropriate to seek protection and conservation of water resources and restrictions on development impacts to the river.
 - Assist with implementation of TMDLs (when completed and approved).
- ◆ Promote the increase of public awareness and personal responsibility for actions to reduce nonpoint source water pollution affecting the Black River to include the following:
 - Promote awareness and compliance with regulatory standards, guidelines, and voluntary measures for water quality protection that address the activities of forestry, agriculture, and land development. Specific standards, guidelines, and measures are described above in this chapter under Strategies to Reduce Nonpoint Source Pollution.
 - Encourage landowners to create and protect vegetated riparian buffers on the Black River and its tributaries. For protection of water quality, a minimum riparian buffer width of 50 to 100 feet (dependent on slope) on both sides of the stream is recommended and the buffer should be characterized by native vegetation, typically trees, shrubs, grasses, and forbs.
 - Initiate and support efforts to reduce litter in the river; participate in the Beach Sweep/River Sweep events; and develop an ongoing litter prevention and control program.
 - Seek assistance from the USDA Natural Resources Conservation Service in addressing agricultural runoff issues and related nutrient and contaminant loading to streams in the watershed.
 - Promote local awareness of and compliance with the Stormwater Management and Sediment Reduction Act.
- ◆ Address streamflow interest by participating in public planning and permitting activities affecting water use and withdrawals. Provide input to public decisions as appropriate to conserve flow conditions needed for the ecological health of the Black River system.

Recreation and Public Access

The current recreational uses of the Black Scenic River include fishing, boating, tubing, swimming, nature study, photography, and bird watching. Hunting and trapping are also common outdoor activities along the river. The entire 75-mile stretch of the scenic river is considered navigable waters under Regulation 19-450 of the South Carolina Code of Laws 1976, as amended, and under Section 10 of the National Rivers and Harbors Act of 1899 (33 U.S.C. 403). The *South Carolina Rivers Assessment* (SCWRC, 1989) reports the Black River as a superior resource of statewide or greater significance to “Backcountry Boating” and the “Flatwater Boating” recreational uses.

The 75-mile scenic river section can be accessed at six public boat landings dispersed along its length. Some sections of the river are navigable by larger powerboats and even water skiing is a popular activity. Other sections require smaller craft such as canoes, kayaks or jon boats, especially during periods of low water levels. Small one-man fishing boats are popular for navigating the narrow sections of the river, the backwaters, and swamps. Upper sections of the river, particularly above Kingstree, may be challenging to navigate as it can be multi-channeled, may be obstructed with fallen trees, and has limited public access.

Photos by Michaele Duke (p. 50), Van Marshall (p. 51 lower), Robbie Humphries (p. 51 upper), Louis Drucker (p. 54 lower), and Michelle Lewis (p. 54 upper)



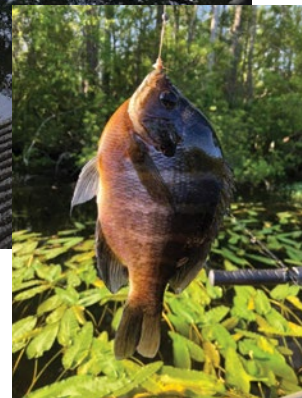
Because there is currently a long distance between some of the access points, the river user who wants a shorter trip must ask permission to ingress or egress on private property. When such permission is not obtained, trespassing becomes an issue of concern to affected landowners.

The Black River is a popular river for paddlers. Weekend and day trips are the most common use. Opportunities for multiday canoe-camping trips are available during lower water conditions when the sand bars along the river offer pleasant camping locations. Currently, there are no public camping facilities on the private or public lands adjacent to the river.

Wherever access is available to the river, people use the white sandy beaches along the banks for picnicking, camping, and swimming. Swimming and wading opportunities are excellent at the river's sandbars that slope into clean blackwater.

Public Access Sites

Within the 75-mile Black Scenic River section there are currently six access sites available for public use. These access sites are described in the following paragraphs and the locations are presented on the maps in Figures 7 through 15. (Note, the maps also present four access sites outside the designated scenic river section: one upstream site on the Pocotaligo River and three downstream sites on the Black River.)



Gilland Memorial Park and Landing – This public park on the Black River provides a boat ramp, large parking areas, picnic shelter, swim area at the river on a sandy beach, restroom facilities, and a playground. The park is located at the end of Singleton Avenue off U.S. Highway 52 in Kingtree. Local citizens will sometimes refer to this landing as Scout Cabin. As positioned on the river, this site is about 32 river miles downstream from the State Road 40 Bridge (June Burn Road), which is the upper end of the designated scenic river. The distance from the Pocotaligo River Landing at North Brewington Road downstream to Gilland Park is about 22 river miles.

Mill Street Landing – This site provides a public boat ramp with a small parking area and is located in Kingtree at the end of West Mill Street just north of the U.S. Highway 52 Bridge. Mill Street Landing is about one mile downstream from Gilland Park. The downstream distance from Gilland Park or Mill Street Landing to the next public access at Ervin Landing is about 32 river miles.

Ervin Park and Landing -- This public park includes a picnic shelter, large parking area, and boat ramp. The park is located at the end of Ervin Road (State Road 688) south of Kingtree

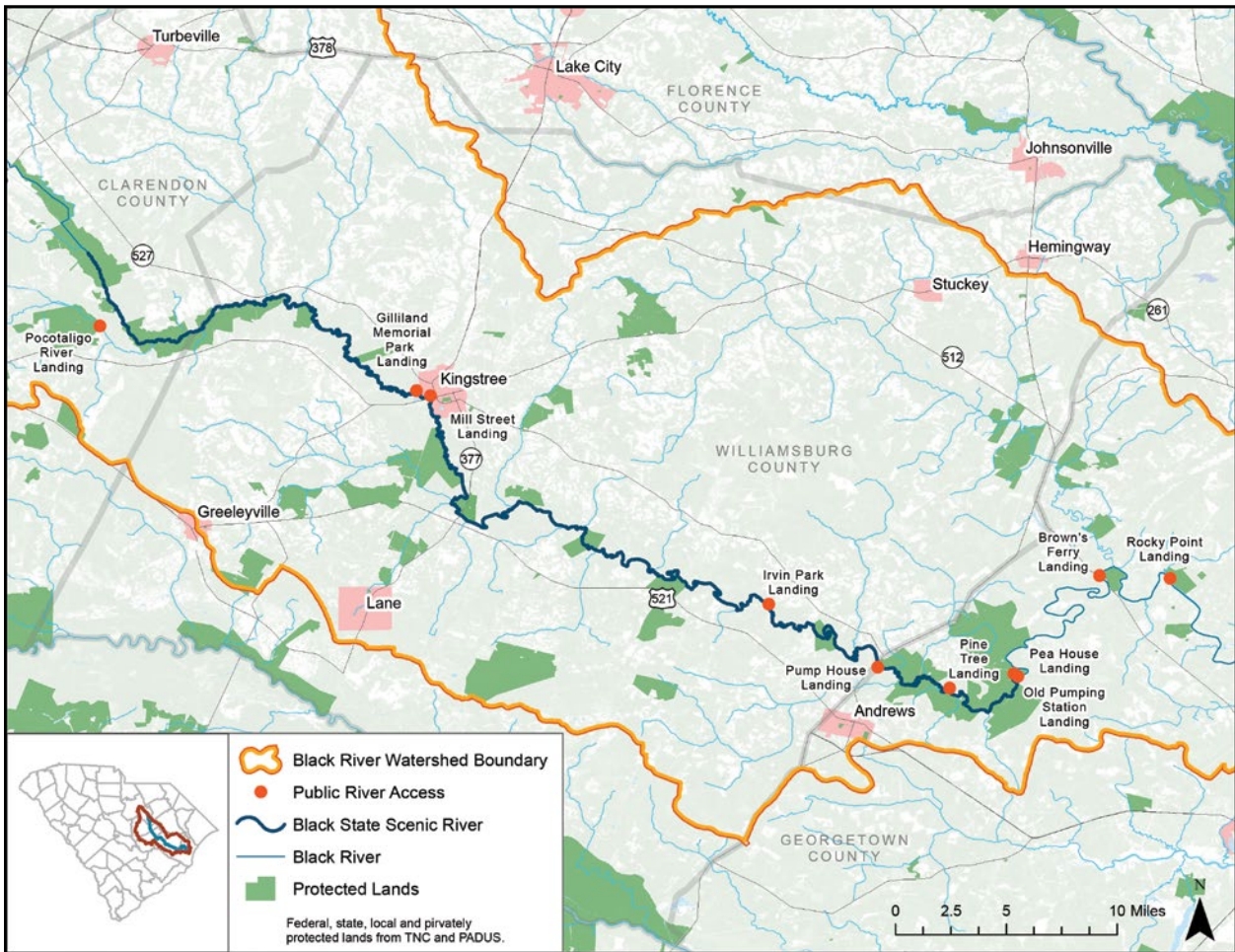


Figure 7. Recreational Access Sites on the Black River.

off S.C. Highway 527 in Williamsburg County. The downstream distance from this site to the next access location at Pump House/Reds Landing is about 10 river miles.

Pump House / Reds Landing -- This public landing is just downstream of the S.C. Highway 41 Bridge in Andrews and includes a large parking lot and boat ramp. The site is located at the end of Reds Landing Road off S.C. Highway 41. This landing has had many names over time; the two names mentioned, as well as Potatoe Ferry Landing and Station Landing. The downstream distance from this site to the next access location at Pine Tree Landing is about five river miles.

Pine Tree Landing -- This public landing includes a parking area, dock, and boat ramp. The site is on the north side of the river on a side channel,

and not easily seen from the main river channel. It's located at the end of Pine Tree Landing Road off Big Dam Swamp Road (State Road 38) in Georgetown County. The downstream distance from this site to the next access location at Pea House Landing is about five river miles.

Pea House Landing -- This public landing includes a parking area, dock, and boat ramp. The site is located at the end of Big Dam Swamp Road (State Road 38) in Georgetown County. The landing accesses the wider and deeper sections of the river and is a popular access for launching larger powerboats. The State Scenic River designation ends at Pea House Landing.

