Citizen Guide to Alabama Rivers

Chattahoochee and Coastal Plain Streams

Volume 3 Winter 2003

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Citizen Guide to Alabama Rivers

Volume 1 *Black Warrior and Cahaba*
Volume 2 *Alabama, Coosa and Tallapoosa*
Volume 3 *Chattahoochee and Coastal Plain Streams*
Volume 4 *Tennessee*
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This guide was written and produced by the Alabama Water Watch Program at Auburn University. It was funded in part from the Alabama Department of Environmental Management, the Alabama Cooperative Extension System and the U.S. Environmental Protection Agency, Region 4 (Clean Water Act, Section 319).

COVER PHOTO. *Lake Eufaula.* PHOTO: ALABAMA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

About these Guides

Alabama's rivers, streams and lakes are priceless in terms of the ecological, economic and social benefits they provide.

The purpose of this guide is to provide an introduction to the unique history and environmental significance of Alabama's River Basins and invite further investigation into Alabama's abundant but limited water resources.

It is hoped that these guides will enhance the dialogue between citizens and key decision makers and help us move toward strategies of how to best manage and protect Alabama's waters.

FISHING ON THE CHATTAHOOCHEE.
PHOTO: FRED C. FUSSELL, HISTORIC CHATTAHOOCHEE COMMISSION

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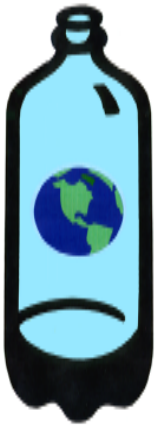
Unlabeled Photos and Graphics: Alabama Water Watch Program

The Water Environment

The World's Water Supply

If all the Earth's water fit into a **one liter** container,



- **970 mL** of the container would be saltwater

- **30 mL** (nail polish container) would be freshwater which includes: atmosphere, lakes, rivers, polar ice caps, and groundwater.

- Only **2 drops** of freshwater are in lakes and rivers.

Alabama's Rich Water Resources

- Alabama contains more than 77,000 miles of streams, 3.6 million acres of wetlands and 560,000 acres of lakes, ponds and reservoirs.
- Alabama has more miles of navigable rivers (1,438 miles) than any other state.
- The Mobile River system is the fourth largest watershed in North America, exceeded only by the Mississippi, Yukon and Columbia River systems.
- About 8% of water in the continental U.S. originates in or flows through Alabama.

What is a Watershed?

A **watershed** is the total land area that drains to a common point, such as a river, a lake or the ocean. Watersheds come in many sizes.

Very large watersheds are also called **drainage basins**. For example the Coosa, Tallapoosa, Alabama, Cahaba, Black Warrior and Tombigbee River watersheds are all part of the greater Mobile Basin. We all live in a watershed, no matter how far we are from a river or lake.

The Mobile Basin is the largest watershed in Alabama draining 3/4 of the state.

GRAPHIC: MOBILE BAY NATIONAL ESTUARY PROGRAM

The Hydrologic Cycle, or the Water Cycle, links land, air and water within a watershed. GRAPHIC: STEPHEN ADDUCI AND PERDUE PESTICIDE PROGRAMS

Nature's Water Recycling Program

When rain falls to the earth, it sinks into the ground (**infiltration**), returns to the air (**evaporation** and **transpiration**) or flows over the land surface (**runoff**). Surface runoff carries dissolved and suspended substances, such as chemicals and sediment. Land use activities in a watershed directly affect both water *quality* and *quantity*. Water supplies are not limitless. Water is never created, it only recycles.

The River Basins

A group of seven rivers and many smaller streams in south Alabama are collectively known as the **Coastal Plain Streams** (in **blue**). Their headwaters originate in Alabama below the prehistoric seashore, called the Fall Line and they flow through 27 counties (17 Alabama and 10 Florida), across the Florida panhandle to the Gulf of Mexico. The mainstems of the **Perdido**, **Escambia**, **Blackwater**, **Yellow**, **Pea**, **Choctawhatchee**, and **Chipola** rivers together are a total of 960 miles long. About 54% of the 16,128 square mile **Coastal Plain Streams** watershed is in Alabama. Many of these streams are called "blackwater" because they are naturally tinted with dissolved substances called tannins. Despite their appearance, many of these **Coastal Plain Streams** are among the cleanest waters in the state.

SEPULGA RIVER IN CONECUH COUNTY, AL.

