

This Place We Call Home



Chapter Preview

Georgia character word:

Diligence, respect for the environment

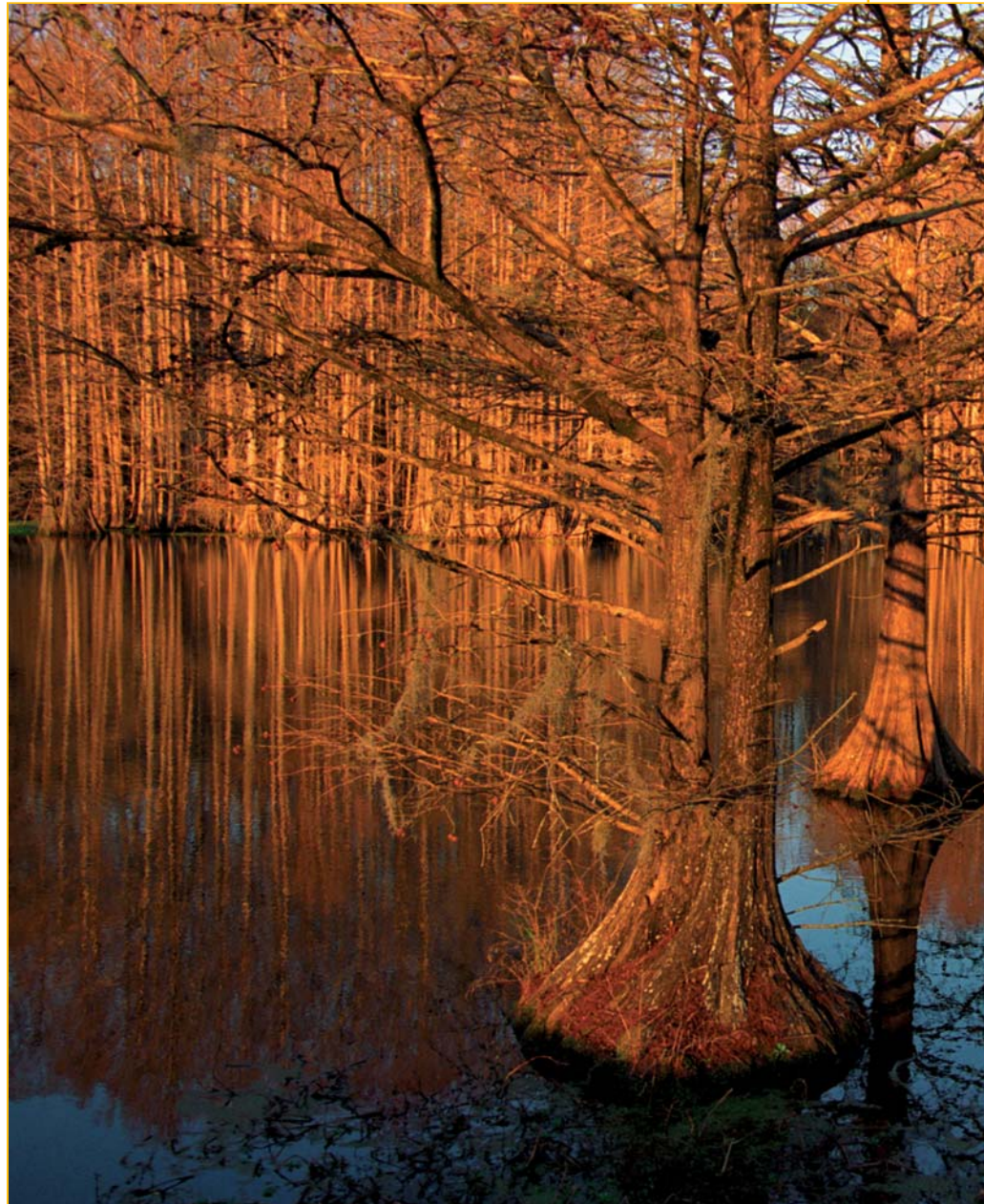
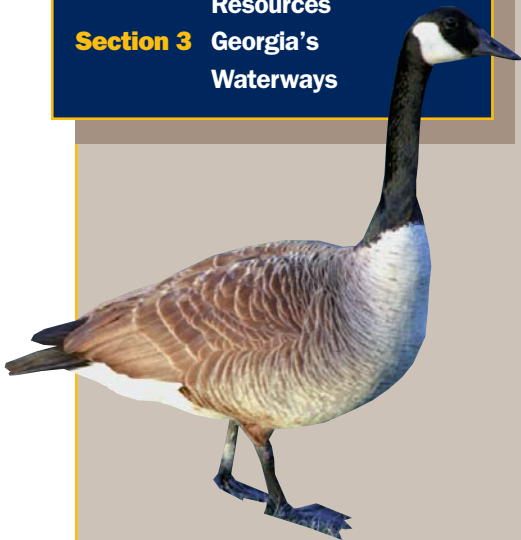
Terms: flora, fauna, Atlantic Intracoastal Waterway, semidiurnal tide, tide, saltwater marshes, freshwater sloughs, estuaries, watershed, reservoir, aquifer

Places: Savannah, Brunswick, Bainbridge, Columbus, Augusta

Section 1 Georgia's Flora and Fauna

Section 2 Georgia's Natural Resources

Section 3 Georgia's Waterways



In Chapter One, you learned about our geographic regions and our state's climate. In this chapter, you will continue your geographic journey through Georgia by examining the plants and animals that live in our state, our mineral resources, and our waterways.



Top: Top: This baby alligator will grow into Georgia's largest reptile. **Above:** The dwarf crested iris is often found in Georgia's forests. **Left:** Lake Blackshear is an 8,000-acre reservoir in Georgia Veterans Memorial State Park. **Opposite page, above:** In March, you can often see peach trees in blossom. **Opposite page, below:** The Canada goose is quickly becoming a year-round resident.

Section 1

Georgia's Flora and Fauna

Georgia's **flora** (its plants, flowers, and trees) and **fauna** (animals, reptiles, birds, and sea life) are among the most diverse in the United States.

Plant Life

Because of a 180-day growing period in the northern section of our state and a 270-day growing season along the coast, Georgia is home to hundreds of species of plants. They range from the hearty purple verbena found throughout the state to the rare and delicate trillium found only in the Tallulah Gorge. And few places can equal the beauty of Georgia's springtime at Callaway Gardens with azaleas, wild dogwood, iris, and daffodils. In the spring, Thomasville is ablaze with color from over five hundred species of roses.

Native plants in Georgia are not just for beauty. Some can be fun and useful. Most people have, at one time or another, picked a dandelion and blown the soft, feathery fuzz into the air. But did you know some families use the dandelion leaves for salad? Plants also serve medicinal purposes. Aloe plants, for example, are a mainstay in many kitchens as an immediate healing agent for burns.

Section Preview

As you read, look for:

- the variety of Georgia's plant and animal life, and
- **vocabulary terms:** flora and fauna.

Did You Know?

Thomasville is called the **City of Roses**, while Macon is called the **City of Cherry Blossoms**.



Wildflowers abound throughout the state. This photograph was taken on Sea Island.



Top: The mountain laurel is one of Georgia's best loved native shrubs. **Center:** The fragile looking Indian pipe thrive in shady areas. **Above:** Kudzu has been nicknamed "the vine that ate the South!"