Downstream of Pea House Landing, the Black River flows for another 38 river miles through Georgetown County to its confluence with the

Great Pee Dee River. Access sites along the lower 38-mile section include five public landings: Old Pumping Station, Browns Ferry, Rocky Point, Peters Creek (one mile up the creek), and Pringles Ferry. From Pea House, the approximate downstream distance to these five landings is 0.3, 13, 19, 27, and 35 river miles, respectively.

Issues

A number of recreational issues are of interest and concern and are summarized below:

- ◆ Limited access to the river is a factor that has contributed to this area remaining in a natural condition.
- ◆ The council is concerned about the misuse of the river and public landings. Such misuse could result in destruction of public and private property, increased litter, illegal drug activity, excessive or underage alcohol use, disorderly conduct and increased noise problems. Off-road driving at access sites is a concern as it can result in damages to riverbanks, erosion, and water quality impairment.
- ◆ To protect natural resource values of the river, there is interest in understanding carrying capacity for hunting and fishing and water recreation within the scenic river segment.
- ◆ Due to the long distance between access points, those paddlers interested in a shorter trip must ask permission to access the river by private property. When such permission is not obtained, trespassing can become an issue.
- ◆ The lack of campsites along the river is an issue limiting recreation in the river corridor.
- ◆ There is a lack of information and signage provided at public landings to orient visitors to the river.

Management Goal for Recreation and Public Access

Allow the Black Scenic River to be reasonably accessible for responsible recreational use and enjoyment while encouraging low-impact uses

and development of low-impact access facilities compatible with the larger goals of protecting the river and its natural resources values.

Recommendations

- ◆ The Black Scenic River project provides an opportunity for citizens to work with their state and local government agencies to promote responsible recreational use of the Black River. Members of the advisory council should be involved with any committees formed by state and local governmental agencies to address recreational access and use on the Black River.
- ◆ The Black Scenic River Advisory Council will seek to work with all local and state government agencies to address any potential development of landings and parks (access sites) on the river. The advisory council will seek to participate in the planning and design of potential access sites to promote development of environmentally friendly and controlled sites on state/county/municipal property along the Black Scenic River. Site design features should address the following:
 - Control of all access and facilities to the extent necessary to prevent vandalism and other unlawful behavior. The Advisory Council suggests gated facilities with specific hours of operation.
 - Consider accessibility for elderly and handicapped people in all facility developments, specifically fishing piers and wildlife observation decks.
 - Locate all parking outside of the riparian zone (at least 50-feet from the river) if possible and minimize the use of impervious surfaces.
 - Work to obtain scenic easements and view protection from all public access points and recreational facilities to provide full enjoyment of the natural resource.

- ◆ Develop and distribute public information and signage to provide orientation to the river and promote lawful, safe, and respectful recreational use of the river. Public information products about river recreation should include the following:
 - Maps of the river to identify public access sites and present river facts and features of interest and importance to recreational users.
 - River rules of law to remind river users of regulations affecting recreation on the river (e.g., litter/trash, boating, hunting and fishing rules).
 - River rules of etiquette to remind and encourage river users to respect natural resources and other users of the river (e.g., wildlife, private property, ramp manners, group size, human waste, and camp fires).
 - River safety and potential hazards to avoid (e.g., trip planning and preparation, river drowning hazards, and insect stings).
- ◆ Encourage the use of non-motorized boats or small-motorized (5-10 horse-powered) craft along the upper portions of the Black Scenic River.
- ◆ Members of the advisory council should be seen as leaders in the fight against litter by

participating in the annual Beach Sweep/River Sweep program each year. Additionally, they should clean the public landings within the scenic river section at least two to three times per year and generate community support for maintaining a litter-free scenic river corridor.

- ◆ Encourage entrepreneurial efforts to provide nature-based or culture-based tourism services in the Black Scenic River corridor.
- ◆ Work with the SCDNR and hunting or fishing groups to ensure that game and fish populations are sufficient to ensure the sustainable use of the resource.
- ◆ Seek and support funding needed to 1) conduct studies to address carrying capacity for hunting, fishing and water recreation within the scenic river segment, and 2) enhance public access sites.





Figure 8. Aerial View of the Black River Corridor:
June Burn Road to Mt. Vernon Road.

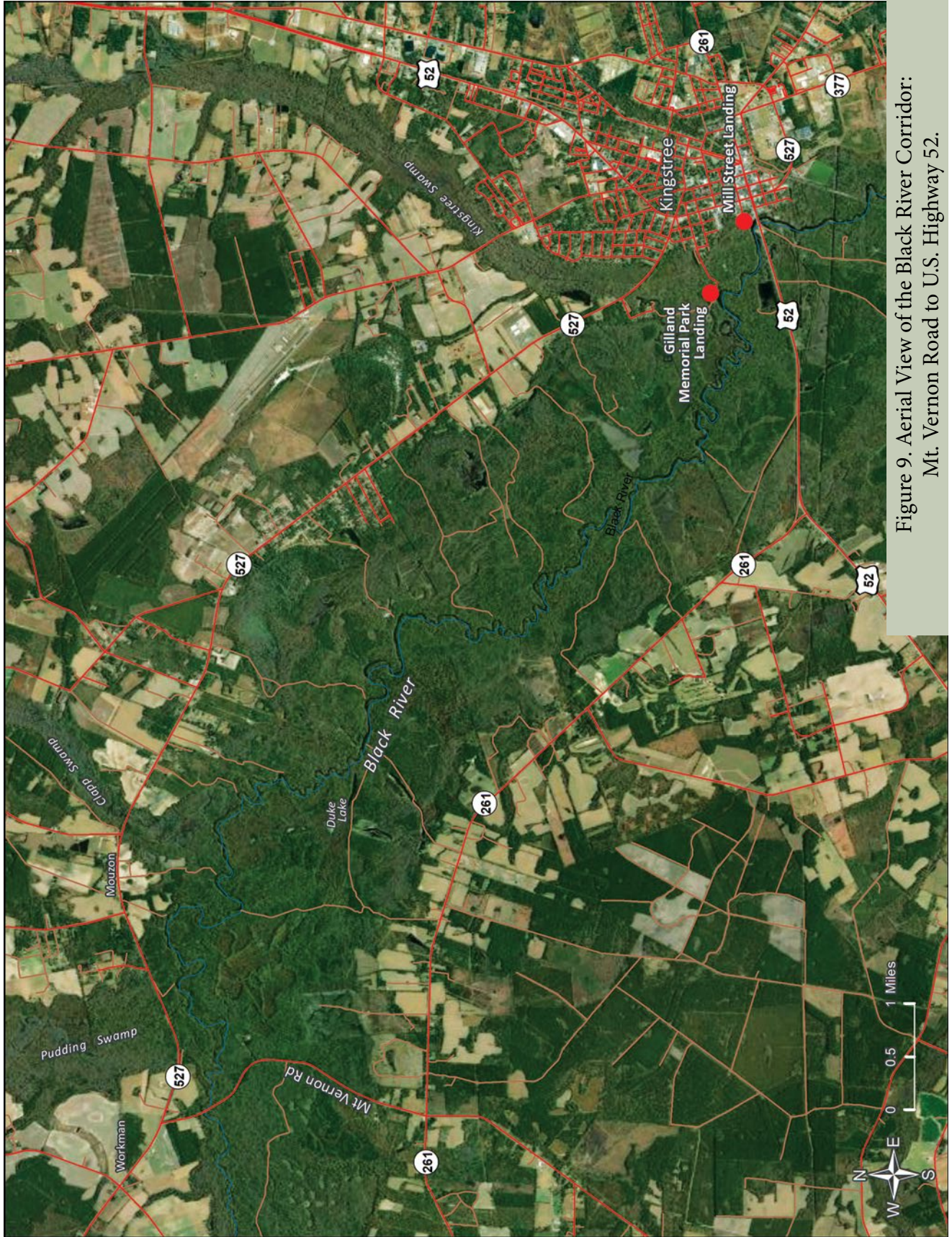


Figure 9. Aerial View of the Black River Corridor:
Mt. Vernon Road to U.S. Highway 52.