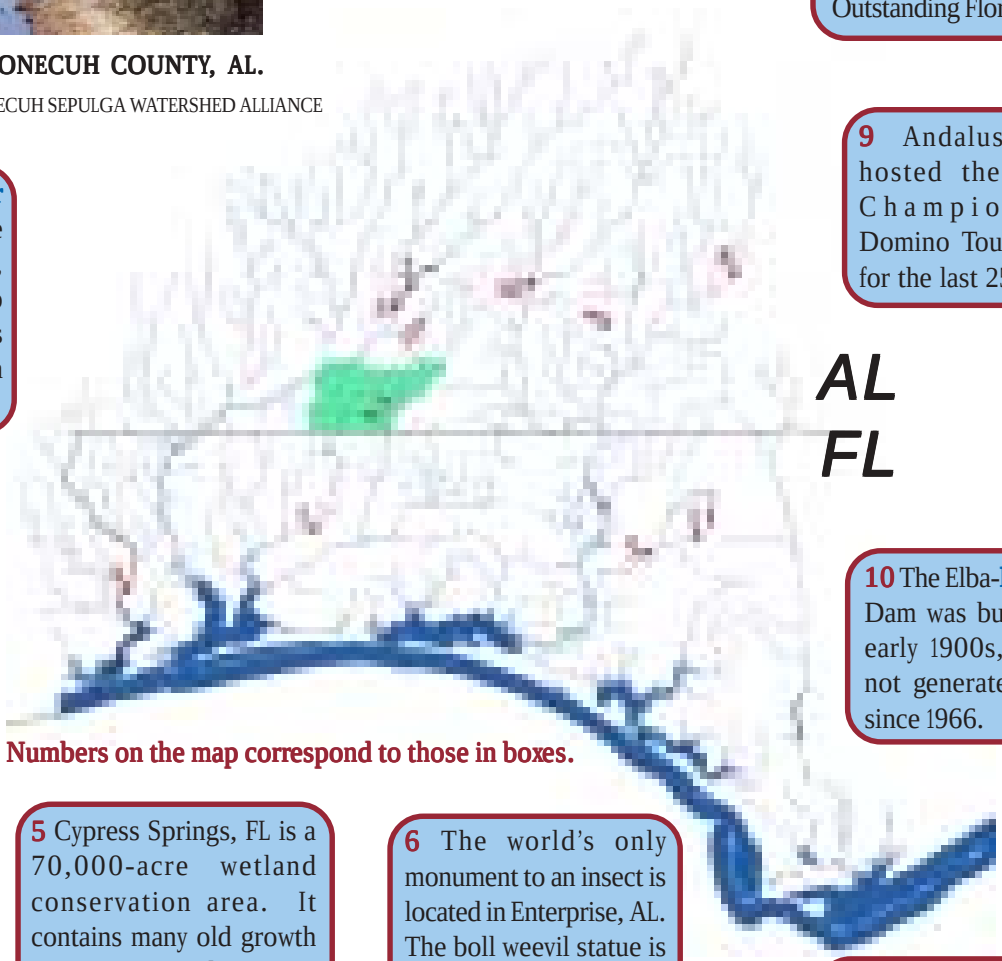
PHOTO: ANN BIGGS-WILLIAMS, CONECUH SEPULGA WATERSHED ALLIANCE

7 The 84,000-acre Conecuh National Forest, AL is adjacent to the 189,600-acre Blackwater River State Forest, FL. These forests contain the largest stands of longleaf pine trees in the world and over a dozen species of rare plants and animals.

8 The **Choctawhatchee River** is one of the longest remaining free-flowing rivers in Alabama and is also designated as an Outstanding Florida Water.

1 The **Blackwater River** headwaters begin in the Conecuh National Forest, AL. As the river flows into Florida, it is designated as a Special Water and an Outstanding Florida Water.

9 Andalusia has hosted the World Championship Domino Tournament for the last 25 years.



2 Gantt and **3** Point A Lakes were built in 1923 by the River Falls Power Company on the **Conecuh River** and impound 3,700 acres.

10 The Elba-**Pea River** Dam was built in the early 1900s, but has not generated power since 1966.

Numbers on the map correspond to those in boxes.

4 The **Perdido River** forms the border between Alabama and Florida and discharges an average 14,000 gallons per second into Perdido Bay.

5 Cypress Springs, FL is a 70,000-acre wetland conservation area. It contains many old growth cypress trees and serves as a refuge for the black bear.

6 The world's only monument to an insect is located in Enterprise, AL. The boll weevil statue is a commemoration of how agriculture diversified from "cotton as king."

11 Falling Waters State Recreation Area is home to Florida's only waterfall.

The **Chattahoochee River** (in **green**) is the 11th largest river in the U.S. It begins as a small spring in the Blue Ridge Mountains in Helen, GA and flows south through Georgia and Alabama. It joins the Flint River at Lake Seminole to form the Apalachicola River and then drains to Apalachicola Bay, FL. The streams within the **Chattahoochee Basin** flow through 45 counties (34 Georgia, 9 Alabama and 2 Florida). The mainstem is 433 miles long and 29% of its 8,745 square mile watershed is in Alabama.

12 Lake Lanier (Buford Dam) is the first impoundment on the **Chattahoochee River**.

14 The **Chattahoochee River** is the longest and one of the most dammed rivers within the southeastern U.S. It provides drinking water to more than 3 million people in the Atlanta Metro area alone.

13 Morgan Falls Dam is the oldest power dam (1904) in GA. It drowned a 35-ft waterfall called Bull Sluice. The 800-acre lake has become a wetland with an average depth 12-24 in. This is a result of >40 ft. of sediment which washed in from decades of poor farming and construction practices.

15 West Point Lake is a 26,000-acre impoundment, built in 1975 and operated by the Army Corps of Engineers for navigation, flood control and recreation.

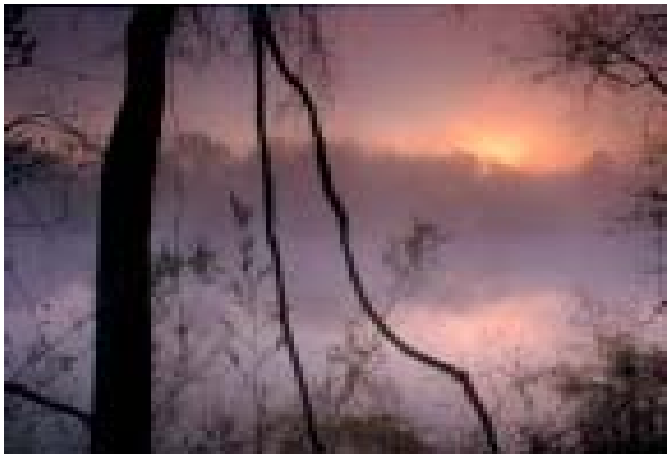
17 The Eufaula National Wildlife Refuge, AL is 11,200 acres. It is the only NWR in the basin and provides protected habitat for federally listed species such as American alligator, wood stork and bald eagle as well as excellent opportunities for bird watching, fishing and duck hunting.