Not all of our plants are popular. During the summer, you need not drive far to see a species of greenery that frustrates all farmers, gardeners, and Department of Transportation work crews. Kudzu has a long but less-than-distinguished career. In 1876, one hundred years after our nation's first birthday, Philadelphia hosted a Centennial Industrial Exposition. One hit of the fair was a bed of thick, green growth on display at the Japanese Exposition. The Japanese used the plant as both medicine and food flavoring. Because of its reputation as an agent in stopping soil erosion, kudzu plants were introduced into Georgia in 1930. Today, our state's neighbors to the north and south are finding out what Georgians quickly discovered. Not only does kudzu fail to stop soil erosion, the multileafed, cascading plant can grow up to one hundred feet during the summer months and is almost impossible to kill. But, the news is not all bad. Recently, scientists have found the leaves can be crushed into a powder and used as a cooking starch. It is also found in health foods and even made into kudzu candy.

Besides kudzu, there are other botanical invaders in our state. Botanists think that about 20 percent of plants found in the wild are foreign to Georgia soil, including privet, Japanese honeysuckle, chinaberry, and tallow trees.

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Trees

Georgia has over 36 million acres of land. Over 23 million acres of that area is forested, which is twice the national average. To put it another way, 60 percent of our state is forested. With over two hundred species of trees in Georgia and the southeastern United States, the variety seems endless. In the northern part of the state are hardwoods such as hickory, red spruce, white oak, beech, and maple. Loblolly, longleaf, slash, and other pines as well as the live oak are abundant in the Piedmont and parts of the Coastal Plain. Bald cypress and cedar cover large areas of the Okefenokee Swamp.

Some of our cities are known for their trees. Magnolias line many of the neighborhood streets in Augusta, while dogwoods abound in Atlanta. In the fall,

Did You Know?

Spanish moss is not really moss. It is an air plant related to the pineapple family. It lives on moisture in the air, has no roots, and can grow to be as long as twenty-five feet. Although beautiful to look at, do not touch this plant because most Spanish moss clumps are filled with chiggers.



American Spotlight

A Mark on Georgia, the World, and Football



Charles Holmes Herty was born in Milledgeville in 1867. When Charles was only a few years younger than you are now (he was 11), he and his sister became orphans. They went to Athens to live with their aunt. Charles attended the University of Georgia and Johns Hopkins University. He returned to the University of Georgia in 1891 as a chemistry instructor. At the same time, he became the University's first football coach. In January 1892, Herty's young team played its first game against Mercer College, winning with a score of 52–0. A month later, the team traveled to Atlanta where they played a team from Auburn College. The team lost, but the game started the South's oldest football rivalry.

In 1899, Herty left the University to study in Europe. When he returned to the United States, he joined the U.S.

Above: Charles Holmes Herty's personal motto was "For Science and Country." The Georgia Section of the American Chemical Society honors him each year by awarding the prestigious Herty Medal to a chemist from the southeastern United States.

Forest Service to work on saving pine trees throughout the South. In 1929, Professor Herty designed a container for the naval stores industry that caused far less damage to the pine trees. By 1932, he had created a pulp and paper lab in Savannah that used pine trees to make newsprint. This led to many new jobs in the South.

Herty was the first president of the American Chemical Society and, with another scientist, helped establish an organization that led to the National Institutes of Health.



Top: “The Big Oak” in Thomasville is over 300 years old and has a limb spread of 162 feet. **Above:** The city of Macon greets spring with over 200,000 flowering cherry trees.

downtown Athens turns bright gold with the fan-shaped leaves of the ginkgo trees, and in the spring, thousands of visitors pour into Macon as the Yoshino cherry trees blossom. It is also difficult to imagine Savannah without thinking of its moss-laden, giant live oaks and palmetto. Then, of course, there are the two trees that are synonymous with Georgia: the peach tree and the pecan tree. Both contribute significantly to Georgia’s economy. Interestingly, although Atlanta has fifty-five streets with the name of Peachtree, there are no peach groves within miles of the city.

The beautiful wooded areas of the state are a major advantage for Georgia’s recreation and tourism industries. The Chattahoochee-Oconee National Forests are one of the protected forest areas of the state. But if you want to see something really unusual, drive to Rome. There you will find Marshall Forest, which is the only virgin forest within a city limits anywhere in the country. The 100-acre forest and surrounding acres are home to over 300 species of plants and were a gift to the Nature Conservancy. This generous gift is a National Natural Landmark, Georgia’s first but hopefully not its last.



Wildlife

Georgia's fauna is as diverse as its flora. With enough land, varied physiographic features, and a moderate climate, Georgia is a natural home for wildlife. Among its fauna are mammals, birds, reptiles and amphibians, and fish.

Mammals

Over forty *species*, or kinds, of mammals are found in Georgia. One of them, prized by hunters and naturalists alike, is the whitetail deer. It was almost extinct by the early 1900s, but, thanks to careful management, whitetail deer can now be found in all 159 Georgia counties. But those soft-eyed, sweet looking creatures that remind us all of "Bambi" do not eat grazing food like hay. They seem to prefer the leaves and blooms of all woody plants and many of the blooms in our yards as well as fruits and nuts. However, the deer add a beauty and grace to our lives that we do not want to lose even if we lose a few plants along the way.

In addition to deer, squirrels, opossums, bats, rabbits, hares, raccoons, and foxes can be seen in most sections of the state. Bobcats are usually found in the forest mountain regions or in swamps. Wild hogs make their home in Coastal Plain river swamps, along with beavers, otters, armadillos, and minks. Wild horses still roam Cumberland Island.



Top: Whitetail deer feed on a wide variety of plants—including people's yard plantings and crops! **Above:** Foxes, like this gray fox, can be found throughout Georgia.

Below: Because they are so slow-moving, manatees often cannot get out of the way of boat propellers. **Bottom:** The cardinal is one of the most common birds in Georgia. This is a female.

Georgia's state marine mammal is the right whale, considered to be one of the most endangered species in the world. Weighing up to seventy tons, the seventy-foot right whale is actually a baleen whale. It earned the name "right" during long-ago whaling days. Whalers claimed this species was "just right" in terms of weight, amount of oil for fuel and soap, and whalebone.

The pygmy sperm whale is the second most common whale off Georgia's coastal waters. Another common marine mammal is the bottle-nosed dolphin, which can be spotted along the ocean beaches and in tidal creeks and rivers. Lesser in number are the Atlantic spotted dolphins and the spinner dolphins, both of which are usually seen only several miles offshore.

One marine mammal facing grave danger of extinction in Georgia is the manatee. The West Indian manatee, commonly called a "sea cow," is a large seal-shaped creature with flippers as forelimbs and paddle-like, rounded tails. The manatee averages ten feet in length and adults weigh 1,000 to 2,500 pounds.

The manatee spend most of their time eating water plants, resting, or traveling in the rivers, estuaries, salt-water bays, creeks, and canals along Georgia's Atlantic coastline. Because they are so temperature sensitive,

manatees congregate at warm water run-offs from plants along the coastline.