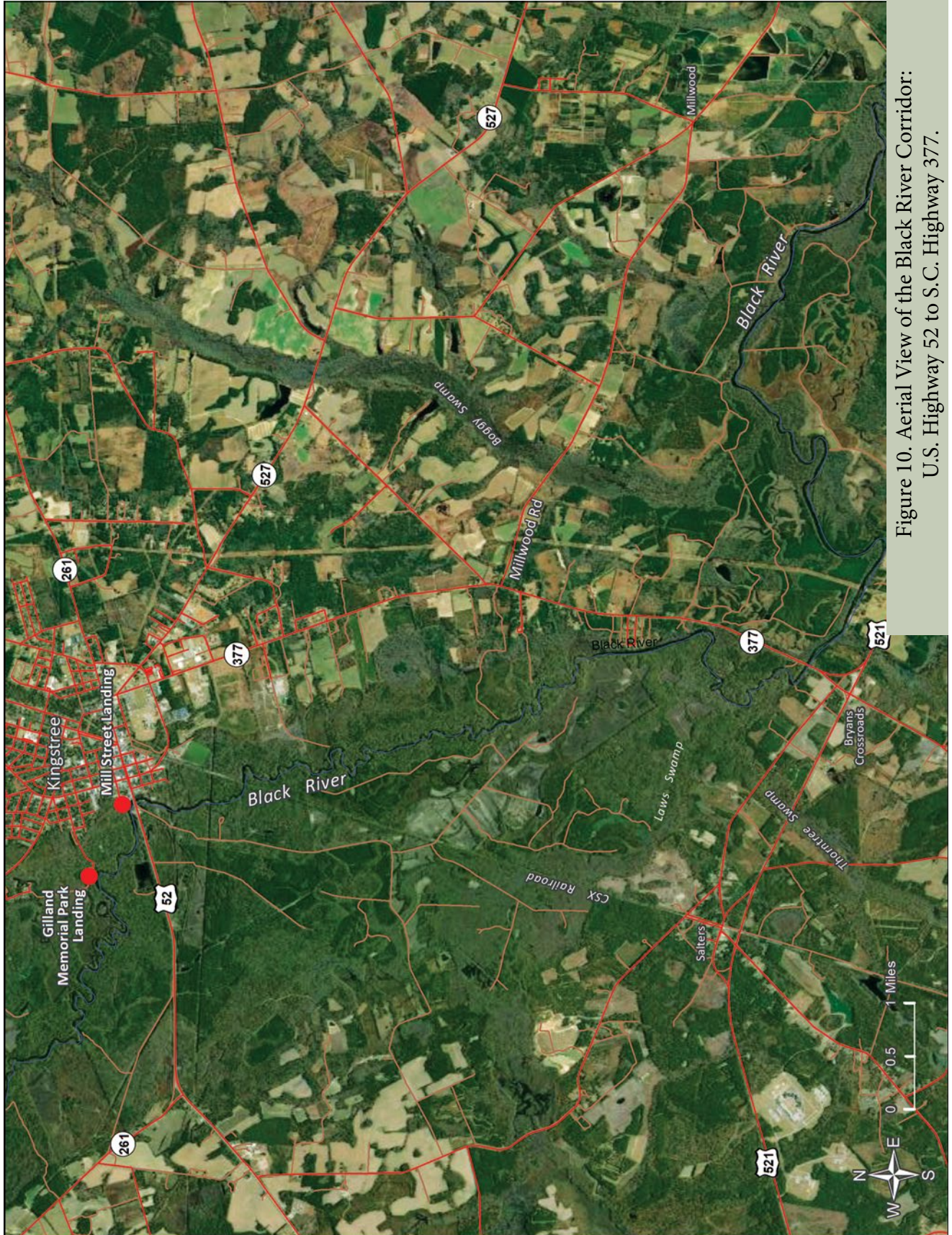


Figure 10. Aerial View of the Black River Corridor:
U.S. Highway 52 to S.C. Highway 377.

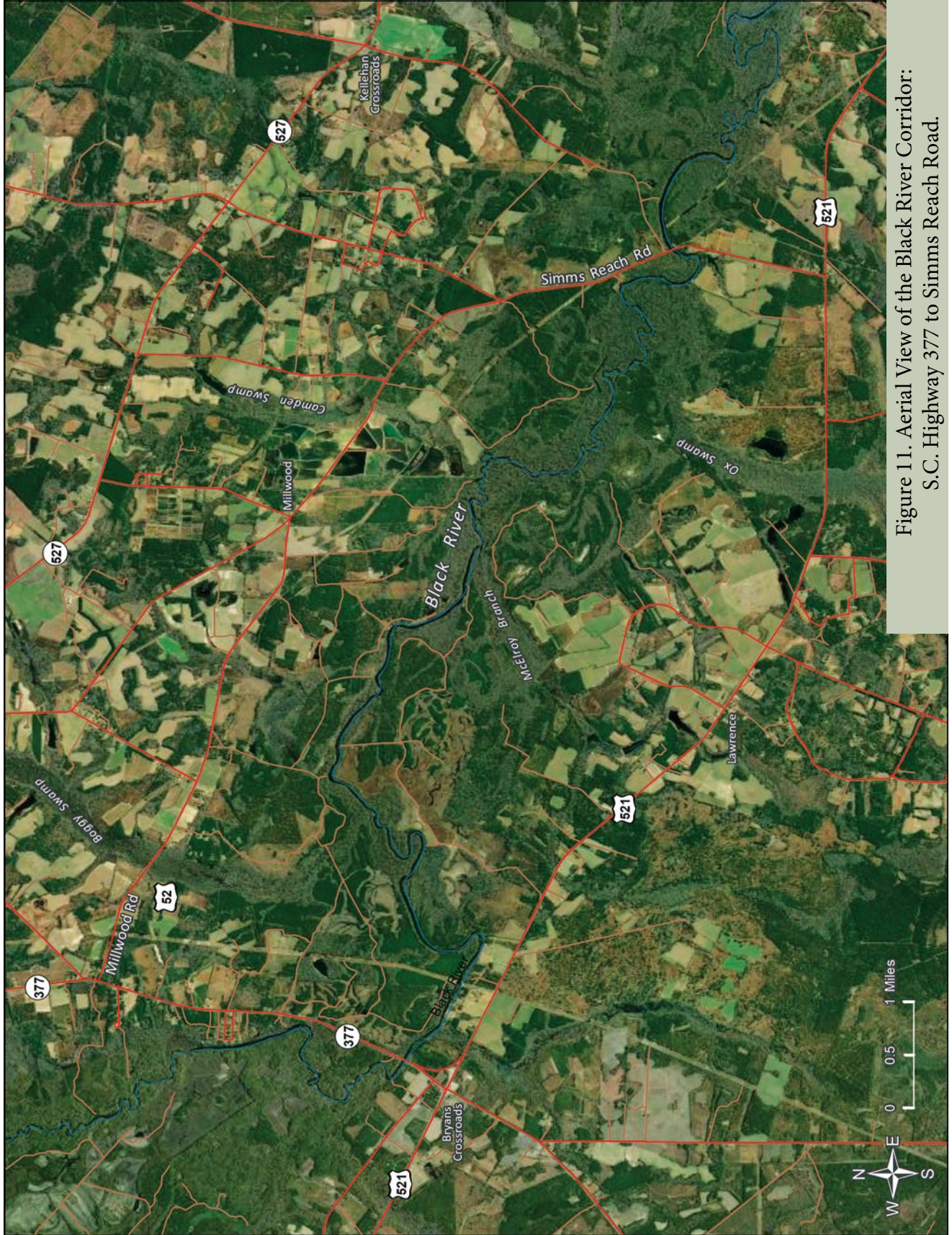


Figure 11. Aerial View of the Black River Corridor:
S.C. Highway 377 to Simms Reach Road.

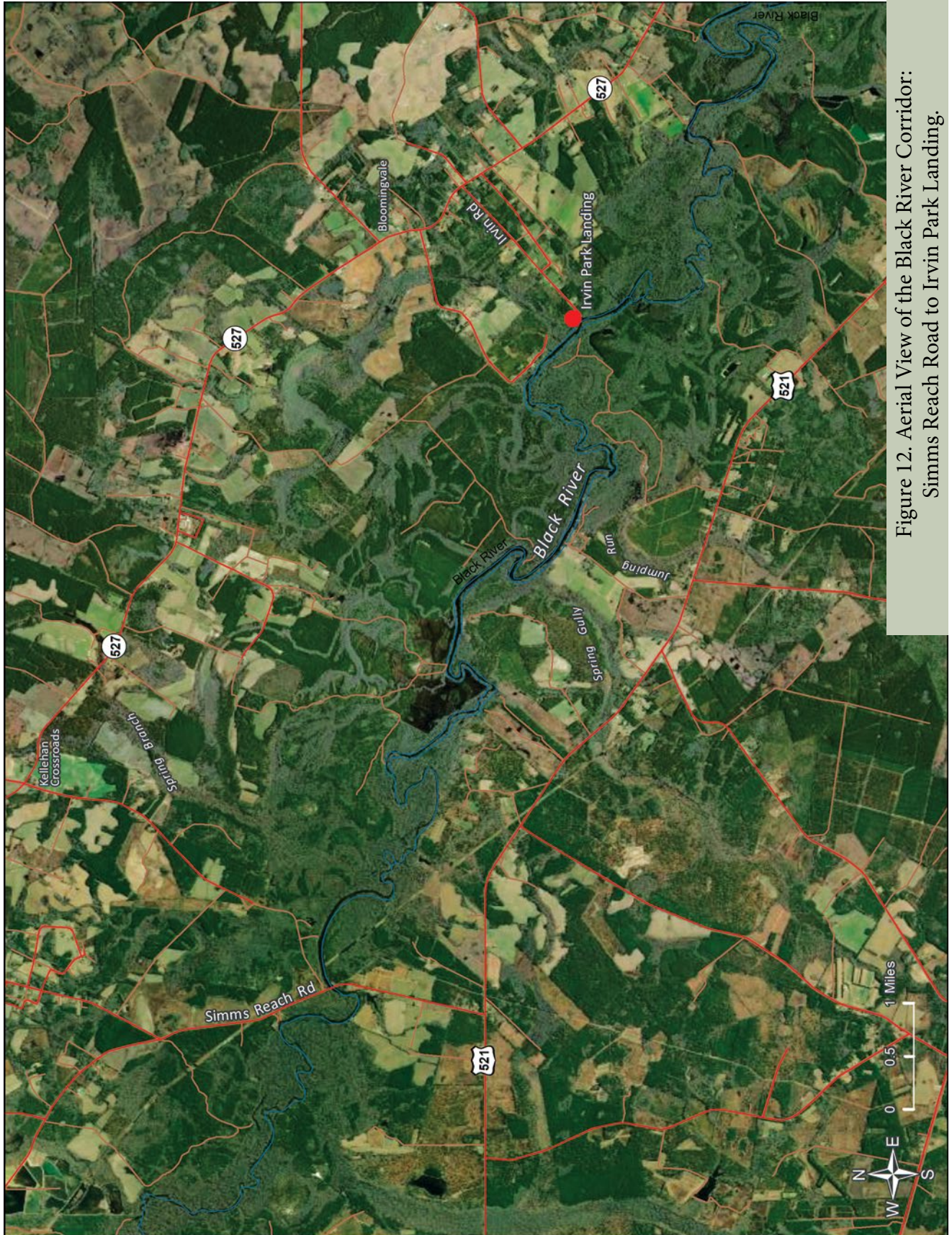


Figure 12. Aerial View of the Black River Corridor:
 Simms Reach Road to Irvin Park Landing.