Downstream of West Point Dam (**15**), the river drops about 375 ft. as it crosses the Fall Line. In this 30-mile stretch, the following dams were developed for power generation:
Langdale Mill Dam
River View Mill Dam
Bartletts Ferry Dam
Goat Rock Dam
Oliver Dam
North Highlands Dam
City Mills Dam
Eagle and Phenix Dam (**16**)

18 Walter F. George Lock and Dam is the largest dam in the **Chattahoochee Basin** and one of the highest in the nation. The lock has a lift of 88 ft.

19 George W. Andrews Lock and Dam is the least visited impoundment on the **Chattahoochee River**.

20 Chattahoochee State Park is Alabama's eastern-most state park and is located where the **Chattahoochee River** leaves Alabama and flows into Florida.



OMUSSEE CREEK, AL. PHOTO: JOE AND MONICA COOK

21 Jim Woodruff Lock and Dam creates the 37,500-acre reservoir, Lake Seminole, at the junction of the Flint and **Chattahoochee** Rivers in the southwestern corner of Georgia.

Life Along the Rivers

Native Culture and Early Settlement

The **Chattahoochee Basin** and **Coastal Plain Streams** are rich in Native American history. Around 1,000 B.C. Indians began building enormous mounds to bury their dead. One of the largest of these was at the lower **Chattahoochee River** village of Kolomoki. Soil was carried to the mound basket-by-basket and required about 875,000 person-hours to complete. Clarence Moore documented 21 mound sites from Columbus, GA to the Appalachicola River.

Indians of the Mississipian culture (700 A.D.-1400) were the first to cultivate the land, growing beans, squash, pumpkins and corn. Important Alabama sites from this period are at Omussee Creek and Spann's Landing in Houston County and the Abercrombie Mound in Russell County. During the 1500 to 1600s, the two largest cities of the Lower Creek Nation were near present-day Phenix City, AL and Fort Benning, GA.

COASTAL PLAIN INDIAN MOUND IN FT. WALTON, FL. *Lake Jackson Mounds State Archeological Site was a political and religious center from 1100-1500 A.D.* PHOTO: FLORIDA CENTER FOR INSTRUCTIONAL TECHNOLOGY, UNIVERSITY OF SOUTH FLORIDA

Many geographic names are derived from events of early settlement. According to Colonel A. J. Pickett (*History of Alabama*, 1851) a tributary of the **Conecuh River**, called Murder Creek, got its name from a "bloody tragedy enacted upon its banks in 1788."

In the early 19th century, Columbus, GA became a center of trade and by 1850 ranked second only to Richmond, VA as an industrial center with the South's largest textile plant. Saw, grain and textile mills harnessed the power of the **Chattahoochee**.

Song of the Chattahoochee

Out of the hills of Habersham,
Down the valleys of Hall,
I hurry amain to reach the plain,
Run the rapid and leap the fall,
Split at the rock and together again,
Accept my bed, or narrow or wide,
And flee from folly on every side
With a lover's pain to attain the plain
Far from the hills of Habersham,
Far from the valleys of Hall.

Excerpts from *Poems of Sidney Lanier*
1884

PHOTO: DOCUMENTING THE AMERICAN SOUTH (http://docsouth.unc.edu), UNIVERSITY OF NORTH CAROLINA AT CHAPEL HILL LIBRARIES, RARE BOOK COLLECTIONS

Sidney Lanier, poet, writer, and musician, was born in Macon, GA in 1842. At the outbreak of the Civil War he joined the Macon Volunteers serving as a scout and in the signal service. He was captured in 1864 and imprisoned in Maryland, where hardships and illness led to tuberculosis. After the war he began writing essays, poems and a cantata. The poem, "Song of the Chattahoochee," traces the flow of the river from its headwaters in Habersham and Hall Counties, GA to its mouth in Apalachicola Bay, FL. In 1956 the Army Corps of Engineers built a 38,000-acre impoundment, named Lake Sidney Lanier, in the headwaters of the **Chattahoochee River**. The lake is the first impoundment on the **Chattahoochee** and provides drinking water as well as recreation to over 5 million people.

SUNSET ON LAKE SIDNEY LANIER.
PHOTO: lanier.sam.usace.army.mil/pics/sunset.jpg

Riverboat Traffic

Keel boat travel began in the 1820s with typical loads of 50-60 cotton bales. To travel upstream, boatmen used the "hook and jam," a long smooth pole, pointed with an iron spike and hook. The point was used by pressing it against streamside trees for propulsion. The hook was used to grab overhanging boughs to pull the boat forward.

Steamboat commerce on the **Chattahoochee** reached its peak in the decades following the Civil War. In addition to their use in commerce, some steamboats were turned into floating palaces, with luxuries that included gourmet food, shooting alligators from the guardrail, listening to jazz bands and dancing aboard a platform towed behind the boat.

FLOATING ENTERTAINMENT. *A party barge excursion on the **Chattahoochee River**.* PHOTO: T.W. TILLMAN AND THE COLUMBUS MUSEUM, www.sherpaguides.com

By 1871 navigation on the **Chattahoochee** was becoming more and more difficult because of heavy sedimentation from half a century of intensive cotton production and deforestation. The Army Corps of Engineers attempted to maintain navigation by widening and deepening the channel, but siltation outpaced their efforts. Expanding rail lines and the birth of automobiles after World War I contributed to the slow death of river commerce. The last steam line sold its final boat in 1921.

Modern-day barge traffic is almost entirely related to movement of local natural resources, such as sand and gravel dredged from river and lake bottoms. Other commerce includes agricultural chemicals, coal, and petroleum and wood products.

