Ochlockonee River

Ochlockonee River

Sylvester

Doerun

Doerun Pitcher Plant Bog Natural Area

Camilla

Joeseph W. Jones Ecological Research Center Center at Ichauway

Lost Creek

Little Ochlockonee River

Bridge Creek

Moultrie

Pelham

Little Creek

East Branch

Spence Mill Creek

West Branch

Ochlocknee

Big Creek

Barnetts Creek

Old Confederate Bridge

THOMASVILLE

Lapham-Patterson House State Historic Site

Greenwood Plantation

Thomasville Rose Garden

Bainbridge

Whigham

Cairo

Tired Creek

Turkey Creek

Attapulgus Creek

Pebble Hill Plantation

GEORGIA

FLORIDA

Willacoochee Creek

Swamp Creek

OCHLOCKONEE RIVER

Birdsong Nature Center

Tall Timbers Research Center

RED HILLS

Lake Iamonia

Quincy Creek

Quincy

Upper Ochlockonee Canoe Trail

Carr Lake

Hurricane Creek

Lake Jackson

Little River

Lake Talquin State Forest and Park

Alfred B. McClay Gardens State Park

Lake Jackson Mounds Archeological State Park

Bear Creek

Ocklowaha Creek

TALLAHASSEE

Telogia Creek

Lake Talquin

Fort Braden Trail

Hosford

N

NW

NE

W

E

SW

SE

S

Sopchoppy River

Wakulla Springs State Park

The Florida Trail

Crawfordville

St Marks

Lower Ochlockonee Canoe Trail

St Marks National Wildlife Refuge

APALACHICOLA NATIONAL FOREST

Sopchoppy

St Marks NWR

Panacea

APALACHEE BAY

Marshes Island

Ochlockonee Point

Ochlockonee Bay

Ochlockonee River State Park

Bald Point State Park

TATE'S HELL STATE FOREST

Crooked River

Dog Island

Oak. Lock. Knee.

by Richard J. Lenz

Three hard nouns. Three door knocks. This is how locals pronounce the name of the river that rises inauspiciously in the red clay soils of southwest Georgia and winds 206 miles to the Florida coast.

Ochlockonee. Not a pretty name—in sound or meaning. Spend time with the river, and you will find oaks on the banks, locks at Jackson Bluff Dam in Florida, and of course plenty of cypress knees. But the appellation comes from the Hitchiti Indian language, which is believed to be describing a river that traditionally flowed as *lanee* or *lakni* (yellow) oki (water), as it drained the yellow and red clay soils of the upland area.

Locals ignore the vowel between lock and knee, but they are forgiven for this short cut, because the river's name has had many spellings, a tradition that continues to this day. In Florida, when you cross the river into Leon County behind the dam that creates Lake Talquin, a sign says you have crossed the "Ochlocoknee." In Georgia, you can turn right on GA 188 in the town of "Ochlocknee" and ride out a mile or so to view the Little "Ochlockonee" River.

Not only is the Ochlockonee a river of many names, it is also a river of different qualities and uses. Upstream in Georgia, it is an "impaired" stream that functions as sewer, carrying so much fecal coliform, agricultural runoff, and mercury that locals are warned not to swim, drink, or consume fish from its waters. Further south, it is the last refuge—or maybe graveyard—on earth of the federally endangered freshwater mussel Ochlockonee Moccasinshell (*Medionidus simpsonianus*), which has not been seen for six years. After crossing the state line, the river provides recreation and adds to the underlying water supply for metropolitan Tallahassee. Downstream, near the bay of the same name, it is a tidally influenced river that hosts salt water fish and serves as nursery grounds for marine life, which contribute to Florida's $20 million seafood industry.

As for superlatives, well, if you polled Georgians to list their state's rivers, the Ochlockonee might be the last one named, in contrast to its famous cousin located sixty-five miles to the east—the Suwannee River featured in Stephen Foster's lyrics—which also is born in Georgia coastal plain swamps and flows to the Florida coast.

Purple Bankclimber

Tired Creek

But it's time the Ochlockonee received its due respect, regardless of its difficult name and our reckless treatment. The Ochlockonee has natural qualities which make it unlike any other river. And like all of our other rivers, it affects the quality of life inside its many fingered grasp. And unfortunately like many of our rivers, it is threatened.