Marine conservationists estimate that fewer than 2,640 manatees are left in the United States. Like the right whale, the manatee suffers from boating collisions, the loss of a natural habitat, water pollution, and the ingestion of fish hooks and lines discarded in coastal waters. A rapidly growing segment of the population operate power boats and pleasure crafts in coastal waters, so the manatee must confront commercial and recreational boaters to survive.

Birds

Georgia is a year-round home for 170 species of birds, including robins, cardinals, blue jays, thrashers, and woodpeckers. Two hundred other species feed and nest in the state during spring and fall migrations. One of the most popular visitors is the ruby-throated hummingbird. Thousands of people place feeders of lightly sugared water in their yards each year hoping to attract the shy, tiny visitors as they migrate to South America.



There are also many game birds in Georgia. Quail, doves, ducks, and wild turkeys are the most popular with hunters. Georgia has joined at least forty-two other states in classifying the bald eagle as an endangered species. Hunting eagles is strictly forbidden by law. The state funds a program to feed the young eaglets until they are ready to live on their own. Extensive federal and state programs, along with caring private citizens, have resulted in a significant increase in the number of nesting bald eagles.

Reptiles and Amphibians

Forty species of snakes live in Georgia; all but six species are harmless. Poisonous snakes include the copperhead, cottonmouth (water moccasin), coral, and three types of rattlesnakes. It is important to remember that snakes do not automatically attack people; they strike to defend themselves. Since they can only strike a distance of about one-half of their body length, it is wise to remain at a safe distance of about 4 to 5 feet and be safe. Snakes are an important and valuable part of our environment since they keep down the population of rodents and insects that can make our lives miserable.

The Coastal Plain region, particularly swampy areas such as Okefenokee, is home to the American alligator. Alligators grow to an adult length of six to twelve feet. Although they are protected by the federal government from unauthorized killing, they have become so numerous that Georgia now allows an alligator hunting season.

There are twenty-seven varieties of turtles in Georgia. The famous loggerhead sea turtles live on the barrier islands off Georgia's coast. From May through August, the loggerheads nest at night on the ocean and river beaches. The species is now endangered because recent developments on the coast have increased the artificial lighting and caused much damage to the nesting habitat. Visitors to a stream, marsh, or pond can easily find some of Georgia's other amphibians. The



Did You Know?

Alligators can run at a speed of 15 miles per hour, and crocodiles cannot stick out their tongues.



Top: The bald eagle, our national symbol, usually nests near water. **Above:** Visitors to the Lamar Q. Ball, Jr. Raptor Center in Statesboro can see raptors like this redtailed hawk “up close and personal.”



By the Side of the Road

WORLD RECORD BASS

Approximately two miles from this spot, on June 2, 1932, George W. Perry, a 19-year old farm boy, caught what was to become America's most famous fish. The twenty-two pound four ounce largemouth bass (*Micropterus salmoides*) exceeded the existing record by more than two pounds and has retained the world record for more than fifty years. Perry and his friend, J.E. Page, were fishing in Montgomery Lake, a slough off the Ocmulgee River, not for trophies but to bring food to the table during those days of the great depression. The fish was caught on a Creek Chub Perch Scale Wigglefish, Perry's only lure, and was 32½ inches in length and 28½ inches in girth. The weight and measurements were taken, recorded and notarized in Helena, Georgia and Perry's only reward was seventy-five dollars in merchandise as first prize in Field and Stream Magazine's fishing contest. The longstanding record is one of the reasons that the largemouth bass was made Georgia's Official State Fish. Montgomery Lake is today part of the Department of Natural Resources' Horse Creek Wildlife Management Area.

On June 2, 1932, near Jacksonville, a nineteen-year-old farm boy named George W. Perry caught what was to become America's most famous fish. The twenty-two pound, four-ounce largemouth bass was the largest bass ever caught, heavier by more than two pounds. The record has stood for over fifty years.

Perry and a friend were fishing in Montgomery Lake, a slough off the Ocmulgee River, hoping to catch food for their

tables during the Great Depression. Perry caught the record bass on a Creek Chub Perch Scale Wigglefish, his only lure. The bass was 32½ inches long and 28½ inches around. The size was notarized in Helena. His longstanding record is said to be one of the reasons the largemouth bass was made Georgia's official state fish.

The Spanish moss-draped oaks that surrounded Lake Montgomery when Perry caught his record fish are still there. But the water no longer winds in from the river, so the lake is much smaller and shallower. You can see a picture of Perry's lure on a giant sign that welcomes visitors to Jacksonville. According to local reports, Perry was a modest man and rarely bragged about his world record. Sadly, he died in an airplane crash in 1974.



Above: A hatchling loggerhead turtle makes its way toward the ocean in late summer.

state is a natural home for twenty-four types of frogs, four species of toads, and thirty-six kinds of salamanders.

Fish and Sea Life

If you ask Georgia fishers, "What do you like to catch?" you can almost guess the part of the state in which they fish by the answer they give. If they like trout, chances are they are from north Georgia. On April 1, they join scores of other people, equipped with hand-made fishing flies or cans of corn, wading into the cold mountain streams. The state boasts four thousand miles of public and private trout streams. To Georgians in the middle and southern part of the state, nothing can match the fun of bringing in a largemouth bass from one of the thousands of ponds and lakes that dot the region. A number of state and national fish hatcheries ensure that our lakes and streams are always full of the hundreds of fish species available to sportspeople. Coastal fishers enjoy the challenge of bringing in red drum, spotted sea trout, sheepshead, and

croaker. Locals along the Golden Isles frequently catch their dinner of blue crabs or pink shrimp. Offshore artificial reefs ensure that future generations enjoy an abundance of fish off the coastal shores. The Grays Reef National Marine Sanctuary, off Sapelo Island, is one of the largest bottom reefs in the southeastern United States. One of the most popular fish in the coastal area is catfish, which can be found in both freshwater and saltwater.

One other fish deserves recognition: shad. The Ogeechee River near Savannah is the home of this special delicacy. The season for shad runs from January 1 to March 31, and many fine restaurants in the coastal region feature this tasty, albeit expensive, delicacy. Shad roe, which is made up of millions of tiny eggs, is usually wrapped in bacon and baked as another unique coastal treat.

One of the most feared sea creatures off the Georgia coast is the shark. You have probably not confronted a shark in the water since they normally swim farther out from shore than beach-goers. But this fascinating fish is vitally important to our future. Scientists believe that sharks never get cancer, even though they live up to one hundred years and can survive for six weeks without eating. Scientists do not know if the absence of cancer is because the shark has no skeletal system (only cartilage) or if it has a natural immunity that can be used in research to find a cure for cancer.

Georgia's fishing industry, which produces about \$45 million per year, is changing. As the shrimping industry slows due to decreasing numbers and size of shrimp and increased government regulations, Georgia's commercial fishers have turned to other fish markets. Asian markets rely on some foods not considered seafood staples in our country but considered to be delicacies in their culture. These new foods include welks and jellyfish. The latter is about 95 percent water, but the remaining part is made into "jelly balls." Fishermen are gathering these new sea foods for export overseas.



Top: This shrimper is sorting his catch. Georgia shrimp are considered by many to be the best in the world. **Above:** Jekyll Island is a favorite destination for surf fishing enthusiasts.