Interstate Chattahoochee Dispute

In the early 1800s, a dispute arose between Georgia and Alabama over the first bridge to cross the **Chattahoochee** in Columbus. Many years later a U.S. Supreme Court ruling granted Georgia jurisdiction to the high-water mark on *both* sides of the river. This decision had serious economic impacts for Alabama settlements for many decades. For example, when the Eagle Mill Dam was built in 1834, Alabama was denied any compensation.

FLOODED PORTION OF BREWTON, 1929.
PHOTO: www.brewton.org

Floods on the Coastal Plain

Communities of the **Coastal Plain Streams** have periodically experienced great floods. In 1929 the city of Elba, AL received about 30 inches of rainfall and the **Pea River** rose to 42 feet. The 1990 flood at Elba was the worst in the history of this region, with damages estimated at $88 million.

Native Sons and Daughters

Famous folks from the **Chattahoochee Basin** and **Coastal Plain Streams** include:

- **Harvey Glance** (Phenix City) - 1976 Olympic gold medalist in track and field
- **Alan Jackson** (Newnan, GA) - country singer, "Chattahoochee"
- **Heather Whitestone** (Dothan) - only "hearing impaired" Miss America (1994)
- **Don Sutton** (Clio) - National Baseball Hall of Fame pitcher, struck out 3,574 batters
- **George Wallace** (Clio) - Alabama Governor 1963-1967, 1971-1979 and 1983-1987
- **Hank Williams** (Georgiana) - country singer, "Hey Good Lookin'"

RED HILLS SALAMANDER, *Phaeognathus hubrichti.* *This salamander is unique to lower Alabama.* PHOTO: MALCOLM PIERSON

The Red Hills salamander grows to a maximum length of 10 inches, making it Alabama's largest non-aquatic salamander. It has an estimated habitat range of less than 55,000 acres. The salamander's range is bounded on the east by the **Conecuh River** and on the west by the Alabama River in portions of Butler, Crenshaw, Conecuh, Covington, and Monroe counties. In 1976 the U.S. Fish and Wildlife Service listed the Red Hills salamander as threatened, making it the first North American amphibian to receive federal protection.

RELICT TRILLIUM, *Trillium reliquum.* *This plant grows in moist hardwood forests and occurs in Bullock, Henry and Lee counties of Alabama as well as limited portions of Georgia and South Carolina.* PHOTO: THREATENED AND ENDANGERED SPECIES OF ALABAMA: A GUIDE TO ASSIST WITH FORESTRY ACTIVITIES

Other fascinating and important animals of the two basins include the pine snake, Barbour's map turtle, red-tailed skink, pocket gopher, Choctawhatchee beach mouse, Indiana bat, and American alligator.

Special Plant

Alabama ranks in the top ten in the nation for the most typ
Conservancy of Alabama, there are over 4,000 species of p
freshwater mollusks (snails and mussels) in Alabama. In spite of
species than any state except Hawaii.

OKALOOSA DARTER, *Etheostoma okaloosae.* *This endangered species is found in only six small streams draining into the Choctawhatchee Bay. About 90% of this fish's habitat is within Eglin Air Force Base. Major threats include habitat degradation, soil erosion, runoff from sewage sprayfields, and possible contaminants from weapons testing areas.*

PHOTO: NOEL BURKHEAD

Freshwater mussels are an important part of **Coastal Plain Streams** ecosystems. Young mussels often hitch rides on certain fishes, causing the fish to produce antibodies which later help the fish fight more serious infections. Mussels feed on suspended particles in streams and rivers. By filtering water, they help to clean and clarify streams. This, in turn, keeps streams healthy for both humans and wildlife. They are also good indicators of a stream's condition. Some mussels in danger of extinction within the **Chattahoochee Basin** and **Coastal Plain Streams** include the Gulf moccasinshell (*Medionidus penicillatus*), Chipola slabshell (*Elliptio chipolaensis*), Alabama pearlshell (*Margaritifera marrianae*), and shiny-rayed pocketbook (*Lampsilis subangulata*).

GULF STURGEON, *Acipenser oxyrhynchus desotoi.* *A threatened species found in all major **Coastal Plain Streams** and in the Gulf of Mexico. This fish and the Alabama shad, Alosa alabamae, are examples of migratory (anadromous) fishes which live in saltwater but move to freshwater to spawn. Free-flowing rivers are, therefore, essential for their survival.* PHOTO: MOBILE REGISTER FOR THE ASSOCIATED PRESS

ts and Animals

pes of native plants and animals. According to The Nature plants, 850 species of vertebrates and nearly 250 species of f high biodiversity, Alabama has more threatened or endangered

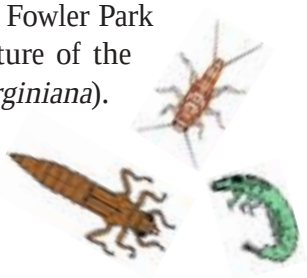
Everything affecting the gopher tortoise's habitat affects the tortoise and eventually affects all other organisms in its ecosystem. Efforts to save the gopher tortoise are really a manifestation of our desire to preserve intact, significant pieces of the biosphere. We must preserve the gopher tortoise and other species in similar predicaments, for if we do not, we lose a part of our humanity, a part of our habitat, and ultimately our world.