The Ochlockonee Watershed

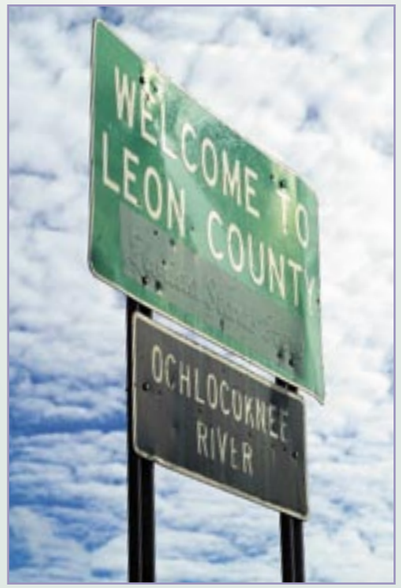
At 420 feet elevation—not far from Gordy, Worth County—cars race by, oblivious that nearby a major river is starting its journey to the sea from a wet wooded thicket in a farmer's field. Here, the landscape tilts slightly to the southeast, which forces water to the elevated road bed where it is frustrated. There, the river collects more volume and is forced north a few hundred feet until it finds a drainage pipe where it sneaks under GA 112. It continues southeast through the cotton and peanut farms of Worth County into Colquitt County and past more farms until it grazes the western edge of Moultrie, town of 14,387 people.

Early settlers liked to build towns on high places next to rivers and Moultrie was no exception, established on a ridge that defines the eastern boundary of the watershed. Thirty miles south, Thomasville, population 18,162, was founded on top of this same ridge.

For the first time, because of the change in topography at Moultrie, the river turns southwest toward Thomasville, instead of keeping its southeastern trend toward Quitman or Valdosta. The Ochlockonee will keep flowing southwest until it meets Telogia Creek in Florida, where it changes its mind back and curve toward the southeast

The Ochlockonee: A River of Names

In 1540, Spanish explorer Hernando DeSoto was the first European to discover the river, which he named Guacuca. During the Spanish Mission period of Georgia and Florida, the Spanish called the river Rio Agna, Rio de Lagna, and Rio Lana, which may have been Spanish renditions of the Muskogean word *lanee* for "yellow." When the English replaced the Spanish in the region, they attempted to reproduce phonetically the Indian names they heard, using a variety of spellings. Historic maps show the river as Ogeelaguanu, Ochlocononee, Ockatockany, O-clock-ney, Okloknee, Ochlochnee, Ochlocknee, Ochlockonee, Ocklockny, and Ocklockony. The Georgia town of Moultrie, established on the banks of the river, was first named Ocklockney. Of Georgia's fourteen major rivers, twelve have names of Indian origin and the other two are based on French and Spanish.



in an aquiline course to finish dead east in the brackish waters of Ochlockonee Bay.

Between Thomasville and Tallahassee, Florida, the Ochlockonee rolls through the beautiful and distinctive timberlands and farm fields of the Red Hills, drawing along with it the waters of southwestern Mitchell County, western waters of Thomas County, and most of Grady County before crossing into Florida.

Just across the state line and east of the river is Lake Iamonia, 5,700 acres, one of three major lakes in Florida that lie within the drainage basin of the river. Iamonia, along with Lake Jackson, was once a tributary of the river, but over thousands of years formed connections to the underlying Floridan Aquifer, which is pumped out for Tallahassee's drinking water, among other uses. While not obvious, the two lakes still have a hydrological relationship with the river. During the normal cycle of floods, twice a year Iamonia is fed from the river through a connection of sloughs and—with 4,325-acre Lake Jackson—through an underground connection.

Native Americans called Lake Jackson *Okaheepee*, or "disappearing lake," in reference to its irregular habit of retreating into underlying sinkholes during droughts, a quality Lake Iamonia shares.

Further south, on the western outskirts of the 150,624-resident Florida capital, the river is backed up by Jackson Bluff Dam to create Lake Talquin, an 8,850-acre reservoir which was built in 1929 to produce hydroelectric power, recreation, and waterfront real estate.

Lake Talquin, like all impoundment lakes, traps the river's sediments, preventing natural elements from nourishing downstream ecosystems. However, wetlands—even man-made lakes—can serve as natural water treatment plants, and Lake Talquin helps to remove a large percentage of unhealthy nutrients that the upper Ochlockonee River brings to the lake.