It's Your Turn

1. What percentage of Georgia's land is forested?
2. Find out which trees and plants dominate in your hometown. How does that differ from some other sections of the state? For example, salt marsh wiregrass does not grow in northern Georgia. It grows only in the long pine coastal areas of the state.
3. Which two endangered marine mammals make Georgia their home for a portion of the year?
4. What aspect of coastal area growth and development most hinders the endangered loggerhead sea turtles?
5. What potential does the shark hold for man's future?

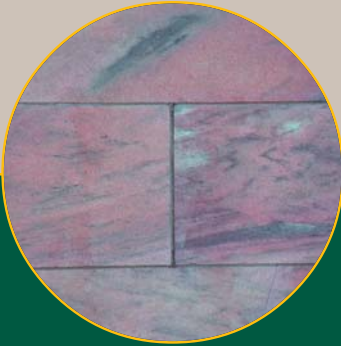
Did You Know?

Georgia's fish serve many purposes. Most people do not realize that some lipsticks used the world over have fish scales in them.

Section Preview

As you read, look for:

- the state's mineral resources and
- uses for minerals mined in the state.



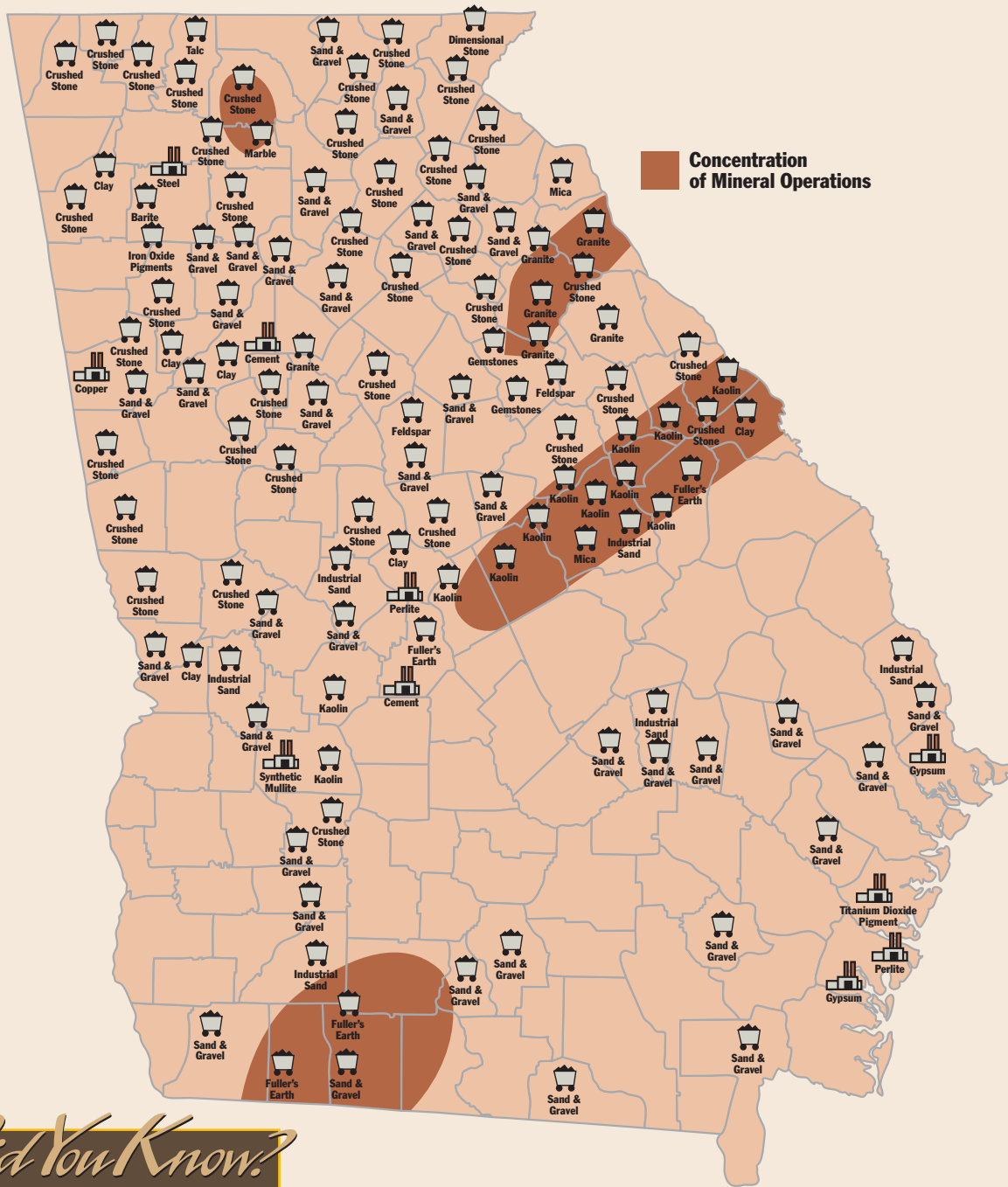
Right: The Tate House was built in 1925 by Colonel Sam Tate, the founder of the Georgia Marble Company. Georgia marble was used in the construction of the Lincoln Memorial. **Above:** The rare rose-colored marble used in the Tate House is responsible for its nickname of the “Pink Palace.” **Below:** The Tate School, built of white marble, is the nation’s only marble elementary school.

Georgia's Natural Resources

Because we have such a diverse state, we are fortunate in Georgia to have many natural resources. Our fauna and flora are a part of those resources, but we also have many rock and mineral resources.

Perhaps our best-known resource is marble, found primarily in Gilmer, Hall, and Pickens counties. In fact, Pickens County holds a Marble Festival each year where you can see a beautiful marble hotel and visit a school made out of marble. Both are located in Tate. Marble is used for buildings, monuments,





Did You Know?

Georgia marble was used in the sculpture of Abraham Lincoln in the Lincoln Memorial in Washington, D.C.

interior decorations, and sculptures. Crushed marble is used for flooring, lime, and in such products as paint, plastic, rubber, latex, linoleum, and even chewing gum.

Another well-known stone product is granite, which is found mainly in Elbert and DeKalb counties. Granite is used for buildings, monuments, paving blocks, and curbs. Crushed it is used in concrete and concrete products

Map 14 Georgia's Mineral Resources

Map Skill: What minerals, if any, are found in your county?

Figure 7 Other Mineral Resources of Georgia

Mineral	Uses	Primary Mining Area
Barite	Used in radiation shielding, as filler for brake shoes, in golf and bowling balls	Cartersville (Bartow County)
Feldspar	Used in ceramics, soaps, scouring powders, and electrical insulations	Jasper, Greene counties
Gold	Used in jewelry, electrical uses, covers dome of State Capitol	Dahlonega (Lumpkin County)
Limestone	Used in cement, highway material, agricultural lime	Much of northwest and Coastal Plain region
Muscovite mica	Used for roofing materials, joint cement, rubber, paint, well drilling compounds, and electrical insulations	Hartwell (Hart County), Washington, and Sandersville
Ocher	Coloring for bricks, mortar, cement, and linoleum	Cartersville (Bartow County)
Phosphate	Used in fertilizer, water softeners, baking powder, detergents, ceramics, and pharmaceuticals	Coastal Plain region
Quartzite	Used in landscaping, decorative stones, road material, industrial sand	Augusta (Richmond County)
Sandstone	Used for building stone, road material	Jasper, Pickens counties and Coastal Plain region
Shale	Cement, brick, tile, road materials, sewer pipe	Polk, Murray counties
Structural clays	Used in brick, tile, road materials, sewer pipe	Richmond, Bibb, Muscogee counties
Talc, soapstone	Used in roofing materials, paper, cosmetics, steel pencils, paint, rubber, insecticides carriers, paper	Murray County, much of north Georgia

including road paving materials. Limestone and slate are two additional stone products mined in Georgia.