Dr. George W. Folkerts
Auburn University Professor
www.gophertortoisecouncil.org

GOPHER TORTOISE, *Gopherus polyphemus.* *This tortoise requires loose sands to construct its burrows, which more than 350 species are known to utilize. Although their range extends from southeastern Louisiana to South Carolina, populations are rapidly declining because of habitat loss.* PHOTO: THREATENED AND ENDANGERED SPECIES OF ALABAMA: A GUIDE TO ASSIST WITH FORESTRY ACTIVITIES

OLE OAK, GENEVA, AL. *This live oak tree has been growing at least since the time that the U.S. Constitution was drafted in the late 1700s.* GRAPHIC: STEPHEN MALKOFF, www.arboresque.com

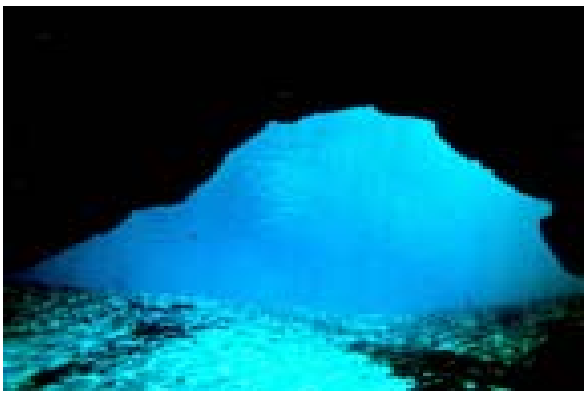
One of the most scenic places to view the junction of the **Choctawhatchee** and **Pea Rivers** is Fowler Park in Geneva, AL. The most notable feature of the park is its stand of live oaks (*Quercus virginiana*).



DRAGONFLY, STONEFLY, CADDISFLY

Hundreds of kinds of aquatic insects spend most or all of their lives in streams. In the **Escambia River** alone there are several insects that are rare or of special concern, including the Alabama shadow dragon (*Neurocordulia alabamensis*), the stonefly (*Alloperla furcula*) and the caddisfly (*Chimarra falculata*).

There are numerous springs in the **Coastal Plain Streams** of Alabama and Florida, fed by underground aquifers and sometimes flowing from huge caverns. Limestone rock filters the water, making it crystal clear. This provides a "natural aquarium" for common as well as unique aquatic organisms such as the bowfin (*Amia calva*), American eel (*Auguilla rostrata*) and many rare snails and crayfish. The springs are also attractive for divers and swimmers and provide opportunities for ecotourism.



BLUE SPRINGS, FL. *One of the world's largest springs yields 122 million gallons of water per day to the **Chipola River**. The entrance to the cavern begins at 12 ft.* PHOTO: underwaterflorida.homestead.com

Land Use in the River Basins

The water quality and quantity of the **Coastal Plain Streams** and **Chattahoochee Basin** are influenced by a variety of urban and rural land uses. The land use maps on these pages were generated from 1992-93 satellite images. River basins are outlined in white and Alabama counties are designated in black. The **orange** line on the **Chattahoochee** map represents the Fall Line, which is the border between the hilly land to the north (Piedmont Province) and the flatter more sandy soils of the south (East Gulf Coastal Plain Province). The **Coastal Plain Streams** lie within the East Gulf Coastal Plain Province and drain about 25% of the state.

Land Use Percentages

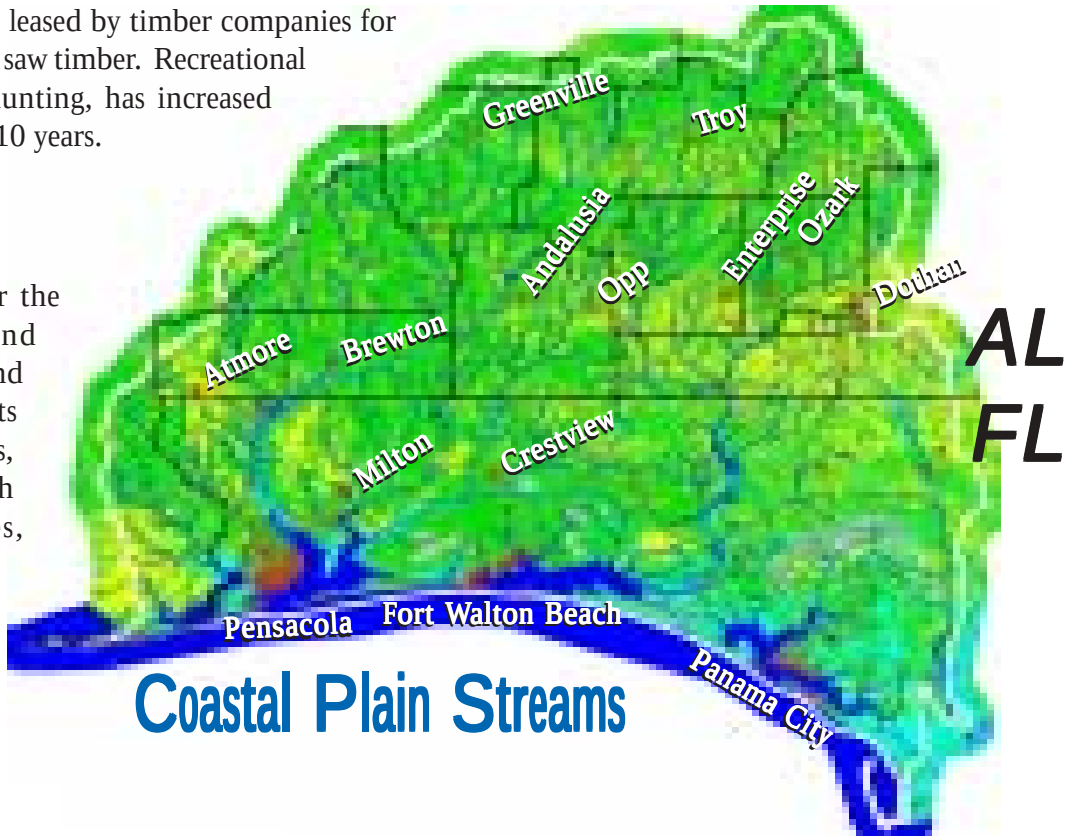
	Coastal Plain Streams	Chattahoochee
Forest	60	72
Agriculture	19	14
Urban/Suburban	2	5
Clearcut/Barren	3	2
Wetland	11	3
Water/Lakes	4	2
Quarry/Mining	<1	<1