South of the Jackson Bluff Dam, the river regains its integrity as it is fed by cleaner tributaries and flows through mostly undeveloped conservation lands of the Apalachicola National Forest and Tate's Hell State Forest before reaching Ochlockonee Bay on the coast.

In Florida, the river forms legal boundary as it winds southward, constituting the county lines between Gadsen and Leon counties, Liberty and Leon, Liberty and Wakulla, and Franklin and Wakulla.

In total, the Ochlockonee watershed drains 2,416 square miles, of which 1,336 square miles

Hooded Pitcher Plant

or fifty-five percent is in Georgia and 1,080 square miles or forty-five percent is in Florida.

Rivers of Complexity

It could be argued that rivers are the most complex ecosystem type on earth due to all of the complex and constantly changing influences upon them. Where does the water come from? From the sky when it rains, from the landscape in streams, or from underground sources? The ground it flows over: is it steep or flat? Does the water flow fast or meander slowly? Is it deep or shallow? What are the organic and inorganic elements and compounds that exist in the watershed and make it into the stream? As they interact, what chemical reactions do they produce? What microscopic and macroscopic plants and animals live in and next to the river? What about seasonal weather patterns and temperature changes?

And finally, what have humans done to the ecosystem to change these qualities?

For the naturalist trying to truly know a river, an understanding of hydrology is critical, but it also helps to know geography, geology, chemistry, biology, botany, climatology, and human history.

Like every river on Earth, the Ochlockonee—a river of great diversity and beauty—is the unique expression of these qualities.

The Landscape of the Ochlockonee

The river flows through a geologically youthful region called the East Gulf Coastal Plain Section of the Coastal Plain Province. This province was once ocean bottom, and today consists of marine deposits and soils that have flowed down from the mountains and been deposited over the millennia.

In Georgia, the upper Ochlockonee waters move across the hilly and rolling topography of the Tifton Upland District, a subdistrict of the East Gulf Coastal Plain Section. Because of the slope, on a map the river and its tributaries look like a tree that only has branches growing on its left side, as almost all of the major tributaries start at a high point west of the river and flow southeast before being captured by the main stream of the Ochlockonee.

Tifton Upland soils were formed twenty-five million years ago during the Miocene Age, and are described as well-drained, brownish, and loamy, often with iron-rich layers. The upland soils support mixed hardwoods and pines, and the well-drained, sandy areas harbor longleaf pine/xerophytic oak species. Much of the watershed has been converted to agricultural land where crops of cotton, peanuts, soybeans, and corn are grown.

South of Thomasville and extending to Tallahassee, the landscape changes to form the Tallahassee Hills/Valdosta Limesink District, also known as the Red Hills ecoregion.

This area has a conjoined name because it has two somewhat different characters. In the west, where the Ochlockonee flows, the Tallahassee Hills portion has rolling, hilly topography that is more forested than the Valdosta Limesink District, and contains soils composed of reddish sandy loam and rich clays that help retain moisture, which fosters a tremendous diversity of plant life. The fire-dependent longleaf pine-wiregrass ecosystem is best expressed in this district. Few streams originating in the coastal plain can be considered alluvial, but the Ochlockonee has a substantial alluvial floodplain and is unlike non-alluvial streams in the area, as it picks up erosion products of sand, silt and clay in the Tallahasssee Hills.

Florida and parts of Georgia, Alabama, and the Carolinas lie on top of porous limestone which holds an irregular body of water below ground known as the Floridan Aquifer. At places where

Blackwater, Alluvial, Spring-run and Tidal Rivers

From start to finish, the Ochlockonee combines the characteristics of four very different kinds of rivers: blackwater, alluvial, spring-run, and tidal. Blackwater rivers are named for their dark brown water caused by tannic and humic acids. These streams originate in pine flatwoods and acidic swamps and carry heavy loads of decaying plant materials, sometimes in a ratio of one part organics to one part inorganics. This creates highly acidic waters (low pH) and their own distinctive ecosystems. Blackwater streams have frequent meanders, broad floodplains, and support low biological diversity, with low oxygen levels due to their slower moving, warmer waters. The Sopchoppy is the largest blackwater stream in the watershed. Alluvial streams are more typical of the piedmont. They have sandy bottoms, carry high sediment loads and a lower percentage of organics and thus have a higher pH, higher oxygen levels, and contain greater biodiversity. Many of the tributaries of the Ochlockonee, especially in the Tifton Upland region, have alluvial characteristics, which produce a rare biological community untypical in the East Gulf Coastal Plain Section. Spring-fed rivers here are fed by the Floridan Aquifer. While not a major influence of Ochlockonee tributaries, three named springs feed the river: Indian, White, and Crays Rise. Spring waters are filtered by limestone so they have a neutral pH and generally low oxygen levels. Tidal rivers are located near the coastline, are short in length, are greatly influenced by the tides. The New River has tidal characteristics where it meets the Ochlockonee.