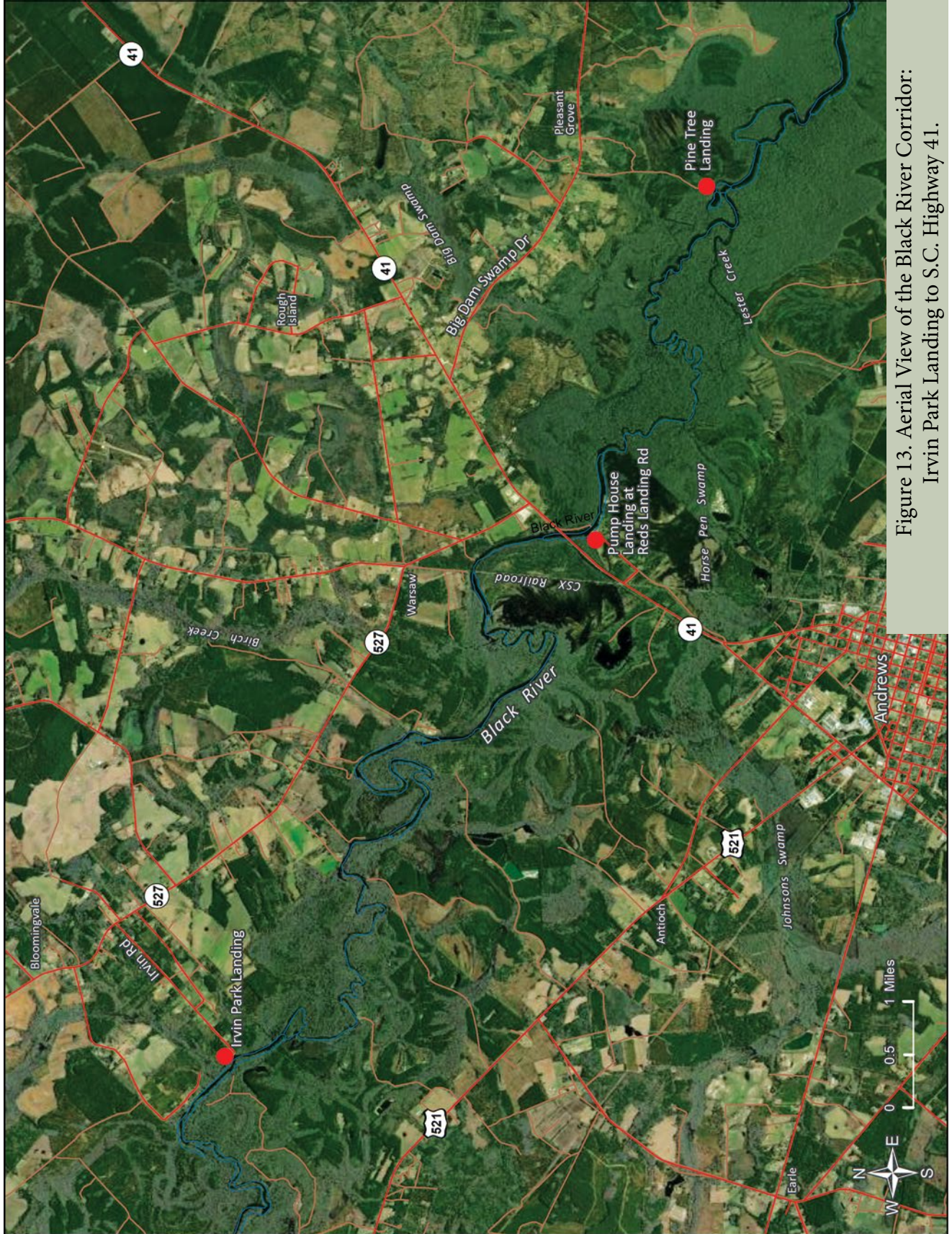


Figure 13. Aerial View of the Black River Corridor:
Irvin Park Landing to S.C. Highway 41.

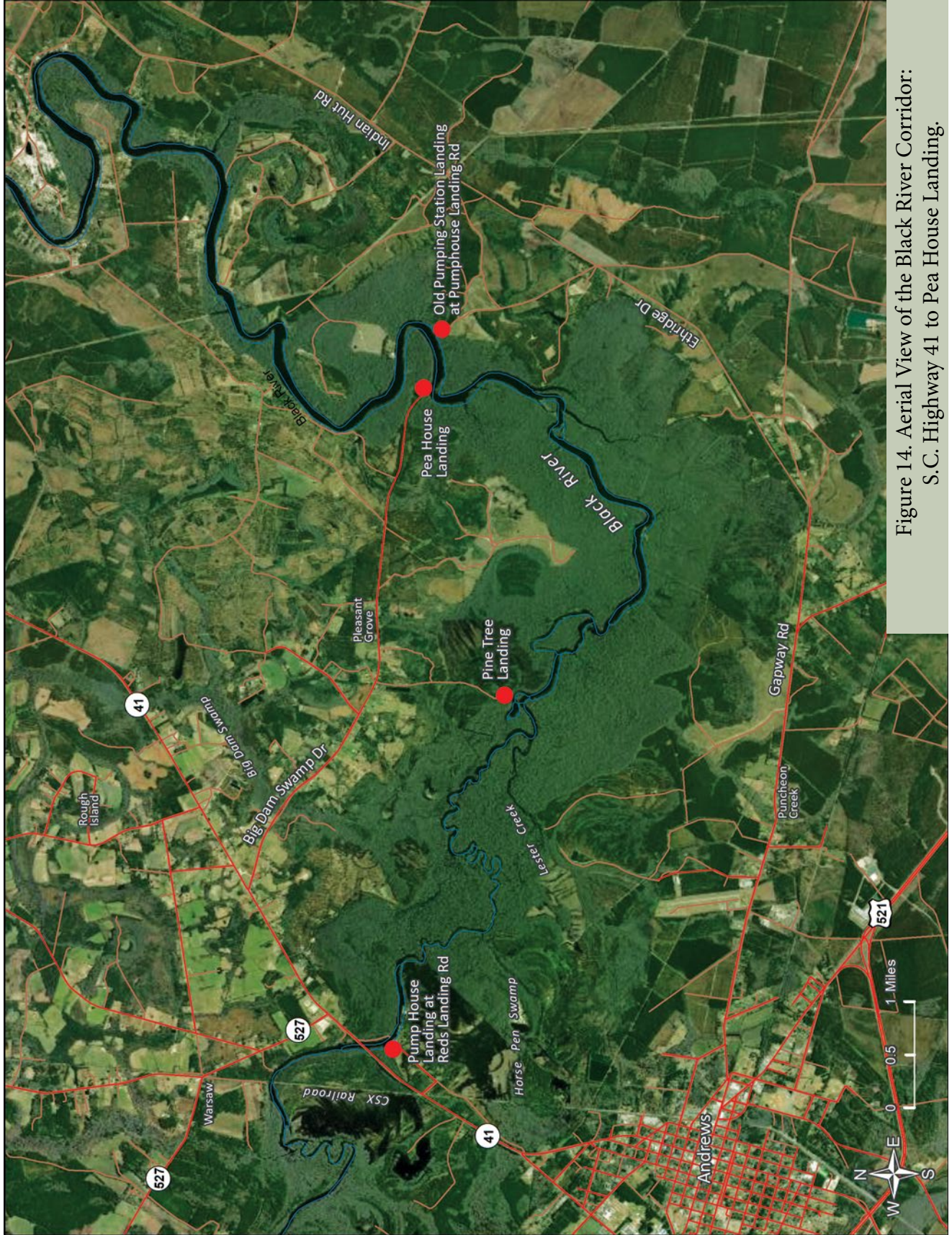


Figure 14. Aerial View of the Black River Corridor:
S.C. Highway 41 to Pea House Landing.

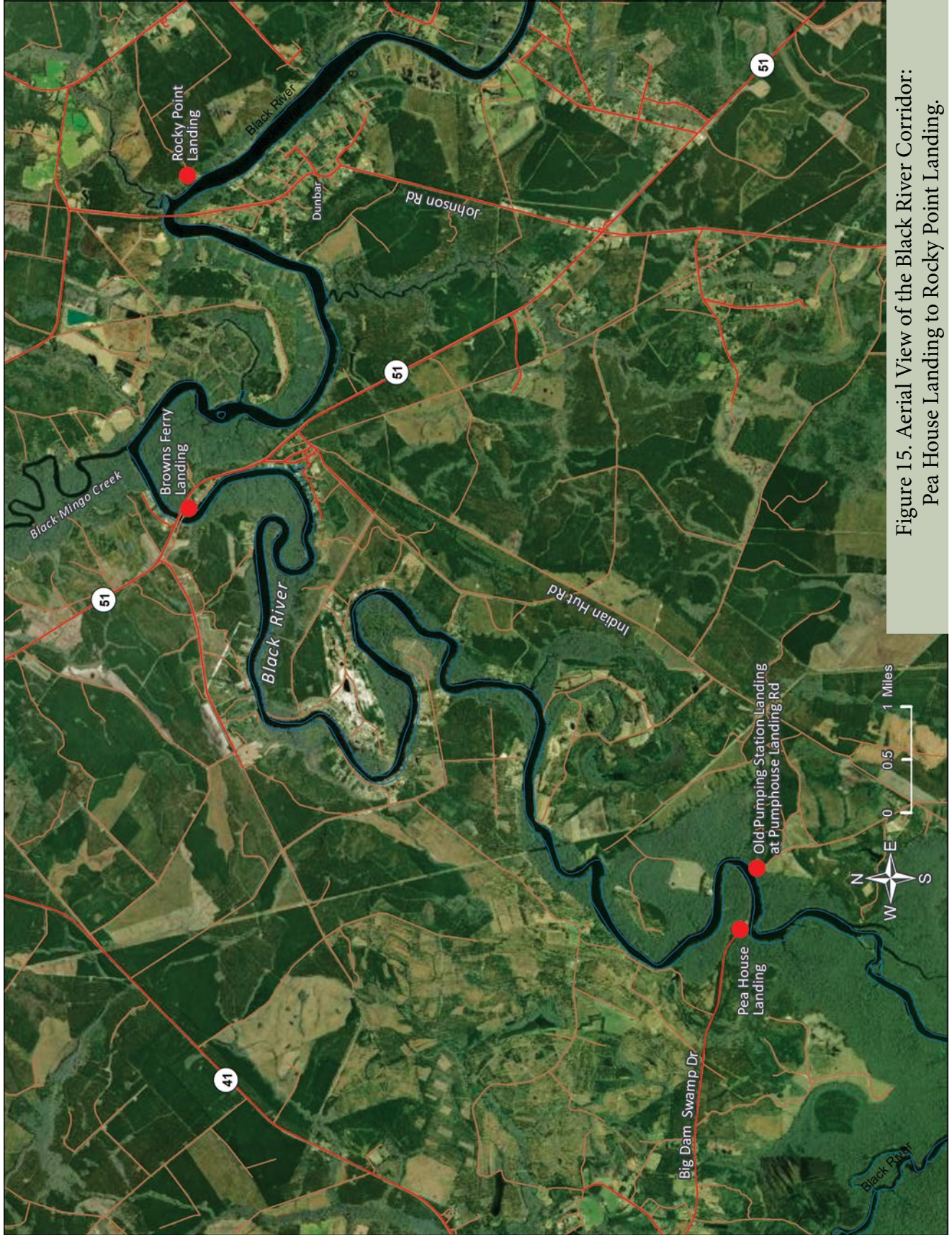


Figure 15. Aerial View of the Black River Corridor:
Pea House Landing to Rocky Point Landing.