FOREST

About 60% of the watersheds of the **Coastal Plain Streams** and 72% of the **Chattahoochee Basin** are covered by forests, which filter and purify water, conserve soil, and enhance wildlife. Timber production is the primary economic activity in the **Coastal Plain Streams**. The pre-logging vegetation of much of the **Coastal Plain Streams** and the **Chattahoochee Basin** below the Fall Line was a park-like forest composed of more than 75% longleaf pine with an understory of wire grass. Slash pine, southern red oak, and post oak began to increase after the area was logged around the turn of the century. Hundreds of thousands of acres are still leased by timber companies for production of wood pulp and saw timber. Recreational use of forests, particularly hunting, has increased significantly during the past 10 years.

AGRICULTURE

Agriculture is important for the economy of the basins, and makes up 14-19% of the land use. Principal farm products include cotton, corn, peanuts, soybeans, sugar cane, Irish potatoes, sweet potatoes, pecans, and all kinds of greens. Pecan orchards are abundant in south Alabama and the nuts are exported nationally and globally.

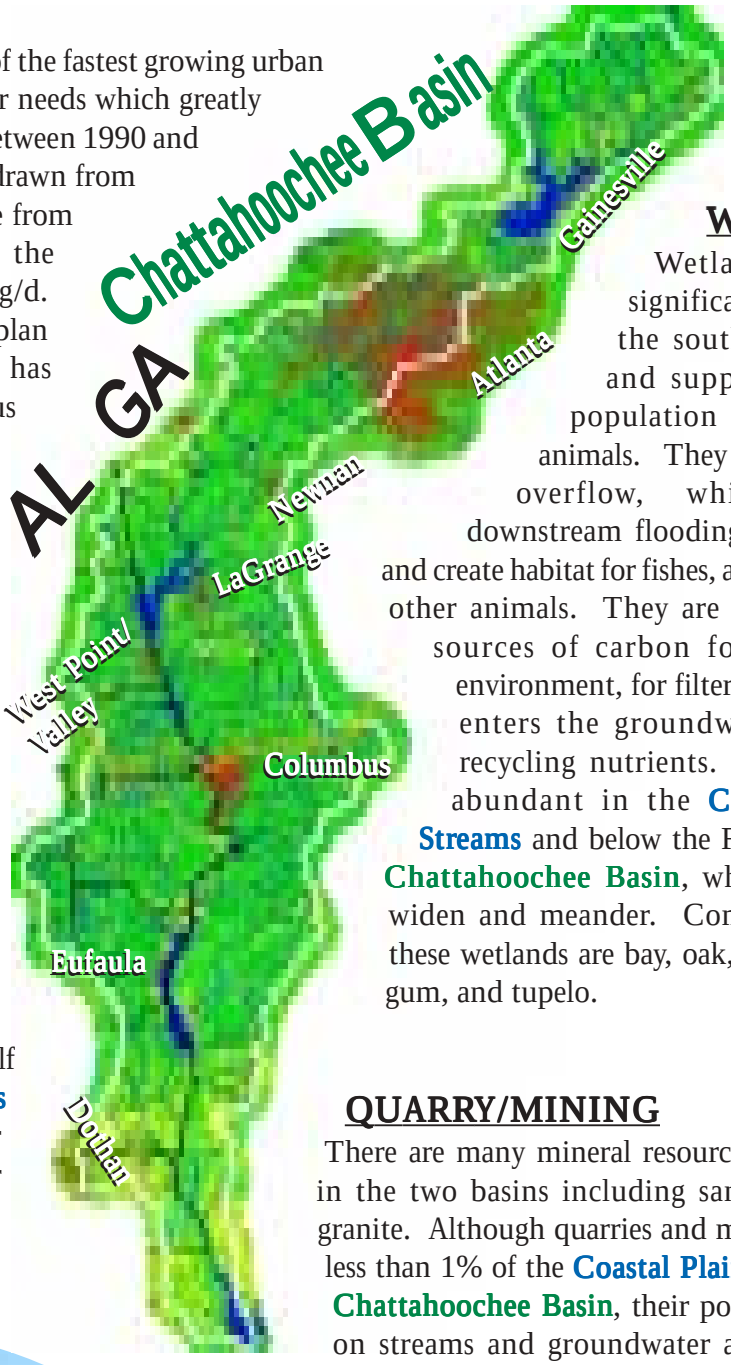


URBAN/SUBURBAN

The Atlanta, GA metropolitan area is one of the fastest growing urban areas in America and has demanding water needs which greatly affect the upper **Chattahoochee Basin**. Between 1990 and 2030, the amount of drinking water withdrawn from the Chattahoochee is projected to increase from 320 million gallons per day (mg/d) to the maximum possible withdrawal of 705 mg/d. Negotiating a water resource allocation plan among Alabama, Georgia, and Florida has become a critical, expensive and contentious issue over the last decade.

Even the smaller cities and towns of the **Coastal Plain Streams** are facing water shortages. Groundwater supplies are the major source of drinking water, but withdrawals exceed recharge in many areas, drying up streams. During the past 20 years, for example, groundwater levels at Dothan, AL have declined by more than 100 feet.

Wastewater disposal is another challenging issue. Urban wastewater treatment plants have often exceeded total maximum daily loads (TMDLs) in the **Chattahoochee Basin**. More than half of households in the **Coastal Plain Streams** are on septic systems, and groundwater contamination by *E. coli* bacteria and other contaminants is common.