contributions as they run across a karst (limestone) landscape that has more direct connections with the Floridan Aquifer.

The Ochlockonee's variability is remarkable because it depends on rainfall for its water volume. If you visit the same spot during different seasons, you will wonder if you are looking at the same river. Where earlier you could have jumped across a slow stream, now you find a fast-moving torrent that has left the banks and spread hundreds of feet into surrounding bottomland forests. Floods occur when low pressure centers and cold fronts pass through the area during winter and early spring, and drought conditions are more common in late spring and fall.

Principal tributaries of the Ochlockonee are the Little Ochlockonee River, Tired Creek, Barnett's Creek, Little River, Telogia Creek, Crooked River, and Sopchoppy River. Each brings its own character and contributions to the river, some being true blackwater streams and others alluvial in nature. Two are tidally influenced. This diversity adds to the complexity and mystery of the Ochlockonee.

The Ochlockonee: A Birth Place of Diversity

Given the deadfalls, multiple channels with dead ends, and thick river swamps of the upper Ochlockonee in Georgia, if you are an explorer who prefers a certain amount of comfort in your travels, you should leave the canoe at home, drive to a bridge crossing, park your car, and climb down the banks to see the river. Don't forget insect repellent.

Here you will witness a shallow, tea-colored river that moves indifferently between white sandy banks. Cypress knees thrust up from the ground like a brown-fingered giant grasping for something that got away.

Downstream, the river disappears into a dark green tunnel of vegetation, in stark contrast to the hard white light on the bridge.

Exploring the banks of the river, you will find black gum, tulip poplar, red maple, water oaks, and bay trees. In wetter areas, cypress dominate. Titi, viburnum and holly impede your way, and poison ivy, muscadine, and trumpet creeper vines drape the natural setting. Openings are screened by the webs of golden silk spiders, and behind it, you may hear the plops of nervous frogs and river turtles leaving their exposed perches. Above your head, perhaps too obscured to see, is an orchestra of birds flitting through the canopy. Small ponds hold white wiggling mosquito larvae, the mature of which have found you. Welcome to the Garden of Eden!

If it were possible to canoe the entire length of the river, from its origin to the Gulf of Mexico, an intrepid visitor would be exposed to a fascinating array of flora and fauna in a variety of settings: river swamps, shallow streams, sandy banks with floodplain hardwood forests, rolling pinelands, an empoundment lake, then a deeper, faster river with cypress, and finally a salt marsh.

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As the trip unfolded, you could discover natural worlds that produce more questions than answers. In the sandy shallows, your bare feet might find freshwater mussels that exist nowhere else in the world. Lines in the river bottom lead to freshwater snails, which make tracks as they consume river algae. Swimming

The Ochlockonee Moccasinshell

Mussels are usually hard to identify in the wild. *Medionidus simpsponianus* measures less than 2.2 inches long, has a slightly elongated shell, with a broadly curved ventral margin and a posterior ridge that is heavily marked with irregular ridges. The outer shell is light brown to yellow-green and sculptured with dark green rays, and the inner shell surface is bluish white. Found only in the Ochlockonee watershed in Grady and Thomas counties in Georgia, like most mussel species, not much is know about its life history. Some mussels can live up to 200 years. It is a filter feeder that consumes plankton and detritus from its aquatic environment. If it is similar to its cousins, it has an unusual and complex reproductive life cycle, with five life stages. The male moccasinshell releases sperm into moderate current, where it finds and enters female moccasinshells. There, the sperm fertilizes the female's eggs, which develop in the female's shell into larvae called glochidia. After maturing to a particular stage, they leave the shell into the stream to find a specific host fish to parasitize. When they find their "correct" species, they attach to their gills or fins where they will feed and grow. After they metamorphosize into juvenile mussels, they release from the fish and settle to the river bottom. There, they continue to grow until sexual maturity. Only three live individuals have been

