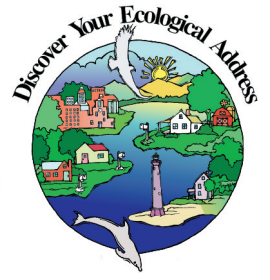
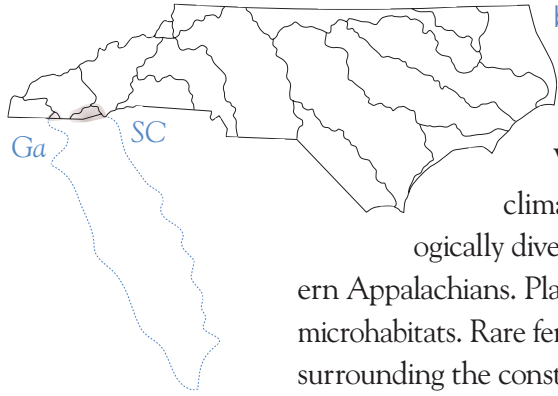


# SAVANNAH RIVER BASIN



Numerous and spectacular waterfalls give the state's smallest river basin a gigantic presence. In the Savannah River Basin, wilderness abounds and diversity astounds. The upper basin receives the highest amount of rainfall in the eastern United States—



between 80 and 100 inches per year. This moisture-rich environment feeds rivers that fall and plunge through rock scarps.

With varied topography and a relatively warm climate, this basin contains some of the most ecologically diverse habitats in North Carolina and the Southern Appalachians. Plants more typical of the tropics thrive in unique microhabitats. Rare ferns and mosses live in temperate mini-rainforests surrounding the constant spray of waterfalls.

The Savannah River Basin is the only river basin in the state that contains no part of the river for which it is named. The major rivers in the

basin—the Chattooga, Horsepasture, Toxaway, Whitewater and Thompson—are the source waters for tributaries of the Savannah River that flow through South Carolina and Georgia (the Savannah River empties into the Atlantic Ocean at Savannah, Ga.). Owing to rugged scenery, the Chattooga River (9.7 miles in North Carolina) and a 4.5-mile segment of the Horsepasture River have been designated as National Wild and Scenic Rivers. The same segment of the Horsepasture is also a State Natural and Scenic River. The Horsepasture's

## profile:

Total miles of streams and rivers: 198

Municipalities within basin: 1

Counties within basin: 4

Size: 171 square miles

Population: 5,563 (2010 U.S. Census)

KEVIN ADAMS

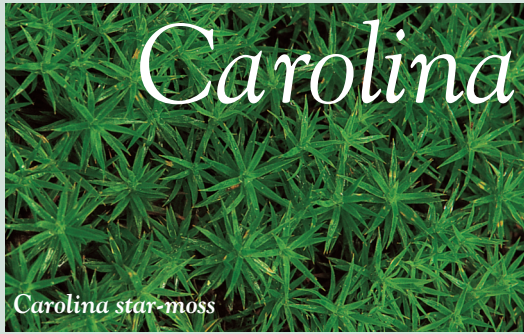


Whitewater Falls



Hiker on Horsepasture River

BILL LEA



Carolina star-moss  
CHARLES BRASWELL JR.



Pringle's moss  
BILL LEA

# Carolina Star-moss

Most plants cannot survive in the turbulent environment that waterfalls create. However, a few rare ferns and mosses find the wild, moist habitat to their liking. The Carolina star-moss, which grows in dark-green rosettes, clings to spray cliffs in the river basin. It is known outside the Southern Appalachians only in the Dominican Republic. Similarly, Pringle's moss, which attaches to rocks under running water, is found elsewhere only in Mexico. Scientists aren't sure how such species exist so far from the tropics. Some suggest that spores were blown from afar. Others theorize that the plants may be remnants from the continent's warmer periods tens of thousands of years ago.



green salamander  
WAYNE VAN DEVENDER

special designations effectively blocked a hydroelectric power plant proposed on the river in the 1980s. The Whitewater River lays claim to the 411-foot Whitewater Falls, the tallest and most voluminous waterfall east of the Rockies. The basin also contains several manmade lakes, the largest of which is a popular resort, Lake Toxaway.