Implementation

This management plan contains five management goals and numerous recommendations to address issues, concerns, and opportunities regarding the Black Scenic River corridor. The creation of this plan with its many objectives is an important accomplishment because it represents a consensus among a diversity of local citizens and landowners and reflects community values, concerns, and desires for the river.

The management plan serves as a guide for promoting good stewardship of the Black Scenic River. The challenge will be to put the plan into action and produce tangible results. Through implementation, the local community can take steps to achieve cleaner water in the river, litter-free landings; beautiful forests and wetlands along the natural shoreline; and exemplary development designs that respect and conserve the natural, rural character of the Black River and its watershed.

The Black Scenic River Advisory Council will advocate this management plan to the local communities and take actions to implement specific recommendations. Not all the recommendations can be implemented at once. Some recommendations will require a short-term effort, while others will be ongoing. Still others will require much time and effort including organizing and building partnerships and seeking funding. Individuals and organizations (landowners, river users, community interest groups, developers, or governmental entities), as well as any who agree this plan presents an appropriate way to manage the river may aid in the implementation of the plan.

Local citizens and organizations are encouraged to become involved with the advisory council to pursue the goals and objectives of this plan. The advisory council will continue to meet regularly in the Black River area and invites interested citizens to be informed of and involved in ongoing activities concerning stewardship of the Black Scenic River.

*Photos by Dana Beach (p. 63)
and Michaele Duke (p. 65)*



Recommendations for implementation are presented below to serve as guidelines for moving forward with advocacy, governmental coordination, funding, and educational efforts to accomplish the objectives of this management plan.

Recommendations:

- ◆ The advisory council will pursue the goals and recommendations of the management plan and will use the plan to inform and encourage other citizens, landowners, developers and leaders of the community to take specific actions for better stewardship of the natural and cultural resources of the scenic river corridor.
- ◆ The advisory council will seek to understand existing and proposed regulations, ordinances, codes, master plans, comprehensive plans, and transportation plans and promote the goals of this management plan to the counties and local planning committees.
- ◆ The advisory council will seek to review and provide comments on plans and permit applications for development projects that have potential impacts on the natural and cultural resources of the Black Scenic River corridor.
- ◆ The advisory council and partnering organizations will identify and assess sources of funding and incentives to facilitate the goals of the management plan. Funding may be necessary for programs, public education, and public relations. Incentives may be needed to encourage resource conservation and conservation designs for development among the river-bordering landowners. Relevant expertise will be sought and consulted to assist the council in understanding the sources of funds and grants and the process of providing incentives.
- ◆ Public education and information programs will be created by the advisory council to accomplish the following:
 - Communicate the vision captured in the management plan and build partnerships among landowners, developers, designers, and local governments to bring about the goals of conservation and compatible development in the river corridor.
 - Build partnerships with those who can provide assistance in conservation, development, and funding.
 - Identify successful models that demonstrate economic value in blending conservation goals with compatible natural resource development.
 - Engage, inform, and educate the public about the values of the Black Scenic River, the goals of the management plan, the facts leading to the creation of the management plan, and the role of the advisory council.
 - Build consensus and broad community support for the plan and the goals of good stewardship of the Black Scenic River.
 - Address community groups such as: scouts, schools, river users, churches, civic associations, business and industry, chambers of commerce, tourism associations, neighborhoods, governments, and elected officials.
 - Communicate the values of the Black Scenic River and the goals and recommendations of the management plan by providing brochures, river maps, group presentations (speakers bureau), news articles, field trips and tours, lesson plans, service projects like river sweeps, and signs or markers at points of access and sites of interest and importance.





Photo by Mac Stone

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Photos by Mac Stone (p.72) and Bill Marshall (p. 73)

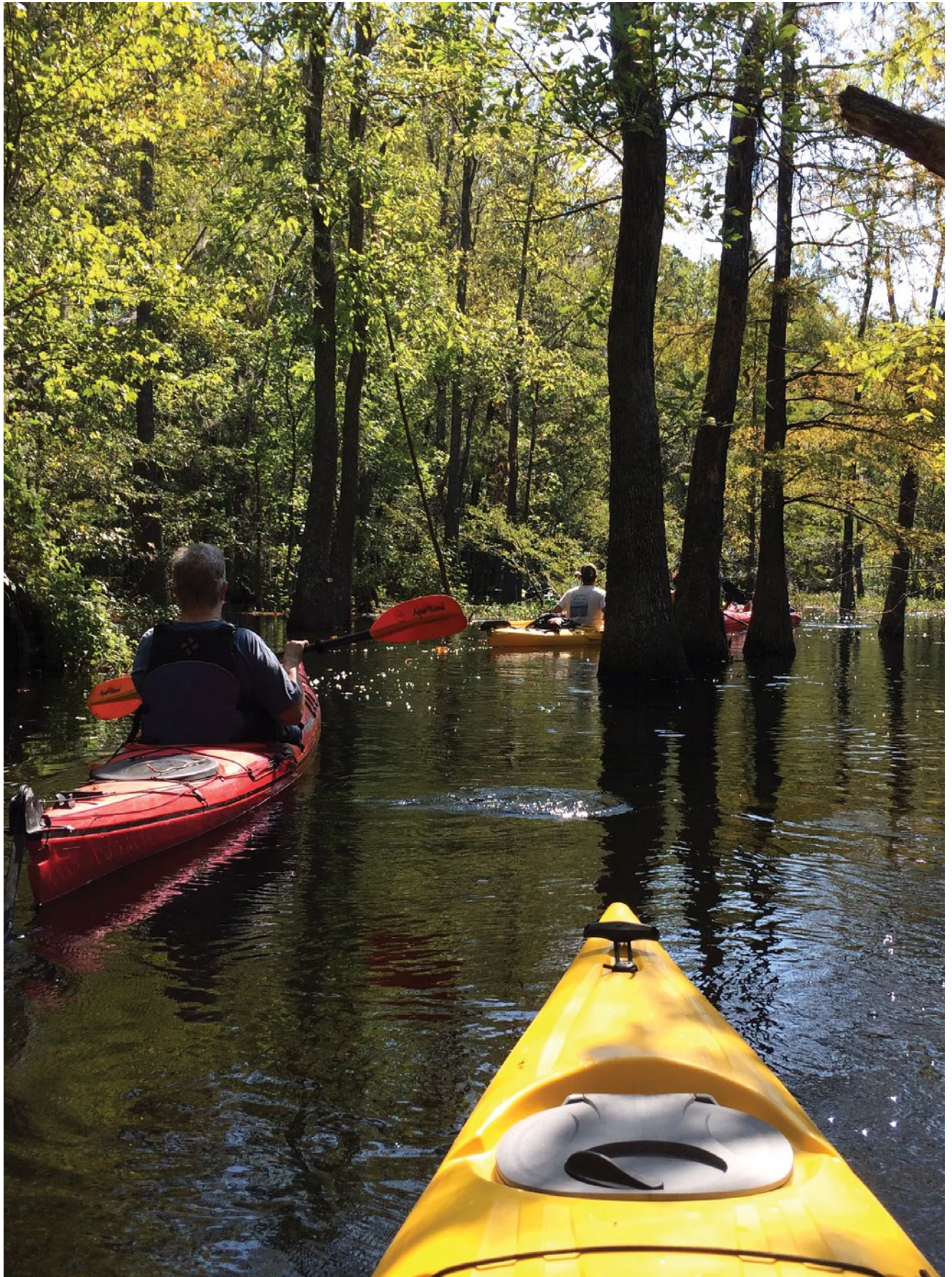





Photo by Dana Beach



Appendices

Appendix A:

Species Lists

Table A1. Fish of the Black River

The following table lists 67 native and exotic fish species found and expected in the Black River, including its side channels, backwaters, and larger tributaries (SCDNR, 2020c).