Confederate Bridge, Thomasville , Georgia

above them might be the bannerfin and dusky shiners, or a spotted bullhead and Suwannee bass—all rare species. Protruding above the reflective water might be the tiny pipelike nose of the massive alligator snapping turtle. Possibly above the water on a weathered log, a motionless Suwannee cooter stretches his neck on alert for intruders while a water moccasin drops from a low tree branch and effortlessly swims away. A noise in the willows

Gopher Tortise

growing next to the river might give away a Florida black bear, or whitetailed deer, or wild hog, using the river as a natural corridor. Ducks would gather in quieter water, resting from a long flight. Above in the trees, you might hear pileated woodpeckers make a racket and see a swarm of migrating swallows flies in and flies out in the blink of an eye.

Exploring the adjoining forests, you may stumble upon the Florida merrybells, a rare species known only from the Ochlockonee and Chipola rivers, or endangered botanical species such as the orange azalea, Ashe's magnolia, bent golden aster, or wiregrass gentian.

Sun filters through the Spanish moss draped from cypress and tupelo next to the river as you glide downstream. Near the coast, the Atlantic sturgeon may be coming into the river to spawn, sharing the waters with the endangered West Indian manatee. Woodstorks may be feeding in shallows. Nearby, you may find rookeries, where heron, egret, and ibis build nesting colonies, or observe the singular nests of southern bald eagles, Mississippi kites, and ospreys. At the shore, your trip finished, you witness pipers, terns, gulls, and other birds looking for food.

Rare, Threatened, Endangered Species of the Ochlockonee

Some scientists have described the Southeast's rivers and streams as an evolutionary laboratory. The Ochlockonee watershed, while a much younger landscape than the highlands, contains a great diversity of species and endemics, influenced by the diverse landscape through which it flows.

A number of plant and animal species in the Ochlockonee basin appear on Federal, Georgia, and Florida lists as threatened, endangered, or of special concern, including two fish, eleven amphibians and reptiles, twelve birds, four mammals, four invertebrates, and at least forty-five plant species. Approximately two-thirds are dependent on the Ochlockonee basin's freshwater, wetland, and saltwater communities.

More than half (242 species) of reptiles and amphibians native to North America live in the Southeast, with the Gulf Coastal Plain

Paradise Found Again

By John M. Hall

In 1955, when I was five years old, my father moved our family to what was once a small farm at the edge of town near the headwaters of the Ochlockonee River. The river was an easy walk across a cow pasture. You never saw anyone at this part of the river. Here the river rose and fell through the year like a slow-moving tide. Every river-swamp expedition produced new adventures. It was common to find a fox with kits, see a low-flying barred owl or watch a giant pileated woodpecker tear apart an old dead snag. Even before reaching the river I'd find pitcher plants to open or shiny black tadpoles by the thousands locked in shallows that I just had to inspect. I sometimes took friends along to explore my secret world at the Ochlockonee's edge. Like Indiana Jones's lost tombs, at low water, the river swamp would reveal giant cathedral rooms with white sand floors and high ceilings formed by the green leaf canopy. As the water level continued to recede, you could walk from narrows and bends into more enormous rooms waiting for discovery. The room's massive ceiling seemed to be held high by straight columns of tulip poplar and loblolly pine. These great trees shot straight up more than sixty feet and were commonly more than forty inches in diameter. The highest part of the river's ceiling was always moving with birds and climbing animals. We enjoyed visiting a place we called "the center of the earth," a wild refuge completely hidden by thick, almost impenetrable walls of green poison ivy and cat claw thorns. Year later, in college, I read the accounts of great naturalists like Bartram, Thoreau, and Burroughs and felt a powerful and even spiritual connection to them, recalling my small river swamp ramblings. These were the beginnings of my quest for a life as a modern-day naturalist.