It may come as a shock to many people, but the estimated value of nonfuel coal mined in Georgia is over \$1.6 billion a year.

More profitable, however, are clay products called kaolin and fuller's earth. Fuller's earth is mined in Decatur, Grady, Jefferson, and Thomas counties. It

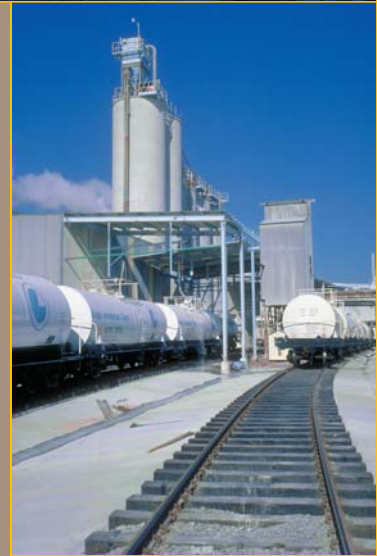


is used primarily for drilling muds, kitty litter, as an absorbent for oil or grease, and in soaps and medicines. The most valuable mineral in Georgia is kaolin, which is almost 54 percent of our nonfuel mineral production. Kaolin is mined in the Fall Line counties of the east-central Coastal Plain. It is used as a coating for paper, a filler for paint, plastics and rubber, as a base for porcelain products, in addition to other uses. Hard kaolin is also used for fire bricks, mortar, and cement.

There are many other minerals that are very important even though they may be mined in smaller quantities.

It's Your Turn

1. Name four minerals for which Georgia is nationally known.
2. You will read in upcoming chapters about Georgia's gold rush. Where is most of Georgia's gold found?
3. Go online with your favorite search engine and research Georgia's mineral resources. One good source is the U.S. Geological Survey. Identify the minerals associated with your own community. Which were mined in the past and which are still mined today?



Top: Kaolin mines are found along a 20-mile-wide, 60-mile-long strip running from Macon to Augusta. **Above:** Kaolin is often mixed with water and shipped in rail cars.

Section Preview

As you read, look for:

- the importance of the Atlantic Ocean and coastal waterways, major rivers of Georgia, and
- **vocabulary terms:** Atlantic Intracoastal Waterway, semidiurnal tide, tide, saltwater marshes, freshwater sloughs, estuaries, watershed, reservoir, and aquifer.

Below: The Atlantic Intracoastal Waterway is an important shipping lane for cargo ships.

Georgia's Waterways

Georgia's waterways provided transportation and food for early Indian tribes. When European settlers arrived, they set up trading posts and established temporary and permanent settlement sites on river *bluffs* (steep riverbanks). Today, the Atlantic Ocean and inland rivers, lakes, and streams are used for recreation, to make electricity, as inexpensive transportation resources for ships and barges, as ports for trade and commerce, as a food source (fishing), and, of course, as attractions for Georgia's tourism industry.

The Atlantic Ocean

Georgia has more than one hundred miles of coastline on the Atlantic Ocean, beginning at the Savannah River and going to the St. Marys River. Savannah and Brunswick are the state's two deepwater ports. Some parts of the coastline serve as wildlife refuges and others as commercial fishing and shrimping centers. There are harbors for the coming and going of luxury cruise ships and trading ships as well as miles of recreational beaches that draw tourists from far and near.

Georgia's barrier islands, are located several miles off the Atlantic coastline. These islands block ocean waves from directly hitting Georgia's mainland. Between the barrier islands and the mainland is the **Atlantic Intracoastal**



Did You Know?

You may have heard the riddle “What has no beginning, end, or middle and touches every continent?” The answer, of course, is **the ocean**.

Consider for a moment the **sheer size** of oceans. Oceans cover approximately **two-thirds** of Earth’s surface. The oceans’ **deepest point** is **6.8 miles down**; **Mount Everest** is only **5.5 miles high**.

Waterway, a 1,000-mile inland waterway that runs from New York to Miami, Florida. The waterway gives commercial and recreational boating traffic safety from storms, strong currents, and waves of ocean routes.

Along the coastal area, Georgia has **semidiurnal tides**, or two high tides and two low tides each day. A **tide** is a rise or fall of the sea level caused by the gravitational pull of the sun and the moon. The coastline has six- to nine-foot tides, which are very unusual. As an example, Cape Hatteras, North Carolina, has two- to three-foot tides, and Miami, Florida, has one- to two-foot tides. The high tides

and the gradual slope of the Coastal Plain allow tidal waters to flow far into the land, creating the most massive area of saltwater marshes on the entire Atlantic coastline. While Georgia’s tides are considered high tides, they are not particularly strong or forceful, so they do not carry into shore the deeper, coarser grains of sand from the ocean. When ocean tides are at their highest, they are referred to as “spring tides” and when they are at their lowest, they are called “neap tides.”

Coastal Waterways

Between the barrier islands and the mainland is a four- to six-mile band of **saltwater marshes** covering about a half-million acres. At least one-third of the salt marshes along the Atlantic coastline are in Georgia. The marshes, protected by the government, are home to many kinds of water life. Salt marshes extend well into Georgia’s mainland by following the major rivers and occupying wetland areas. About 95 percent of the vegetation in the salt marshes is cordgrass, but there is also glasswort, saltwort, salt grass, and marsh lavender. Plant life is certainly not the only active life among the saltwater marshes. The rulers of the marshes are the sand fiddlers and mud fiddlers; they are joined by the snails and crabs that thrive in the harsh environment. The marshes are a food source for herons, egrets, ibis, sandpipers, and the endangered

Below: The great blue heron can be seen throughout Georgia, except in the northeast. **Bottom:** Jekyll Island’s saltwater marshes are home to many varieties of plants and fish.



Endangered Marshes?



Are Georgia's 450,000 acres of saltwater marshes in trouble?

In the spring of 2002, scientists along a six-county area of the coastal marshlands tried to find the reasons behind the sudden appearance of over five hundred acres of parched, browning and balding, dying marshes. At this point, there appear to be three possibilities for the frightening die-off in marsh areas: Georgia's severe droughts from the late 1990s and early 2000s, a new form of virus attacking the marshlands, or pollution from manmade problems such as chemical spills.

During the same time period, the state's blue crab population was severely decreasing as were coastal shrimp resources. Are the three problems related? No one knows for sure, but if Georgia loses the salt marshes, it would have a horrendous impact on shellfish and other wildlife that depend on the marshlands for home, protection, and food. In addition, the loss of the recreational use of the marshlands would be devastating to local economies and tourism. This situation is an example of the "If ..., then ..." proposition. Why?

Use your research skills to follow-up on the causes and solutions for the marsh die-off. Are there things that you can do to harm or to protect one of Georgia's most beautiful resources?

wood storks so popular among coastal birdwatchers.