Common Name	Scientific Name
American Eel	<i>Anguilla rostrata</i>
American Shad	<i>Alosa sapidissima</i>
Atlantic Sturgeon	<i>Acipenser oxyrinchus</i>
Banded Pygmy Sunfish	<i>Elassoma zonatum</i>
Banded Sunfish	<i>Enneacanthus obesus</i>
Black Bullhead	<i>Ameiurus melas</i>
Black Crappie	<i>Pomoxis nigromaculatus</i>
Blackbanded Sunfish	<i>Enneacanthus chaetodon</i>
Blue Catfish	<i>Ictalurus furcatus</i>
Blueback Herring	<i>Alosa aestivalis</i>
Bluegill	<i>Lepomis macrochirus</i>
Bluespotted Sunfish	<i>Enneacanthus gloriosus</i>
Bowfin	<i>Amia calva</i>
Chain Pickerel	<i>Esox niger</i>
Channel Catfish	<i>Ictalurus punctatus</i>
Coastal Shiner	<i>Notropis petersoni</i>
Common Carp	<i>Cyprinus carpio</i>
Creek Chubsucker	<i>Erimyzon oblongus</i>
Dollar Sunfish	<i>Lepomis marginatus</i>
Dusky Shiner	<i>Notropis cummingsae</i>
Eastern Mosquitofish	<i>Gambusia holbrooki</i>
Eastern Mudminnow	<i>Umbra pygmaea</i>
Everglades Pygmy Sunfish	<i>Elassoma evergladei</i>
Flat Bullhead	<i>Ameiurus platycephalus</i>
Flathead Catfish	<i>Pylodictis olivaris</i>
Flier	<i>Centrarchus macropterus</i>
Gizzard Shad	<i>Dorosoma cepedianum</i>
Golden Shiner	<i>Notemigonus crysoleucas</i>

Common Name	Scientific Name
Golden Silverside	<i>Labidesthes vanhyningi</i>
Golden Topminnow	<i>Fundulus chrysotus</i>
Grass Carp	<i>Ctenopharyngodon idella</i>
Green Sunfish	<i>Lepomis cyanellus</i>
Hickory Shad	<i>Alosa mediocris</i>
Hogchoker	<i>Trinectes maculatus</i>
Hybrid Striped Bass	<i>Morone saxatilis x M. chrysops</i>
Ironcolor Shiner	<i>Notropis chalybaeus</i>
Lake Chubsucker	<i>Erimyzon sucetta</i>
Largemouth Bass	<i>Micropterus salmoides</i>
Least Killifish	<i>Heterandria formosa</i>
Lined Topminnow	<i>Fundulus lineolatus</i>
Longnose Gar	<i>Lepisosteus osseus</i>
Margined Madtom	<i>Noturus insignis</i>
Mud Sunfish	<i>Acantharchus pomotis</i>
Pirate Perch	<i>Aphredoderus sayanus</i>
Pumpkinseed	<i>Lepomis gibbosus</i>
Redbreast Sunfish	<i>Lepomis auritus</i>
Redear Sunfish	<i>Lepomis microlophus</i>
Redfin Pickerel	<i>Esox americanus</i>
Lowland Shiner	<i>Pteronotropis stonei</i>
Sawcheek Darter	<i>Etheostoma serrifer</i>
Shortnose Sturgeon	<i>Acipenser brevirostrum</i>
Snail Bullhead	<i>Ameiurus brunneus</i>
Southern Flounder	<i>Paralichthys lethostigma</i>
Spotfin Mojarra	<i>Diapterus plumieri</i>
Spotted Sucker	<i>Minytrema melanops</i>
Spotted Sunfish	<i>Lepomis punctatus</i>
Striped Bass	<i>Morone saxatilis</i>
Striped Mullet	<i>Mugil cephalus</i>
Swamp Darter	<i>Etheostoma fusiforme</i>
Swampfish	<i>Chologaster cornuta</i>
Tadpole Madtom	<i>Noturus gyrinus</i>
Taillight Shiner	<i>Notropis maculatus</i>
Tessellated Darter	<i>Etheostoma olmstedii</i>
Threadfin Shad	<i>Dorosoma petenense</i>
Warmouth	<i>Lepomis gulosus</i>
Yellow Bullhead	<i>Ameiurus natalis</i>
Yellow Perch	<i>Perca flavescens</i>

Table A2. Rare Plants of the Black River

The following table lists 16 rare plant species found in the Black River floodplain and lands immediately adjacent to it. These species are listed under the U.S. Endangered Species Act or are tracked by SCDNR as Critically Imperiled (S1), Imperiled (S2), or Rare (S3) (SCDNR, 2020d).

Scientific Name	Common Name	Global Rank	State Rank	Federal Status
<i>Cyperus subsquarrosus</i>	Smallflower Halfchaff	G5	S2	
<i>Epidendrum conopseum</i>	Green-fly Orchid	G4	S3	
<i>Fimbristylis vahlii</i>	Vahl's Fimbry	G5	S1	
<i>Galearis spectabilis</i>	Showy Orchis	G5	S3	
<i>Helianthium tenellum</i>	Mud-Babies	G5	S2	
<i>Ilex amelanchier</i>	Sarvis Holly	G4	S3	
<i>Isoetes hyemalis</i>	Wintergreen Quillwort	G2G3	S1	
<i>Listera australis</i>	Southern Twayblade	G4	S2	
<i>Macbridea caroliniana</i>	Carolina Birds-in-a-Nest	G2G3	S2	At-Risk
<i>Nuphar sagittifolia</i>	Narrowleaf Pondlily	G2	S2	
<i>Physostegia leptophylla</i>	Tidal Marsh Obedient-plant	G4?	S3	
<i>Orthochilus ecristatus</i>	Spiked Medusa	G2G3	S2	
<i>Rhynchospora decurrens</i>	Swamp-forest Beaksedge	G3G5	S2	
<i>Schwalbea americana</i>	Chaffseed	G2	S2	Endangered
<i>Sideroxylon reclinatum</i> ssp. <i>reclinatum</i>	Smooth Bumelia	G4G5TNR	S1	
<i>Tiedemannia canbyi</i>	Canby's Cowbane	G2	S2	Endangered

Table A3. Non-native, Invasive Plant Species at Black River

The following table lists the most problematic invasive plant species currently found in undisturbed habitats along Black River with classification of threat by the South Carolina Exotic Pest Plant Council (SCEPPC), and plants prohibited by the SCDNR Aquatic Nuisance Species Program (SCDNR, 2020d).

Scientific Name	Common Name	SCEPPC	SCDNR
<i>Ailanthus altissima</i>	Tree of Heaven	Severe Threat	
<i>Albizia julibrissin</i>	Mimosa	Significant Threat	
<i>Alternanthera philoxeroides</i>	Alligatorweed	-	Illegal
<i>Eichhornia crassipes</i>	Water-hyacinth	-	Illegal
<i>Elaeagnus pungens</i>	Autumn-olive	Severe Threat	
<i>Ligustrum sinense</i>	Chinese privet	Severe Threat	
<i>Lonicera japonica</i>	Japanese honeysuckle	Severe Threat	
<i>Melia azedarach</i>	Chinaberry	Severe Threat	
<i>Microstegium vimineum</i>	Japanese stilt-grass	Severe Threat	
<i>Pueraria montana var. lobata</i>	Kudzu	Severe Threat	
<i>Triadica sebifera</i>	Chinese Tallow Tree	Severe Threat	

Appendix B:

Guide to Best Management Practices for Riparian Lands

By South Carolina Department of Natural Resources - Scenic Rivers Program

Recognizing that activities occurring on the land, especially those adjacent to rivers, can have direct and immediate impacts on water quality, aquatic resources, and recreational uses of the state's rivers, the South Carolina Department of Natural Resources (SCDNR) Scenic Rivers Program encourages riparian landowners to practice wise land and water management to conserve the natural and scenic qualities of the rivers for themselves and their community.

Riparian landowners can practice good stewardship by adopting best management practices (BMPs) suited to their particular land uses. The recommended BMPs listed on the following pages are intended to serve as land-management guidelines for protecting and enhancing water quality, wildlife habitats, and the scenic character of state-designated scenic river corridors. The BMPs presented in this guide are merely recommendations; however, as noted in sections that follow, some activities addressed by this guide are regulated under existing local, state, and/or federal laws, and landowners are advised to be aware of the regulations and consult with the relevant governing agencies as additional information needs arise.

The Scenic Rivers Program has developed these BMPs to address several land uses including timber management, agriculture of various types, and residential and commercial development. Based on their land use objectives, a landowner may adopt a combination of BMPs to protect and enhance water quality, scenic values, and/or wildlife habitats in varying ways as different sections of land may be managed for different purposes.

The single-most important BMP for protection of river resources is to provide and protect riparian buffers. A riparian buffer is the land area adjoining a stream, lake or wetland characterized by a cover of naturally occurring vegetation consisting of trees, shrubs, grasses, and forbs. Buffers provide a continuous band of vegetated land along the water's edge. The recommended width of the buffer depends on the management goal, but larger buffers are always better at providing the functions that are valued by people, to include:

- ◆ Protecting water quality by filtering pollutants from runoff,
- ◆ Stabilizing stream banks and reducing channel erosion,
- ◆ Storing and slowing flood waters, thereby decreasing damage to property,
- ◆ Providing habitat cover and food sources for fish and wildlife,

- ◆ Improving aesthetics of stream corridors, which can increase property values, and
- ◆ Offering recreational and educational opportunities.

For protection of water quality, a minimum riparian buffer width of 50 to 100 feet (dependent on slope) on both sides of the stream is recommended. The greater the slope, the larger the riparian buffer needs to be to provide water quality protection.

To protect aesthetic/scenic values, it is recommended that the riparian buffer be extended to a minimum of 100 feet on both sides of the stream with the first 50 feet remaining undisturbed.

To conserve and enhance wildlife diversity, a riparian buffer measuring at least 100 to 300 feet on both sides of the stream is recommended. The wider the buffer, the greater the benefits will be for wildlife. Ideally, the riparian buffer will include the natural floodplain and adjacent bluff.

The SCDNR Scenic Rivers Program advocates a minimum riparian buffer of at least 100 feet on both sides of the stream to protect water quality, scenic values, and wildlife habitat.

Water Quality BMPs

The following sub-sections present best management practices for the protection of water quality. First, the topic of riparian buffers is addressed with the intent to inform readers that large amounts of technical information exist that can guide land managers in ways to utilize buffers to protect/improve water quality. Second, the BMPs for water quality are grouped by three general land use categories: forest management, agriculture, and residential/commercial development.

The BMPs presented here are important to the protection of water quality and are recommended for implementation by riparian landowners.

Riparian Buffers and Water Quality

Riparian buffers will protect water quality by reducing the amount of sediment, nutrients, and other contaminants that enter rivers and streams from rainfall runoff. Many studies have been conducted to demonstrate these benefits; studies also show that many factors affect the ability of the riparian buffer to remove pollutants from runoff. These factors include the hydrology (the way and rate water flows over and through the riparian area), soil structure, field slope, type and density of vegetation, and pollutant load from the adjoining land uses.