Excerpted from *Between Two Rivers: Stories from the Red Hills to the Gulf.*, Edited by Susan Cerulean, Janisse Ray, and Laura Newton., Heart of the Earth and Red Hills Writers Project, Tallahassee, FL, 2004.

through which the Ochlockonee flows being the most significant area of endemism of reptiles and amphibians in the U.S. Of these, 170 species are native to longleaf pine-wiregrass ecosystems that have been greatly reduced from their original abundance and range through timbering, development, and fire suppression, which has significantly reduced populations and diversity of reptiles and amphibians.

Of special mention are the Ochlockonee's threatened and endangered freshwater mussels: the purple bankclimber, shiny-rayed pocketbook, Gulf moccasinshell, oval pigtoe, Ochlockonee moccasinshell, and Ochlockonee arc-mussel.

Mussels have been declining in diversity and abundance due to pollution, sedimentation, loss of host fish, invasions of non-native species such as Asiatic clams, and changes in river flow due to dams and channelization. Almost ninety percent of the freshwater mussel fauna of North America are found in the southeastern U.S., of which forty-eight percent are considered threatened, endangered, or possibly extinct.

The Red Hills Ecoregion

Where the river leaves the agricultural lands of the upper Ochlockonee watershed, it flows into the Red Hills ecoregion,

Eastern Diamondback Rattlesnake

which today holds the best remnants of the once widespread longleaf pine savanna. Pre-Columbian, it stretched from the James River in southeastern Virginia to the Trinity River in eastern Texas. This natural community was characterized by thinly distributed longleaf pines occurring in a sea of diverse grasses, herbs, wildflowers, and carnivorous plant communities. The ground cover was one of the most diverse in the world, where seventy-five species of vascular plants could be found in a single one-square-meter quadrat and 130 could be found in a 0.1-hectare plot.

Species that inhabit longleaf pine-wiregrass communities exhibit a high incidence of rarity and endemism, including 191 species of rare plants, uncommon today due to destruction of the original ecosystem. Finding refuge in the Red Hills community are forty three species that are federally listed or of special concern, as well as one hundred candidate species for federal listing.

The federally listed red-cockaded woodpecker is the best known animal that depends on longleaf pine forests for its survival. The small bird requires live old-growth or mature second-growth pines for cavity excavation. As the longleaf habitat has declined across the Southeast, so has the red-cockaded woodpecker, and today many efforts are being made to save the species. The Red Hills harbors the largest population (approximately one hundred clans) of the red-cockaded woodpecker found on privately owned land in the U.S.

A fascinating group of plants which have adapted to the acidic soils and aquatics of the region make their home in the Ochlockonee watershed. Carnivorous plants, like those found at Doerun Pitcher Plant Bog Natural Area, obtain their nutrients from animals, usually insects, by elaborate mechanical and chemical adaptations, such as sticky leaves, hollow tubular leaves, and traps. With fifty four total species, the Southeast contains the world's greatest diversity of carnivorous plants. These plants require particular soils and wetlands habitats that are quickly disappearing due to many factors, including changes in water quality from fertilizer runoff, pond-building and wetlands draining, and hobbyists who collect these rare species for unproven medicinal uses and floral arrangements.

Another well-known species is the gopher tortoise, a species whose populations have declined by eighty percent in the past one hundred years, according to scientists. The "Gopher" as locals refer to them, is a keystone species in longleaf pine ecosystem. More than 300 species of invertebrates and sixty-five species of vertebrates use gophers' underground burrows, which is a unique microhabitat created only by these tortoises as an evolutionary response to frequent fires which used to occur in this ecosystem.

Over millions of years, naturally occurring fires reduced competing hardwoods, creating an ecosystem dominated by fire-tolerant pines and a fire-adapted ground cover. Historically, ten to thirty percent of southeastern pinelands burned each year, which reduced forest litter and invasion by woody species into the understory. Fire created the right conditions for pine seedlings and many specialized grasses and forbs, which need bare soil and an open canopy for germination and early growth.

When fires became controlled or prevented, oak, hickory, and pine replaced longleaf pine on the Coastal Plain, leading to declines in species associated with the ecosystems. Today, less than three percent of old growth the longleaf

pine forest remains, a loss comparable with or exceeding that of many of the other unique natural communities in North America.

Not only are fires suppressed today, but much of the former pinelands have been converted to crop and commercial timber

Mushrooms

production. In the Red Hills region, most of the land is privately owned, and many of these individuals and organizations appreciate the value of the rare ecosystem and practiced conservation measures to protect it.