WETLAND

Wetlands cover a significant portion of the southeastern U.S. and support a diverse population of plants and animals. They receive stream overflow, which reduces downstream flooding and erosion, and create habitat for fishes, amphibians and other animals. They are also valued as sources of carbon for the stream environment, for filtering runoff that enters the groundwater, and for recycling nutrients. Wetlands are abundant in the **Coastal Plain Streams** and below the Fall Line in the **Chattahoochee Basin**, where the rivers widen and meander. Common trees of these wetlands are bay, oak, cypress, sweet gum, and tupelo.

QUARRY/MINING

There are many mineral resources sought after in the two basins including sand, gravel and granite. Although quarries and mining occur in less than 1% of the **Coastal Plain Streams** and **Chattahoochee Basin**, their potential impacts on streams and groundwater are significant. Impacts may include soil erosion, siltation, toxic metal runoff and rock fractures which alter water tables and disrupt spring flows.

VIEW OF THE CHATTAHOOCHEE RIVER, VALLEY, AL.

PHOTO: PASCHAL PRICKETT

I think its safe to say that water is now going to be the driving force in all of our decisions, and we're going to have to be a lot smarter about it than we've been in the past.

F. Wayne Hill
Gwinnett County, GA official

Balancing Economy and Environment in the River Basins

Abundant water, timber, rich soils, minerals, and other natural resources have been important for boosting Alabama's economy, creating jobs and providing necessary products for all of us. The way these natural resources are used can cause environmental problems that negatively affect human health and our quality of life. More than half of these problems come from nonpoint source pollution that enters streams from broad areas of both urban and rural portions of a watershed. Possible problems may include...

Agriculture

- Excess nutrients and bacteria from animal wastes, including CAFOs (Concentrated Animal Feeding Operations)
- Runoff and aerial deposition of pesticides and other chemicals from cropland and pastures

POULTRY CAFO. PHOTO: LARRY RANA

Nitrogen and phosphorus are essential nutrients for plant and animal growth, but excessive amounts can stimulate blooms of algae and other aquatic plants in waterbodies. In turn, algal blooms can impair water suitability for a variety of uses, such as drinking, swimming and fishing.

INTEGRATED PEST MANAGEMENT (IPM). *Addition of biological and physical control of pests allow farmers to save money on pesticides and reduce contamination of streams from runoff.*

PHOTO: AL SOIL AND WATER CONSERVATION COMMITTEE

9 Dams

- Changes in natural river flow patterns and levels
- Drastic water temperature and oxygen changes in streams from dam releases
- Often used for flood control but can alter wetland habitats

OLD HYDROELECTRIC DAM ON PEA RIVER.

PHOTO: peariverramblins.homestead.com/PowerDam.html

Forestry Practices

- Erosion and runoff from improper logging practices
- Changes vulnerable headwater ecosystems

Erosion and sedimentation have been a problem in Alabama as far back as colonial settlement. This is especially true for the highly erodible, sandy soils of the Coastal Plain. In the 1930s, the Soil Conservation Service, now called the Natural Resources Conservation Service (NRCS), was formed to address erosion problems and other land use issues.

SOIL EROSION AND STREAM SEDIMENTATION FOLLOWING A FOREST CLEARCUT. PHOTOS: RUSSELL WRIGHT

Urban/Suburban/ Rural Development

- Concrete and asphalt reduces infiltration of water to soil, inhibiting groundwater recharge
- Runoff from streets, parking lots and lawns enters storm drains and flows directly to streams untreated
- Inadequate and failing septic systems

INADEQUATE BMPs CONTRIBUTE TO SOIL EROSION

PHOTOS: ADEM

BMPs CAN DRAMATICALLY REDUCE EROSION AND STREAM SEDIMENTATION

ERODED SOIL WASHING TO STORM DRAINS AND CREEKS.

PHOTO: MICHAEL MULLEN

Solutions to many environmental problems are achieved through Best Management Practices (BMPs), education, good planning, and enforcement. Specific BMPs for each land use activity may be obtained from the NRCS, the Office of Surface Mining, Alabama Forestry Association, the Alabama Cooperative Extension System or ADEM.

Coastal Development

- Destroys habitat for coastal species
- Saltwater intrusion to municipal water supplies
- Wetland destruction
- Sea walls cause beach erosion

The rapid increase in coastal population and accompanying land use changes have resulted in major challenges for planners. For example, Baldwin County grew from 98,000 people in 1990 to 120,000 in 2000. This rate of growth underscores the importance of understanding, protecting and preserving our coastal environments before they are irreparably damaged.

BOATS MAY LEAK PETROLEUM AND DUMP SEWAGE INTO COASTAL WATERS.

PHOTO: www.brownmarine.com/MARINA_VIEW.htm

Exotic, Invasive Species

- Replace native plant and animal communities
- Harm ecosystem functions
- Expensive to control

Exotic, invasive species are introduced into ecosystems where they did not evolve sometimes spreading rapidly and replacing native species. People are usually the culprits for introduction of non-natives. Examples of invasive species include the kudzu, purple loosestrife, popcorn tree and privet.

JAPANESE KUDZU. *Intentionally introduced in the 1920s to control erosion, it rapidly overtook native habitats (growing up to 1 ft. per day) and now covers over 7 million acres in the South.* PHOTO: BARRY RICE, NATURE CONSERVANCY

Water Policy, Law and Citizen Involvement

There are many water policies and laws from various federal, state and local agencies that are sometimes difficult to understand. Virtually all water quality protection laws in Alabama stem from the federal Clean Water Act, passed by the U.S. Congress in 1972. Since that time the quality of our nation's waters has improved dramatically with cooperative effort by federal, state, tribal and local governments and the general public. Much cleanup work remains to be done, however.