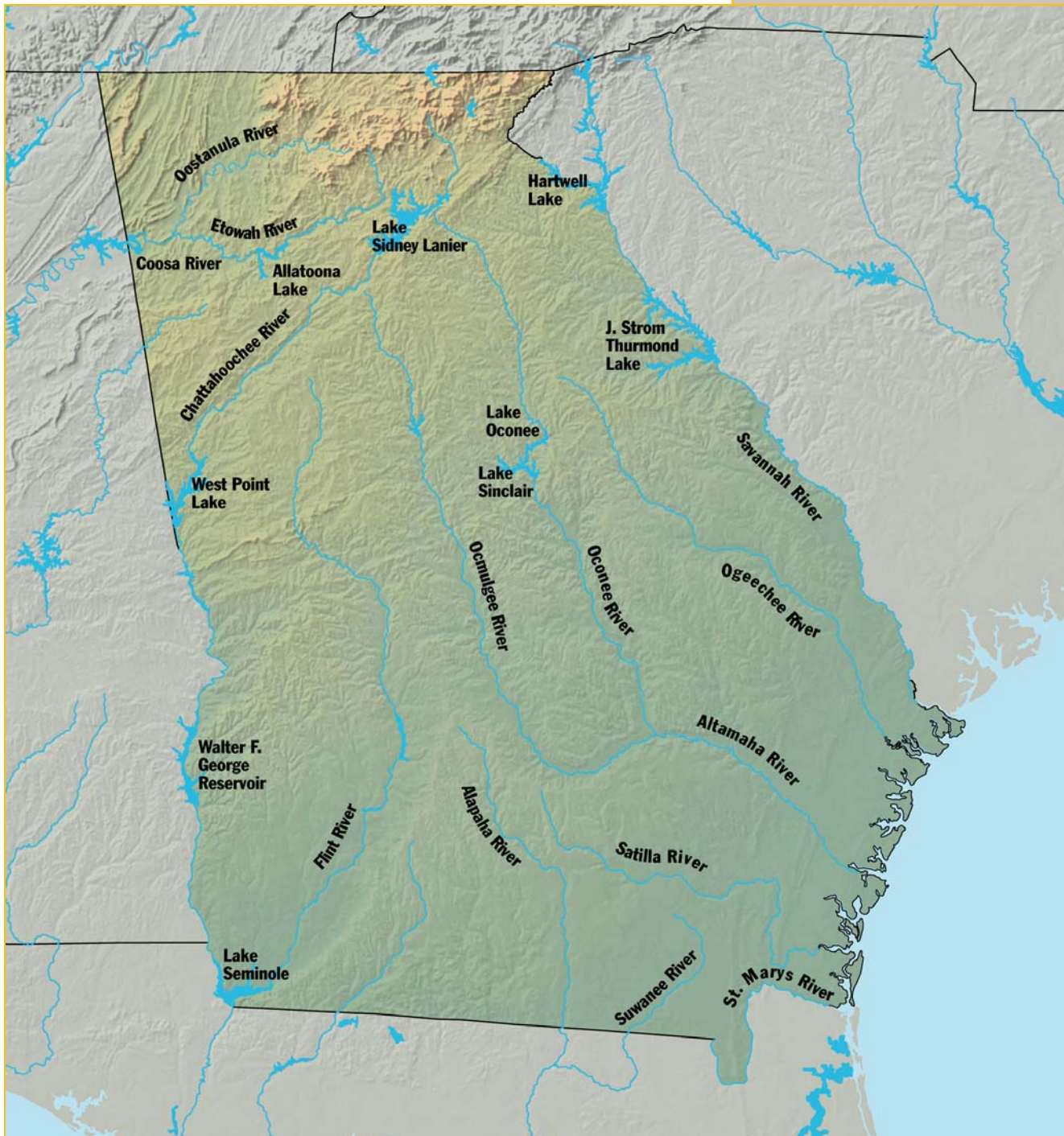
Freshwater sloughs (pronounced "slaws") are small ponds, freshwater marshes, and swamps. Sloughs also develop from marsh creeks that lose their tidal flow. Within the maritime forests, a number of freshwater sloughs serve as a source of fresh water for the wildlife of the forests.

Estuaries are bodies of water where freshwater rivers and salt water mix. Sounds, marsh creeks, and tidal rivers are examples of estuaries along Georgia's coastline. These estuaries are nurseries for crabs, shrimp, fish, and shellfish. When these animals are young, they

are known as plankton, tiny microscopic organisms. They are among the few creatures that thrive in the harsh environment of the estuaries. The *salinity* (salt level) of the sea water decreases as it moves into the interior marshes, creeks, and rivers. The salinity also changes regularly because of the tides and rainfall. Changes in salinity are one factor in making the marshlands a difficult environment for plant and marine life.

The many different elements of the coastal area are interdependent. The sandy beaches and dunes protect the islands from erosion and flooding. The barrier islands protect the salt marshes from storms and ocean currents. The salt marshes are feeding grounds for aquatic life, which are, in turn, food for larger

marine life. They provide nurseries and nesting sites for coastal birds. As tides flow in and out of the marshes twice daily, they remove marsh waste and circulate valuable nutrients and organisms.



Rivers

Georgia has twelve principal river systems. The Savannah, Ogeechee, Altamaha (which combines the Oconee and Ocmulgee rivers), and Satilla rivers flow directly into the Atlantic Ocean. Western rivers, including the Chattahoochee and Flint, become part of the Gulf of Mexico. In the northern part of the state, the Etowah and Oostanula rivers form the Coosa River, which flows through Alabama into the Gulf. The Alapaha, the Suwannee, and the St. Marys, located in south Georgia, flow across the Georgia-Florida border.

Map 15 Georgia's Rivers and Lakes

Map Skill: Which river appears to be the longest in this map?

Spotlight on the Economy

Georgia's Ports



Georgia's has two major deepwater seaports, Savannah and Brunswick, and two inland barge terminals, Bainbridge and Columbus. The economic impact of these ports exceeds \$1.8 billion in annual income. They account for over 81,000 jobs and pay over \$585 million in state and local taxes. Over 90 steamship lines serve Georgia, which leads the South Atlantic region in foreign cargo handled.

The key to the economic success of Georgia's ports is the transportation infrastructure supporting those ports. The ports of Brunswick and Savannah are located close to two major interstate highways (I-95 and I-16) and to key railroad hubs. From Georgia, goods are two truckload days from 82 percent of the U.S. industrial marketplace and 79 percent of the nation's largest consumer markets. Over 100 motor freight carriers serve the metropolitan areas of Georgia. The state has 35 scheduled carriers, 2,200 intrastate haulers, and 25,000 interstate truckers serving the state. In addition, two major railroad lines operate in the state.

Above: Savannah is one of the most important containerized ports in the United States.

Savannah's seaport concentrates on containerized cargo and is the fifth largest container port in the nation. The Brunswick port concentrates on auto shipping, heavy equipment, farm machinery, and luxury tour buses. In addition, shipping of bulk agricultural products has increased.

A massive amount of imports (goods and supplies shipped into the state) and exports (goods and supplies shipped out of state) flow through Georgia's seaports and inland barge terminals. In fact, the ship on the reverse side of Georgia's state seal represents the state's exports. Georgia has a history of product exporting. In 1788, it was the first state to export cotton to Great Britain. The first cattle exported from America left from Savannah's port.