The history of man and the Ochlockonee Watershed is one of exploitation of the region's natural resources going back thousands of years.

Humans and the Ochlockonee

The history of humans and the Ochlockonee Watershed is one of exploitation of the region's natural resources going back for thousands of years.

Humans have lived next to the waters of the Ochlockonee for at least 10,000 years. No doubt attracted by the warm climate and easy food sources, Native Americans first settled in the region and fished in its waters, foraged and hunted in its fields, and later farmed the rich soils.

When the first Spanish explorers under Hernando DeSoto reached the region in 1539, they found much of the land being farmed by the Apalachee Indians, with a population estimated to be 25,000. The Spanish established thirteen missions between the Apalachicola River and St. Augustine, connected by the Royal Road. Mission San Luis de Apalachee, established west of present-day Tallahassee, served as the western capital. Many Indians converted, and the settlement had approximately 1,400 residents, many of whom were converted by the Franciscans.

In 1704, under threat of attack by the English and their Creek Indian allies, the Spaniards and Apalachees evacuated the missions, and the area was repopulated by Seminole and Creek Indians. Eventually, the fertile soil and abundant lakes and rivers attracted white pioneers who eventually forced out the Indians and converted the area to a thriving cotton production area in the first half of the 1800s. In the 1820s, the towns of Tallahassee (an Apalachee word meaning "old fields" or "abandoned villages") and Thomasville were founded, each with its chief economy being agriculture and related trade. Tallahassee, which was created in 1824 to serve as Florida state capital, was linked to the coast in 1837 when the sixteen-mile, mule-drawn Tallahassee-St. Marks Railroad was built, the first in Florida. By the late 1800s, forestry and the naval stores industry flourished in Florida, thanks to spur rail roads which accessed timber reserves in the flatlands. Thomasville was linked to Savannah in 1861 by the Atlantic and Gulf Railroad. Trade between the two towns, only twenty-eight miles apart, became important as well, and the two areas in the twenty-first century are developing toward each other.

The Ochlockonee River near Sate Route 90 outside of Tallahassee, Florida.

During the Civil War, both areas supported the Southern cause. Thomasville, which initially did not want succession, eventually supported the Confederacy and provided 1,500 troops and supplies. As a rail terminus, Thomasville was an important shipping point and briefly the site of a temporary prisoner of war camp. Near Tallahassee, a battle was fought at Natural Bridge that caused 200 casualties. The southerners prevailed, making Tallahassee the only uncaptured Confederate capital east of the Mississippi River. Union forces raided Confederate salt works near the mouth of the Ochlockonee River.

After the Civil War, the area fell into decline like the rest of the South, and many of the great cotton plantations were abandoned. Beginning in the 1870s, the pine timber industry became more important and the area began cutting some of its forested lands.

From the 1880s to 1910, Thomasville became the "Original Winter Resort of the South." Believing the pine-scented air offered health benefits, Northerners came to Thomasville during winter and stayed at many luxurious hotels and cottages that were built to accommodate the tourists. With the extension of railroads further south into Florida, the seasonal crowds went with them, but many northern industrialists had already purchased property and plantations and built magnificent mansions, and continued to use their property for hunting, fishing, and socializing.

Much of the Red Hills started to change as forests were cut and the wiregrass groundcover was ploughed for agriculture. Government programs promoted fire suppression, which started to convert the landscape from an open grassland to a woody, brush-choked groundcover. One deleterious effect was the decline of the native quail population, a game bird that requires open savanna to thrive.

When quail populations went into decline, wealthy landowners led by Col. Lewis Thompson, Henry Beadel, and Harry Whitney organized to find a solution. They initiated a research project that brought Wisconsin biologist Herbert L. Stoddard to Thomasville. He realized the importance of fire to keep the forest healthy and promoted prescribed burning and selective harvest as management techniques for the hunting plantations.

Eventually, Stoddard's ideas caught on and landowners who shared his appreciation for the native longleaf pine ecosystem worked to preserve it with an emphasis on managing property for quail hunting, turning Thomasville into the "Quail Hunting Capital of the South."

Descendants of those families, many now living in Thomasville year round, still own many of the seventy-one plantations found between Thomasville and Tallahassee, the largest concentration in America.