The Clean Water Act is subdivided into many sections that influence Alabama's water. Three of the main sections are:

Section 319

Provides federal funds through the U.S. EPA to ADEM for educational and technical assistance and programs such as Alabama Water Watch and the Clean Water Partnerships. (www.epa.gov/region4/water/nps/grants/index.htm)

Section 305

Requires an assessment of waterbodies every two years to determine whether designated uses are being met. The Biennial Water Quality Report to Congress, or the 305(b) Report, provides summary information about the quality of the state's waters.

Section 303

Charges states and tribes with setting specific water quality criteria and developing pollution control programs to meet them. Designated uses may include drinking water, recreation, aesthetics, irrigation, fishing, swimming or a combination of these and other activities.

Waterbodies that do not meet water quality standards for their designated water use classification are included in a 303(d) list (www.epa.gov/waters). EPA requires ADEM to develop total maximum daily loads (TMDLs) for each waterbody included on the 303(d) list. The TMDL is the maximum quantity of a pollutant that can enter a waterbody without adversely affecting the designated use classification of the waterbody.

Partnerships *of local citizens, landowners, business, industry and governmental agencies have a high potential for restoring degraded habitats and protecting water quality.*

Citizens can do much to protect their watershed by:

- Becoming aware of key water issues
- Neighbor-to-neighbor persuasion to reduce pollution
- Public outreach and education
- Participating in watershed-based protection plans, including the TMDL process
- Becoming part of a citizen group
- Being the "eyes and ears" for lake/stream changes and pollution
- Advocating policy changes and enforcement

The Alabama Clean Water Partnership (ACWP) was created in 1998 to coordinate stakeholders for the restoration and protection of river basins in accordance with the Clean Water Act. A resulting Watershed Management Plan will represent the diverse interests of all stakeholders . Citizens may contact ACWP or ADEM to get involved in the:

Chattahoochee-Chipola River Basin CWP
Choctawhatchee-Pea-Yellow River Basin CWP
Coastal River Basin CWP
Conecuh-Sepulga River Basin CWP

BIRD'S EYE VIEW OF WOLF BAY. PHOTO: ANN CRAWFORD

Many water-related citizen groups have formed within the **Chattahoochee Basin** and **Coastal Plain Streams**. Several monitor water quality as Alabama Water Watch volunteers (marked with *). Although citizen groups come and go, most groups listed here have existed for several years and have significantly improved environmental education and protection.


Students work to prevent pollution in rivers

STUDENTS OF CHARLES HENDERSON HIGH SCHOOL LABEL STORM DRAINS TO PROTECT THE PEA RIVER.

Citizens for Northern Chambers County
*Columbus High School**
Georgia Adopt-a-Stream
The Chattahoochee Riverkeeper, Inc.
*Middle Chattahoochee River Stewards**
Soque River Watershed Association
*Phenix City Intermediate**
Upper Chattahoochee Riverkeeper
*Alabama Coastal Foundation**
*Andalusia Water Watch**
Big Escambia Creek Association
Choctawhatchee Basin Alliance
*Choctawhatchee, Pea and Yellow Rivers Watershed Management Authority**
*Coastal Plain Streams Water Watch**
Choctawhatchee River Blue Water Initiative
Conecuh/Sepulga Watershed Alliance
*Covington County Clean Water Coalition**
*Enterprise Junior High School**
Friends of Perdido Bay
*Holmes County Watchers**
Perdido Bay Environmental Association
Perdido Ecosystem Restoration Group
*Perdido High School**
*South Dale Middle School**
*Wolf Bay Watershed Watch**

Want More?

For further information about Alabama's waterways or how to get involved in protecting your watershed, contact:

Alabama Clean Water Partnership
866-346-8426 www.cleanwaterpartnership.org

Alabama Cooperative Extension System
334-844-4444 www.aces.edu

Alabama Department of Agriculture and Industries
334-240-7100 www.agi.state.al.us

Alabama Department of Conservation and Natural Resources
334-242-3420 www.dcnr.state.al.us

Alabama Department of Economic and Community Affairs
334-242-5694 www.adeca.state.al.us

Alabama Department of Environmental Management
334-271-7700 www.adem.state.al.us

Alabama Forestry Association
334-265-8733 www.alaforestry.org

Alabama Land Trust
256-782-3737 www.allandtrust.org

Alabama Soil and Water Conservation Committee
334-242-2620

Alabama Water Watch
888-844-4785 www.alabamawaterwatch.org

Choctawhatchee, Pea, and Yellow Rivers Watershed Management Authority
334-670-3780

Geological Survey of Alabama
205-349-2852 www.gsa.state.al.us

Gulf Coast Resource Conservation and Development Council
251-580-0195 www.rcdnet.org

Legacy, Inc.
800-240-5115 www.legacyenved.com

Mid-South Resource Conservation and Development Council
334-244-6903 www.rcdnet.org

In 1819, when Alabama entered the Union, its leaders designed a great seal that featured the state's waterways. In adopting this symbol they affirmed their belief that the future of Alabama lay with its rivers. It did, and it still does.

Harvey Jackson, III
Rivers of History

National Agricultural Library Water Quality Information Center
www.nal.usda.gov/wqic

Natural Resources Conservation Service
334-887-4552 www.nrcs.usda.gov

The Nature Conservancy of Alabama
205-251-1155 http://nature.org/states/alabama

The Natural Heritage Program
334-834-4519 X29 www.natureserve.org/nhp/us/al

Office of Surface Mining
205-290-7282 www.osmre.gov

The Water Course (Alabama Power Company)
800-280-4442

U.S. Environmental Protection Agency (Region 4)
404-562-8357 www.epa.gov

U.S. Fish and Wildlife Service
334-441-5181 www.fws.gov

U.S. Geological Survey
334-213-2332 www.usgs.gov

Wiregrass Resource Conservation and Development Council
334-774-2334 www.rcdnet.org