More than half the basin's land lies in federal ownership, most within the Nantahala National Forest. Gorges State Park spans 7,100 acres of the Toxaway and Horsepasture river gorges. With its diverse mix of rocky outcrops, high-elevation forests, streams and waterfalls, this ecologically rich region has been deemed of national ecological significance by the state's Natural Heritage Program. Gorges State Park and the neighboring Toxaway River Gamelands support 32 rare species of plants and animals, some of which are found few other places in the world.

The basin has three rare endemic fish species, including the Turquoise Darter, Blackbanded Darter and the Rosyface Chub. Endemic means a species is restricted to only one place or region in the world. These three fish have been found only within the Horsepasture and Toxaway River systems in North Carolina. The forests of the basin's large, rocky ravines contain a large population of the Swainson's warbler, a bird rarely found in North Carolina's mountains. One of the largest populations of the green salamander in the state is found here too; the species is state-listed as an endangered species. This secretive salamander lives in the damp, shaded crevices of cliff faces. Other rare species known to inhabit the watershed include the state endangered peregrine falcon and the Rafinesque's big-eared bat (mountain subspecies) which is listed as threatened in North Carolina.

CHARLES BRASWELL JR.



Swimmers on the Horsepasture River

Waterfalls of the Savannah River Basin come in all shapes and sizes. The community of Lake Toxaway has more waterfalls within a 15-mile radius than any other spot in North Carolina. Besides Whitewater Falls, notable waterfalls in the basin include Drift Falls, a popular, but dangerous, swimming area; Turtleback Falls, a wide, curved rock face over which water tumbles into another hazardous swimming hole known as Chug Hole; and Rainbow Falls, whose drenching mists create frequent rainbows.

A significant environmental threat in the Savannah River Basin is the destruction of eastern hemlock forests by a non-native pest, the hemlock woolly adelgid. Like an aphid, it sucks fluids from the tree, killing it. The loss of the tree canopy alters these moist, cool environments, which shelter unique plant and animal species suited to mountain coves. Without shade, water temperatures in forested streams increase, stressing trout and other cold-water species. The death of tree root systems may also lead to erosion of streambanks and accumulation of sediment in the water. In 2003, the Chattooga Conservancy led a collaborative effort to establish a laboratory to raise and release predatory beetles that feed exclusively on the adelgids. About \$100,000 of the funds came from private donations by residents in surrounding communities. The lab has released more than a half-million beetles on U.S. Forest Service land in the Chattooga River subbasin in North Carolina, South Carolina and Georgia in the hopes of checking the spread of the hemlock pest. The conservancy is also educating homeowners on how to treat infested ornamental hemlocks on their property. Other efforts are being carried out by the U.S. Forest Service and Highlands-Cashiers Land Trust to treat important remaining stands of hemlock, including the world's largest standing eastern hemlock.

Overall water quality in the Savannah River Basin is good. More than one-fourth of its stream segments are managed by the state to maintain their exceptional water quality. Runoff from construction sites, paved and unpaved roads and developed areas is an emerging threat to water quality. While most of the land in the basin is forested (approximately 90 percent), many retirement homes, second homes and commercial resorts are being built.

Alteration of natural areas may damage wildlife habitat and harm surrounding waters. As land is cleared, rain and melting snow pick up eroded sediments, pesticides, fertilizers and road salts and carry them to streams and lakes. Responsible planning and development are essential. Property owners can help by establishing or leaving wide strips of shrubs and trees beside streams or lakes on their land; by maintaining unpaved roads in a way that prevents erosion; and by properly maintaining septic systems. For information on conservation initiatives in the basin, see the contacts on the back page.

KEVIN ADAMS



Rainbow Falls

DOUG WECHSLER, VIREO



Swainson's warbler

# THE WILD SIDE



## of the Savannah River Basin

Several rare and fascinating fliers find sanctuary in the Savannah River Basin. Among these are the peregrine falcon, listed as an endangered species in North Carolina, and Rafinesque's big-eared bat, state-listed as threatened.