Georgia's marketplace really is the world, and the state's seaports make that marketplace a viable enterprise.



Did You Know?

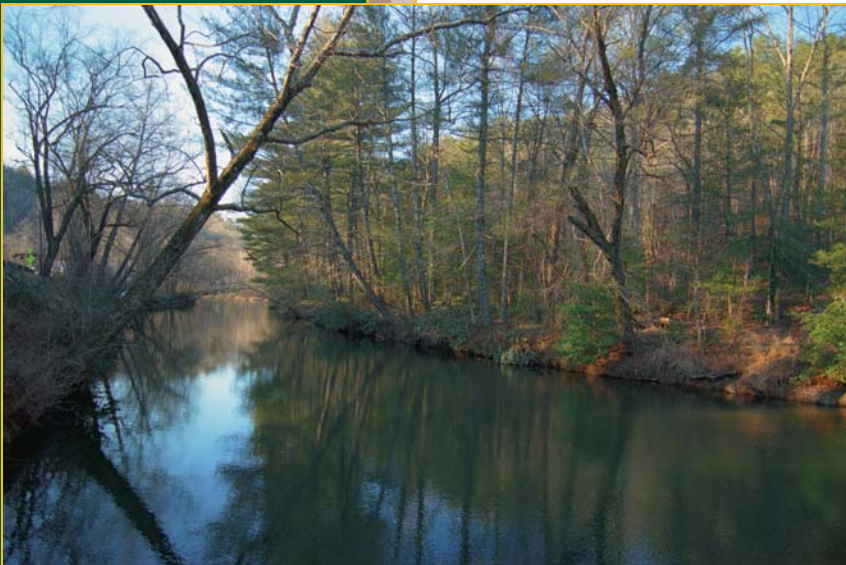
Except for the Savannah River, no rivers flow into Georgia from other states.

Georgia's major waterways have been important to the social, political, and economic growth of the state. In looking at a map of Georgia's river systems, it is notable that the names of more than half show an Indian influence. For example the Coosa River gets its name from the

Choctaw. It means "kusha," or cane. The Choctaw used cane to make arrows, spears, and knives and as a container for fragile pieces of clothing. Altamaha is believed to mean "chief's lodge." Other smaller river systems have Indian names, including Apalachee, Towaliga, and Coosawatee. But the American influence can certainly be seen in river names like Rottenwood Creek, Settingdown, Potato Creek, and Mud Creek.

These rivers play important roles in recreation, in providing water sources for towns and cities, as sources for seafood, and as a boon to Georgia's economy through the economic benefits of inland barge terminals in Bainbridge and Columbus. The inland port terminals at Bainbridge and Columbus are located on the Apalachicola-Chattahoochee-Flint river system. They provide low-cost transportation services primarily for agricultural and industrial commodities to and from the Gulf of Mexico and major markets in the southeastern United States.

Above: Visitors to Etowah Mounds State Historic Site can see original Indian fish traps in the Etowah River.



Top: The Savannah River, seen here at Augusta, forms the border between Georgia and South Carolina. **Above:** The headwaters of the Chattahoochee River, seen here at Helen, are near Brasstown Bald

The Savannah River

By the time Hernando de Soto reached the Savannah River in 1540, Indians had traveled the 314-mile-long waterway for many years. They called it the Isondega, meaning “blue water.” Along the border of South Carolina, the river spreads into three lakes: J. Strom Thurmond Lake (formerly called Clark Hill Lake), Lake Russell, and Hartwell Lake. The Savannah is the only river that flows into Georgia from outside its borders. The headwaters of the Savannah River are in South Carolina.

The Chattahoochee River

The name of the Chattahoochee comes from the Cherokee and means the “river of the painted rock.” It was so named because of the colorful stones that lay across the riverbed. The river itself flows 436 miles from the mountains of North Georgia to the Gulf of Mexico. Part of the southern section forms the natural border between Georgia and Alabama. The chief cities along its banks include Gainesville, Atlanta, and Columbus. Major manmade lakes, including Lake Lanier, West Point Lake, and the Walter F. George Reservoir, are part of the Chattahoochee’s winding path. In addition to supplying water



to Atlanta and Columbus, the river is a water source for Helen, Buford, LaGrange, and West Point.

The Flint River

The Flint River is one of Georgia's most picturesque and vital rivers. It runs parallel to the Chattahoochee from College Park, near Atlanta, until it empties into Lake Seminole at Bainbridge. Like all river basins, the Flint River basin is a **watershed**, an area that catches rain and snow, which then drains into marshes, streams, rivers, lakes, and groundwater. The Flint covers 8,460 square miles of Georgia's Piedmont and Coastal Plain regions. Interestingly enough, the river meanders (curves) so much that a boater can travel 350 miles although the river is actually only 212 miles long.



Top: The mighty Altamaha River carries much silt downriver and, at Darien, has formed islands and a delta.

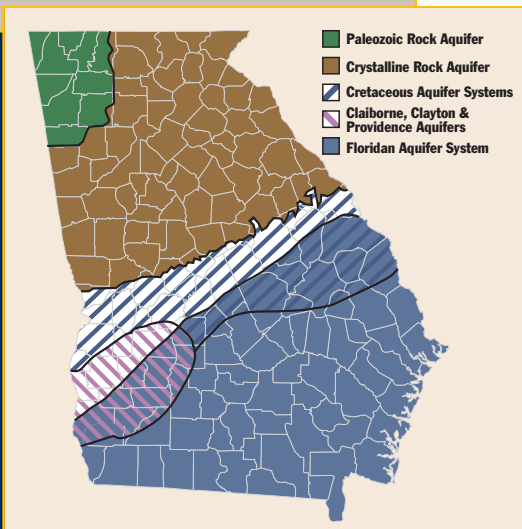
Above: The Flint River flows gently over boulders at Sprewell Bluff State Park.

The Altamaha River

The Ocmulgee and Oconee rivers meet near Hazlehurst and Lumber City. They then flow into one of Georgia's most powerful rivers, the Altamaha. This muddy river is rich in fish and fertile swamps. It empties into the Atlantic Ocean near the coastal city of Darien.



Lake Chatuge was created in 1941 by the TVA.



Georgia's Major Lakes

Although Georgia does not have any large natural lakes, the state is fortunate to have excellent lakes created by the U.S. Corps of Engineers and the Georgia Power Company. There is also a network of lakes formed from Georgia's massive river systems. Whether manmade or natural, the state's lake system provides recreational areas, reservoirs, and hydroelectric power.

Allatoona, Carter Lake, Lake Lanier, Walter George, West Point, and Seminole all generate hydroelectric power, which provides us with the electricity we use in our homes. In later chapters, you will also read about the nuclear power plants that provide electricity for the state. In addition, J. Strom Thurmond Lake, Hartwell Lake, Oconee Lake, and others offer enjoyable fishing, camping, boating, and recreational shorelines.

Map 16 Georgia's Major Aquifers

Map Skill: What aquifer underlies most of the Coastal Plain?

Water — Not An Endless Resource

In the last chapter, you looked at the damaging effects a drought can have on our state. You also examined the importance of all forms of precipitation in providing water for our state. However, Georgia has water concerns even when there is no drought.