If a landowner wants an enhanced level of performance in a riparian buffer to protect water quality, they should seek further science-based guidance to consider design aspects of a buffer (e.g., greater width or vegetation alternatives) that will address site-specific factors, as mentioned above, which can affect the removal of pollutants. Additionally, it should be understood that while riparian buffers are important, they are not the sole solution to managing polluted runoff. In places where pollutant loads are high, slopes are steep, or erosion is severe, additional land-management actions will be needed upslope from the buffer in order for the riparian buffer to be effective (Klapproth and Johnson, 2009).

Additional land-management actions that support riparian buffer functions include the following considerations: 1) Manage land to reduce water runoff and increase infiltration. 2) Maintain/conservate vegetative cover as much as possible. 3) Avoid potentially polluting activities on areas most prone to generating significant runoff, such as slopes. 4) Minimize potentially polluting activities during times of year most prone to generating runoff, such as high-rainfall seasons. 5) In addition to providing riparian buffers, use a system of upland BMPs to reduce runoff and pollution loads to adjacent streams (Bentrup, 2008).

Landowners are encouraged to make use of licensed or certified professionals knowledgeable of local hydrology, soils, and vegetation to obtain site-specific recommendations for buffers and other BMPs.

Forest Management

At a minimum, forest management activities along scenic rivers should be conducted according to the South Carolina Best Management Practices for Forestry produced by the South Carolina Forestry Commission (SCFC, 1998). Additional information and guidance for the management of riparian forest buffers can be obtained from the U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) and USDA Forest Service.

The following are important examples of forestry BMPs for the protection of water quality:

- ◆ Land adjacent to perennial, intermittent, and ephemeral streams requires special attention during forestry operations. A riparian buffer, what foresters refer to as a “streamside management zone” (SMZ), should be identified and protected. At a minimum, the SMZ should be 40 to 80 feet in width on both sides of the stream, dependent on slope, as recommended in the South Carolina BMPs for Forestry. Clear-cuts should never extend to the bank of perennial or intermittent streams.
- ◆ Larger SMZs, a minimum of 100 feet in width with the first 50 feet remaining undisturbed, are recommended on scenic rivers to enhance the protection of water quality, as well as aesthetics and wildlife habitat. Forest management on lands adjacent to scenic rivers should be designed to promote wildlife habitat and diversity; see Wildlife Habitat BMPs on the following pages.
- ◆ Forestry operations should be timed to avoid wet weather and wet soil conditions to prevent excessive ground disturbance, causing ruts and increasing erosion potential.
- ◆ Forest roads should be planned and designed to minimize the amount of sediment leaving the site and entering streams. Road construction should avoid sensitive areas such as the SMZs and wetlands. For guidance on planning, construction, stabilization, and maintenance of forest roads, refer to the South Carolina BMPs for Forestry or contact the S.C. Forestry Commission BMP Forester for your area.
- ◆ Broadcast application of herbicides should be avoided within the primary SMZ. If vegetation control is needed in riparian areas, then consider manual, targeted herbicide applications (e.g. backpack foliar spray, hack and squirt, or basal bark application).
 - Pesticide application activities are regulated and the landowner and/or pesticide applicator should be aware of the regulations, certification, and licensing requirements which are administered by Clemson’s Department of Pesticide Regulation in partnership with the S.C. Department of Agriculture and Clemson Extension Service (S.C. Regulation 27-1070 through 27-1092).

Agriculture

Agricultural activities along scenic rivers should be conducted according to BMPs or Conservation Practice Standards published by the NRCS. In addition, many agricultural activities, animal operations in particular, are subject to state regulations; therefore, farmers are advised to consult with the South Carolina Department of Health and Environmental Control (SCDHEC), the NRCS, or Clemson Extension Service for case-by-case guidance.

The following are important examples of agricultural BMPs for the protection of water quality:

Row Crop Production

- ◆ A minimum 50-foot riparian buffer should be established and maintained along both

sides of all streams. The buffer should be characterized by native vegetation, typically trees, shrubs, grasses, and forbs. Farm fields should never extend to the bank of a stream or drainage ditch. Instead, a vegetated buffer is needed to prevent streambank erosion and excess sedimentation from entering the stream.

- ◆ Larger riparian buffers, a minimum of 100 feet in width, are recommended on scenic rivers to enhance the protection of water quality, as well as aesthetics and wildlife habitat.
- ◆ To help keep agricultural chemicals, such as fertilizers and pesticides, out of streams, a no-till vegetative-filter strip should be established along all drainage ditches; a minimum width of 15 feet on both sides of the ditch is needed and a wider filter strip, 30 feet, is recommended.
- ◆ New drainage ditches should not be constructed in the riparian corridor of scenic rivers. When maintaining existing ditches, care should be taken to minimize sediment loading to streams.
- ◆ Pesticide application activities are regulated and the landowner and/or pesticide applicator should be aware of the regulations, certification, and licensing requirements in South Carolina, which are administered by Clemson's Department of Pesticide Regulation in partnership with the S.C. Department of Agriculture and Clemson Extension Service (S.C. Regulation 27-1070 through 27-1092). Pesticide use considerations include the following:
 - Always read and follow the label directions for use, mixing, application, storage, and disposal of the pesticide.
 - Only apply pesticides when the economic benefit of spraying exceeds the cost of spraying.
 - Avoid applications when rainfall runoff losses are likely, such as right before a predicted rain event.
 - Consider the toxicity, runoff potential, and leaching potential when choosing the appropriate and most efficient pesticide for the target pest.
 - Pesticide containers should always be triple rinsed in upland areas and disposed of properly to prevent accidental contamination of chemicals to nearby waterways.
 - Aerial spraying of pesticides should not be conducted within 100 feet of a scenic river or its tributaries and aerial spraying should not be conducted under any wind condition blowing towards streams and wetlands or other sensitive areas.
- ◆ Minimize erosion; keep soil on the field. Establish cover crops that will help reduce water runoff and erosion and enrich the soil with organic matter.
 - Practice conservation tillage, an approach to growing crops that reduces tillage and soil disturbance, and retains plant residue on the soil surface. Conservation tillage reduces runoff and soil loss. Traditional plowing and tilling disturbs the soil, leaving it unprotected, allowing more erosion to occur.
- ◆ Control water runoff and sedimentation from fields. Filter, trap, or settle sediment before it reaches a stream by using control measures such as vegetated filter strips, field borders, sediment retention ponds, and terraces.
- ◆ Highly erodible lands, such as steep-sloped areas, should be removed from crop production.
- ◆ Nutrient management plans help a farmer know how much and when fertilizers should be used on crops. With the aid of the NRCS and/or Clemson Extension Service personnel, farmers should develop and implement nutrient management plans to minimize fertilizer costs and reduce nutrient runoff into local waterways.

Livestock/Poultry Production:

- ◆ Standards for the permitting of Agricultural Animal Facilities are found in S.C. Regulation 61-43. These regulations establish requirements on the growing or confinement of animals, processing of animal manure and other animal by-products, and land application of animal manure and other animal by-products. Operators of agricultural animal facilities should understand and adhere to these regulations, which are administered by SCDHEC.
 - Regulation 61-43 specifies many different setbacks/separation requirements. The setbacks and separations from streams range from 100 to 3,960 feet and are based on the size and type of animal facility being considered as well as the character of the affected stream based on flow regime (e.g. perennial, ephemeral, and intermittent) and special stream designations (e.g. Outstanding Resource Waters or Trout Waters as classified by SCDHEC).
- ◆ All animal facilities should be located outside the 100-year floodplain and should not be located within 100 feet of perennial, intermittent, or ephemeral streams. A greater separation, more than 100 feet from a stream (possibly as much as 3,960 feet), may be required by the regulations depending on the facility and stream type.
- ◆ Animal waste treatment lagoons/storage ponds should not be located within 100 feet of drainage ditches.
- ◆ Waste from confined animal facilities should be disposed of in such a manner to prevent contamination of both surface water and ground water. Animal waste spray-fields should not be located within 150 feet of perennial streams, adjacent wetlands, or drainage ditches.
- ◆ Pastured or free-roaming animals should not be allowed uncontrolled access to streams

or adjacent wetlands. The animals should be fenced out at least 50 feet away from streams and wetlands to prevent destruction of the streambank and riparian buffer vegetation and to prevent contamination of the water from pollutants associated with fecal waste.

Residential/Commercial Development

Many development activities are subject to state and/or county regulations affecting erosion and sediment controls (under S.C. Regulation 72-300 through 72-316) and local building standards. Developers should consult with SCDHEC and/or city and county building officials for case-by-case guidance.

At a minimum, it is recommended that all residential and commercial development activities near the river be conducted outside the 100-year floodplain and in accordance with the best management practices to control erosion, sediment, and stormwater runoff as provided by SCDHEC in their BMP handbook (SCDHEC, 2005). The recommendations in this section for residential and commercial development are intended to apply generally to any land-development and construction activities that can affect streams and riparian areas.

The following are important examples of BMPs for the protection of water quality:

- ◆ A minimum 50- to 100-foot riparian buffer should be established and maintained along both sides of the stream. Native vegetation, typically trees, shrubs, grasses, and forbs, should characterize the buffer. Any development within buffer areas should be avoided. Where possible, the Scenic Rivers Program advocates a more extensive buffer, a minimum of 100 feet, on the stream to allow for additional protection of water quality and preservation of other important values such as aesthetics and wildlife habitat.
- ◆ New buildings for residential or commercial purposes should be located outside the

100-year floodplain and set back at least 100 feet from the riverbank. If a new building must be sited within the Federal Emergency Management Agency (FEMA)-regulated floodplain or floodway then additional permits with specific building-design standards (e.g., elevation and setbacks) will be required by the local manager of the National Flood Insurance Program. County officials can be contacted for building requirements associated with the National Flood Insurance Program.