### Peregrine Falcon

During the spring and summer, you may see peregrine falcons flying above the cliffs of Whiteside Mountain or sitting on rock outcrops. These migratory birds of prey return each year to nest on the exposed rock faces of the 4,930-foot mountain. The bird is a fast flier, averaging speeds of 69 mph as it hunts for its food, which consists mostly of smaller birds. When it dives for prey, it may reach speeds of up to 200 mph. The falcon usually strikes its prey in midair, knocking it to the ground. Listen for a piercing, rapid "kek kek kek" cry as it hunts. During courtship, the adults fly near each other around the nest ledge and also perform aerial acrobatics. During the 1950s the species was wiped out in the eastern United States due to effects of pesticides such as DDT (banned in the United States in 1972). A re-introduction program using captive-bred falcons was begun in the 1970s and started in North Carolina in 1984. Eighty juveniles had been released in the state by 1991, with an additional 12 birds released in 1996 - 1997. Nesting on Whiteside Mountain was first observed in 1988. Since then, 39 chicks have fledged from this location. Eleven nesting pairs of falcons are known in North Carolina. Although it was removed from the federal endangered species list in 1999, the peregrine falcon remains protected in North Carolina due to low breeding numbers and high rates of chick mortality.



MASLOWSKI PRODUCTIONS

DR. J. SCOTT ALTENBACH

### Rafinesque's Big-eared Bat

This night-flying mammal with long, rabbit-like ears is slight in number throughout its native range in the southeastern United States. Two subspecies, one of which occurs in the Savannah River Basin, are on the federal watch list as species of special concern and are listed by the state as threatened species. In the mountains, this bat lives in caves, old mineshafts, hollow trees and gaps in rock ledges. The bat has the habit of twisting its long ears back almost into a spiral while roosting. Like other bat species, it "hears" its prey. It emits high-frequency sounds and listens for echoes that bounce back from objects in its path, including moths and other insects. Bats use this sophisticated method, called echolocation, to quickly and efficiently home in on prey.





CHARLES BRASWELL JR.



BILL LEA

Waders on the Horse-pasture (left); Tox-away Falls (right)

## WHERE SHOULD I GO ?

What makes the Savannah River Basin so special? See for yourself. Visit these Environmental Education Centers to discover more about your ecological address:

- Earthshine Discovery Center
- Gorges State Park

For more information about Environmental Education Centers in North Carolina, check out the Office of Environmental Education and Public Affairs' website at [www.eenorthcarolina.org](http://www.eenorthcarolina.org).

## HOW CAN I HELP ?

You can gain a sense of community pride by learning more and helping to protect streams, rivers and lakes in the Savannah River Basin. The contacts listed below can help you do just that. To find out about local river organizations and conservation groups, contact your local soil and water conservation district.

**Clean Water Management Trust Fund**  
<https://cwmtf.nc.gov>

**North Carolina Association of Soil & Water Conservation Districts**  
[www.ncaswcd.org](http://www.ncaswcd.org)

**North Carolina Division of Water Resources Education Programs**  
<https://deq.nc.gov/about/divisions/water-resources/water-resources-training/public-involvement/project-wet>

**North Carolina Water Science Center**  
<http://nc.water.usgs.gov/>

**Savannah River Basinwide Plan\***  
<https://deq.nc.gov/about/divisions/water-resources/planning/basin-planning>

*\*Basinwide water quality planning is a nonregulatory, watershed-based approach to restoring and protecting the quality of North Carolina's surface waters. The N.C. Division of Water Resources welcomes community input.*

▶ To order additional brochures on any of North Carolina's 17 river basins, a general river basin booklet or a poster, fill out the online order form at [www.eenorthcarolina.org](http://www.eenorthcarolina.org).

**Office of Environmental Education and Public Affairs, N.C. Department of Environmental Quality.** *Editor* Carla Burgess *Designer* KC Schott, Red Gate Design • Special Thanks to the N.C. Wildlife Resources Commission, N.C. Division of Water Resources and N.C. Natural Heritage Program • Date: 2018 • 5,000 copies of this public document were printed at a cost of \$1,300 or \$0.26 per copy.