Much of the northern section of the state (the Appalachian Mountains regions of the Appalachian Plateau and the Ridge and Valley region, the Blue Ridge region, and the Piedmont Plateau) does not have groundwater because

of the bedrock so close beneath the soil surface and because of the steep slopes of the mountainous areas. When this section receives precipitation, most of the water runs off and into the rivers of the area. Those rivers flow southward, carrying the water away from north Georgia and into the central and southern areas of the state and other states.

Since the northern half of our state relies on surface water to meet its water needs, a number of major **reservoirs**, or holding tanks, have been constructed in that section of Georgia. However, most of Georgia's population and much of the state's rapid growth have taken place in the metropolitan areas around Atlanta in the Piedmont Plateau. The area with the greatest water needs lies in the area with the least amount of water resources.

The southern half of our state, basically the Outer and Inner Coastal Plain areas, does have ground water. The major **aquifers** in our state serve as natural water storage tanks, but all four are located in the Coastal Plain. While they provide an abundant water supply for agriculture as well as southern residents and businesses, there are concerns about the aquifers as well. In the past one hundred years, increased usage of water has dropped the water level in these natural reservoirs. In some cases, the level has dropped enough that *brackish water* (a mixture of salt and fresh water) has flowed into the aquifers.

Water is not an endless resource. It is a resource that must be shared by all residents, businesses, and industries. In Georgia's case, that water must also be shared with Alabama, Florida, and South Carolina who are also served by some of the state's rivers and aquifers. Conservation of natural resources, including water, is the responsibility of every Georgian. What can you do to help preserve our water resources?

A Final Note

There is a one-of-a-kind water resource located in Augusta (Richmond County). It is a canal, a nine-mile transportation corridor that is the only canal of its kind in the southern United States. In the past, the Augusta Canal had different uses as you will learn in later chapters. Now it is a National Park Heritage Area. That canal changed the county and the state both before and after the Civil War. It is a source of pride for Augustonians.

It's Your Turn

1. What might happen if Georgia's barrier islands were all washed away?
2. What are estuaries? How do they protect Georgia's ecological balance?
3. How have Georgia's abundant water resources helped the state attract business and industry?
4. What are Georgia's natural water storage tanks and where are they located?

Chapter Summary

- Georgia has very diverse plant and animal life. Endangered species include the bald eagle, the right whale, and the manatee.
- Over 23 million acres of land in Georgia is forested, twice the national average.
- Georgia's natural resources include forests and minerals. Key minerals in Georgia are clays, kaolin, granite, and marble.
- A major waterway is the Atlantic Intracoastal Waterway, a 1,000-mile water highway running from New York to Florida.
- Georgia has semidiurnal tides (two high tides and two low tides daily).
- Major rivers include the Savannah, Ogeechee, Altamaha, and Satilla rivers, which flow directly into the Atlantic Ocean. The Chattahoochee and Flint rivers flow into the Gulf of Mexico. The Etowah and Oostanaula rivers form the Coosa river and flow through Alabama into the Gulf. The Alapaha, Suwannee, and St. Marys rivers flow across the Georgia-Florida border.
- Georgia's manmade lakes provide recreational facilities, water storage reservoirs, and hydroelectric power.
- The state's water resources were a major influence on settlement in the early days of Georgia's history and are a major influence attracting business and industry to the state today.
- Georgia has two deepwater seaports, Savannah and Brunswick, and two inland barge terminals, Bainbridge and Columbus.

Chapter Review

Reviewing People, Places, and Terms



Use each of the following terms in a sentence.

1. aquifer
2. Atlantic Intracoastal Waterway
3. estuaries
4. flora
5. fauna
6. inland barge terminal
7. reservoir
8. watershed

Understanding the Facts



1. What are some of the types of trees grown in the northern, coastal, and Okefenokee areas of the state?
2. Because of strong conservation efforts, what mammal is now found in all 159 of Georgia's counties?
3. Identify three of Georgia's endangered species.
4. What species of poisonous snakes are native to Georgia?
5. What are some of the most profitable mineral resources in Georgia's economy?
6. What are Georgia's inland port terminals and how do they strengthen the economy?
7. How many acres of saltwater marshland lie between Georgia's barrier islands and the state's mainland?

8. Which Georgia rivers flow into the Atlantic Ocean? Which Georgia rivers flow into the Gulf of Mexico?
9. What are the main benefits of Georgia's large lakes?

Developing Critical Thinking



1. How do Georgia's semidiurnal tides benefit coastal marine life?
2. Explain the differences between Georgia's manmade reservoirs and natural aquifers, and give examples of each.
3. Where are Georgia's seaports and how does the transportation infrastructure contribute to their success?
4. Based on what you have read in the chapter, discuss three ways you can become more "diligent" and three ways you can demonstrate "respect for the environment."

Checking It Out



1. History, including geography, always contains some mysteries. You have read about the bald eagles in our state and Georgia's efforts to preserve this endangered national symbol. The good news has one exception. During 2002, twenty-five eagles mysteriously died around Lake Thurmond. In addition, numbers of Canadian geese also died. Both fell victim to AVM (avian vacular myelinopathy), a fatal disease of unknown origin. Will this undo all of the efforts to save the bald eagle? Why are the

birds dying? The only clue experts had in 2002 was “the coots.” Use the Internet and see if you can find out why the birds died and solve this mystery.

2. In addition to the Atlantic Ocean, which borders Georgia’s east coast, what are the other oceans of the world? Find them on your maps or globe.
3. In addition to the minerals described in the chapter, Georgia has other minerals, some of which you can mine yourself. Which mineral deposits are located closest to your home? Which minerals are you likely to come across while “rock hunting”?

Writing Across the Curriculum



1. Write an 3-4 paragraph expository report for your class on ways of conserving water resources in Georgia. Your report’s purpose is to *inform*. Organize the report with an introduction that states a specific point (called a *thesis sentence*). Then provide details (examples, evidence, authority information, facts, or statistics) to support your point (prove your thesis). End your report with a brief conclusion that restates or rephrases your thesis and summarizes the major supporting details presented. Of course, you will have to do a bit of research to gather information for your report. It should not be just personal opinions, but should be based on factual data.

Exploring Technology



1. Use your favorite search engine to find the names and locations of all of Georgia’s state and national parks. Make an alphabetical chart of the cities and towns in which these parks are located. What types of activities are available in each park?

2. If you are interested in sea creatures that live deep in the ocean and are never seen, go to a website such as www.oceans.gov. Find three of the creatures that you think are the most interesting to share with your classmates. Also check out “aquatic nuisance species” to see what we need to do to manage these damaging entities.



Applying your Skills

1. Georgia has over 180 festivals each year celebrating local flora, fauna, and history. After researching Georgia festivals, record on a state map the festivals and dates of celebrations that will be taking place within about 65 miles of your home (that’s about an hour’s drive away).
2. National Arbor Day, a day set aside to encourage the planting of trees, is in April. Georgia’s Arbor Day is in February. Find out what accounts for this difference.
3. Georgia’s granite industry employs about 2,400 people for a payroll of just over \$57 million. What would be the average salary if everyone was equally paid?



Photo Question

This lake was created when the Chattahoochee River was dammed. What is it?