- ◆ When planning a site for development the following should be incorporated to reduce erosion and polluted runoff:
 - Minimize disturbance of natural ground-cover; set aside more area into naturally vegetated open/undeveloped space.
 - Cluster or concentrate the development away from sensitive areas such as streams, wetlands, and wooded areas, which provide connectivity of habitats or refuge for wildlife.
 - Reduce the area of impervious surfaces, such as pavement and buildings. Keep as much area in naturally vegetated open space as possible. Use pervious (porous) surface material where possible, such as gravel instead of asphalt, for driveways and parking lots.
 - Incorporate the use of grass swales instead of curbs and gutters.
 - Reduce the amount of area devoted to lawns. Establish lawns at least 50 feet from streams and conserve a riparian buffer consisting of trees, shrubs, grasses, and forbs.
- ◆ Septic tank and drain systems should be properly designed and installed by a qualified contractor in suitable soils. Requirements for the design, construction, installation, operation, and maintenance of septic systems (onsite wastewater systems) are specified in S.C. Regulation 61-56. Developers should consult with SCDHEC for case-by-case guidance. Please note that no part of a septic tank or drain system may be located within 75 feet of a stream.
- ◆ Existing septic tanks for most homes will usually require maintenance cleaning every three to five years. Pumping is needed when solids fill from one-third to one-half of the tank. The only way to know when this occurs is to have your tank inspected. A septic tank service contractor will recommend pumping by a licensed septic tank pumper whenever:
 - 1) the bottom of the scum (grease) layer is within 6 inches of the bottom of the outlet tee, or
 - 2) the top of the sludge layer is within 12 inches of the outlet tee.
- ◆ Along roads and right-of-ways, culverts should be adequately sized, positioned, and installed to properly manage the main-channel flow of streams as well as flood flows from the upstream watershed. The area around culverts should be stabilized.
- ◆ The handling and disposal of chemicals, such as pesticides, should be avoided within 100 feet of the river and its tributaries.
- ◆ Existing homeowners and businesses are advised to consider how they may be causing water pollution and identify actions to reduce their inputs to pollution. Information from Clemson Cooperative Extension and SCDHEC can assist with this evaluation and the following are important examples to consider:
 - Apply lawn and garden chemicals sparingly or not at all; read and follow directions for applying pesticides and fertilizers.
 - Manage exposed ground surfaces to control soil erosion and stop sediment runoff to streams.
 - Maintain proper septic tank system function with inspections and pump-outs every 3-5 years (see more about septic tank systems, above).
 - Cleanup pet wastes, litter, and debris from yards, parking lots, streets, and

storm-drain systems as these typically flow directly into streams.

- Properly dispose of used oil, antifreeze, paints, and other household chemicals at recycling centers or service stations.
- Repair automobile leaks and cleanup spilled brake fluid, oil, grease, and anti-freeze. Do not wash spills into streets, as these will drain to streams.
- Establish and maintain riparian buffers of native vegetation along all streams and lakes (see more about riparian buffers, above).

Scenic Quality BMPs

The natural conditions of a river corridor, its landforms and vegetation, are the basis of the scenic qualities that enhance the recreational value of a river and increase adjacent private property values. The land use and development activities of riparian landowners have a major effect on the natural and scenic qualities of a river corridor.

The following BMPs are important to the protection of scenic quality and aesthetic values in scenic river corridors and are recommended for implementation by riparian landowners.

- ◆ For the protection of scenic and aesthetic values, a minimum 100-foot riparian buffer is recommended along both sides of the stream to promote a natural visual environment within the river corridor. The buffer should be characterized by native vegetation, typically trees, shrubs, grasses, and forbs.
- ◆ If creating a view through a riparian buffer is desired, then openings or thinning in the riparian buffer should be established by selectively thinning underbrush, shrubs, and low-hanging limbs using hand tools. Cutting and felling trees should be avoided when attempting to create views, and such view corridors should be limited in width (e.g. the lesser of either 75 feet or one third of the lot width).

- ◆ All new structures/buildings and related site development should be designed to minimize visual impacts on views from the river and surrounding lands. Structures should be set back, away from the riverbank. A setback distance of least 100 feet is recommended to conserve the natural, scenic qualities of the river corridor.
- ◆ The exterior design, color, and height of buildings and other structures should be compatible with, and unobtrusive to, the scenic, natural, and cultural qualities of the river corridor.
- ◆ Avoid using riverfront areas as a storage yard. Keep trailers, campers, vehicles, equipment, storage buildings, and discarded items/junk at least 100 feet away from the riverbank.
- ◆ Docks, landings, and bulkheads require state and federal permits to be constructed in rivers. Docks and piers proposed within a designated state scenic river should be designed to avoid and minimize negative impacts to water quality, scenic values, wildlife habitat, and public recreational uses of the river.
 - Docks and piers in scenic rivers should be minimal in size and should not include any covered or enclosed structures.
 - To reduce the number of dock structures and related visual impacts to the river, plan and design docks to be shared by multiple property owners or provide community docks to provide access for the residents of a riverside community.
- ◆ To stabilize and restore eroded stream banks, avoid the use of riprap, concrete rubble, or bulkhead walls; instead, consider using techniques of live planting and bioengineering with plants and woody materials with minimal use of riprap and no walls. Clemson Extension Service provides detailed information about designing and maintaining vegetated shorelines to stop erosion, protect water quality, enhance wildlife habitat, and beautify waterfronts.

- ◆ Structures for utilities, such as communication towers, transmission lines, and gas lines should be built in ways that minimize visual impacts to the scenic river. The collocation of equipment for multiple users on existing and new towers or corridors is recommended. Wherever possible, utility structures should be screened from the scenic river by topographical features. Where this is not possible, the structure height and design should be such to minimize visual impact.
- ◆ Signage should be limited and designed to be unobtrusive and blend with the surroundings. Placement of commercial signs within the viewshed of scenic rivers should be avoided.
- ◆ Fences or barriers should not visually or physically obstruct natural or aesthetic features.
- ◆ Restore over-used or abused areas (e.g., areas denuded of vegetation with exposed, eroding soils) within the scenic river corridor. Landscape and re-vegetate these areas, as well as areas where the riparian buffer is thin. Control access and specific uses that may be causing the degradation (e.g., roaming livestock, vehicle access, random foot trails).
- ◆ To conserve and enhance wildlife diversity, landowners are encouraged to maintain riparian habitat corridors in naturally occurring vegetation along streams. For the protection of wildlife values, a vegetated riparian buffer measuring at least 100 to 300 feet on both sides of the stream channel is recommended; the wider the riparian buffer, the greater the benefits for wildlife. Native vegetation, typically trees, shrubs, grasses, and forbs, should characterize the buffer.
- ◆ Ideally, the riparian buffer will include the natural floodplain and adjacent bluff. Bluffs provide important transitional habitats from floodplains to upland areas, which may be critical to animals during floods. Additionally, bluffs can provide rare habitats for sensitive species of plants and animals and should be managed to protect these natural habitat values.
- ◆ Timber management can occur within the riparian habitat corridors, but should be designed to promote wildlife habitat and diversity and protect water quality. For example:

- Maintain the mixed or hardwood forest stands and other naturally occurring habitats of the river corridor and avoid converting to short rotation monoculture forest stands. Maintain stands of trees in a variety of size classes and ages.
- Leave groups of mature nut- and fruit-bearing trees, such as oak, hickory, and dogwood, to provide food for wildlife.
- Leave snags, or non-hazardous dead trees, and old trees that provide hollow dens and cavities for wildlife.
- Use prescribed burning to remove thick undergrowth and promote the growth of valuable wildlife food, such as legumes and hardwood sprouts, and perpetuate fire-dependent species.

Wildlife Habitat BMPs

Riparian habitats are ecologically diverse and productive places. When managed to conserve natural conditions, riparian habitats can support a broad range of plants and animals. Riparian areas provide an essential transitional habitat for semi-aquatic species such as salamander, frog, turtle, mink, beaver, and otter. Additionally, there are many species that use riparian buffers as a travel corridor. Many water-dependent birds, such as heron, kingfisher, eagle, and osprey, rely on forested riparian areas for both resting and nesting habitat.

The following are examples of BMPs recommended to riparian landowners for the protection and enhancement of wildlife diversity in river corridors.

- Provide wildlife travel corridors to connect tree stands that are separated by clearings.
- Provide for the specific habitat needs of sensitive species located in the area.
- Bluffs provide important transitional habitats from wetlands/floodplains to uplands, they often support sensitive species of plants and animals and should be managed to protect their habitat values.
- ◆ Landowners with forested or woodland lots in the river corridor can enhance wildlife diversity on their property by maintaining an understory of native shrubs and herbaceous plants, a multi-layered tree canopy with diverse tree sizes, and some standing dead snags and fallen trees.
- ◆ Maintain large, contiguous blocks of natural habitats and avoid habitat fragmentation that can be caused by permanent land clearing. Enhance the connections between existing natural habitat blocks, particularly to those that are isolated, by establishing forest stands or vegetated habitat corridors.
- ◆ Fences or barriers that create a hindrance to the movement of wildlife should not be constructed in the riparian corridor, except those that are pertinent to protecting the riparian buffer or stream from livestock.
- ◆ The use of recreational vehicles in river corridors should be controlled and minimized to avoid degradation of riparian buffers caused by the destruction of vegetation, erosion of soil, and disturbance of wildlife.
- ◆ To stabilize and restore habitat on eroded streambanks, avoid the use of riprap, concrete rubble, or bulkhead walls; instead, use techniques of live planting and bioengineering with plants and woody materials with minimal use of riprap and no walls. Clemson Extension Service provides detailed information about designing and maintaining vegetated shorelines to stop erosion, protect water quality, enhance wildlife habitat, and beautify waterfronts.
- ◆ Exotic (non-native) invasive plant species pose a significant threat to wildlife habitats in South Carolina because they displace native plant communities. Some invasive plant species will alter entire landscapes within the span of one to three growing seasons; many will invade and spread along river corridors. Landowners need to be aware of exotic invasive species and take steps to control and/or eradicate these plants to prevent their further spread.
 - Information to identify and control exotic invasive plant species can be obtained from the South Carolina Exotic Pest Plant Council, Clemson Extension Service, South Carolina Native Plant Society, and USDA Invasive Species Information Center.



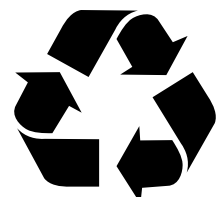
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