Recognizing the importance of plantations and their fire-maintained habitats to the culture and ecosystem of the area, many properties evolved to become preserves, parks, or research centers. Two internationally famous research centers dedicated to education, conservation, and research of nearby ecosystems make their homes in the area at former plantations: Tall Timbers Research Station and Joseph W. Jones Ecological Research Center at Ichauway.

Concerns over the landscape south of Tallahassee led to the establishment of the St. Marks Refuge in 1931 and the Apalachicola National Forest in 1936, both of which serve to keep the Ochlockonee a better protected stream. Eventually, the Florida State Legislature declared the Ochlockonee River an Outstanding Florida Water, and where the Ochlockonee eventually empties into Apalachee Bay, an Aquatic Preserve. The bay supports a diversity of aquatic habitats, including salt marshes, sea grass beds, oyster bars and reefs, and hard bottom reefs. The Aquatic Preserve is the largest in Florida encompassing 450,000 acres.

Today, the economy in both areas is much more diversified than the plantation era, with education, government, agriculture, manufacturing, and tourism being large factors. Tallahassee and Leon County has been one of the fastest growing metropolitan areas in the U.S., doubling its population in thirty years to more than 240,000 people. This is expected to have a growth effect on Georgia counties to the north where the Ochlockonee flows. Currently, Worth, Colquitt, Thomas, and Grady counties have roughly half Tallahassee's population, with 130,000 residents.

Why Humans Need Rivers

It is not a coincidence that when NASA probes other planets looking for life, they try to find evidence of water. Scientists understand that water is essential to life.

Closer to home on Earth, especially in the Southeast, we take our waters for granted. We seem to be surrounded by waters; and when we turn on the tap, out it flows. We are disconnected from the landscape that gives us this vital element of life.

A naturally flowing southeastern river produces many benefits, most of which are not appropriately appreciated by humans who depends on these ecosystems to live.

If looked at from a purely selfish point of view—even ignoring all other living beings on the planet—we should still cherish and protect our rivers. They help provide clean drinking water, control floods, and serve as free waste management facilities as they recycle nutrients and sediments back into the environment. Rivers support biodiversity and downstream ecosystems, which help comprise the bottom layer of the food pyramid on which we depend. Rivers serve as transportation corridors, power generators, and many are a source of spiritual renewal when used for recreation and appreciated for their beauty.

The southern river is not a concrete canal. A southern river will not produce these benefits if it is altered by channelizing (straightening) its course, cutting down the floodplain forests that are an integral part of it, pouring sediments and wastes into it, introducing plants and animals that don't belong in it, pumping out the water that feeds it from below, and damming the river and its tributaries. These threats, to varying degrees, have occurred to the Ochlockonee.

Fishing on Lake Talquin

Most people would agree that these benefits are important and would support river protections, as long as the protections didn't restrict their behavior on "their" stream. Many people don't realize that wherever they live,

Golden Silk Spider

they are affecting some unnamed tributary that eventually finds a named creek or river. It is estimated that eighty percent of these small creeks and rivulets, small enough for a child to straddle, make up the nation's stream network. While efforts have gone forward to protect the larger rivers, not much attention has been given to headwater streams, which greatly influence the quality of the main river.

An important natural process that plays a leading role in producing these benefits are the periodic floods into the surrounding wetlands of the Ochlockonee River. For the system to "work," it especially needs its riparian buffers or floodplain forests and wetlands, which act as natural lungs for the river system. Scientists report that the South has the largest remaining areas of riparian habitats in the U.S. and that it is in decline due to conversion to farmland, industrial parks, and urban areas. While it is only one watershed in the South, the Ochlockonee is an important piece of this landscape.

A typical citizen appreciates his nearby river for aesthetic reasons and doesn't pay it much attention except when fishing in or boating on its waters, or when they are impacted by its floods. Municipalities, industries, and farms in the Ochlockonee's watershed usually get their water from underground sources such as the Floridan Aquifer, so the river's contribution to the water supply is not obvious and therefore not appreciated.

But people start to grow concerned when they smell strange odors coming from the river, or are warned not to eat the fish they catch, or swim in the river like they did as children, or in the case of Moultrie attorney Billy Fallin notice their dog emerging from the river covered in grease.

Current Threats

Georgia delivers to Florida a sick, malfunctioning river. Where the Ochlockonee flows into Florida, the water quality is so poor—twenty-eight times the normal amount of nitrates and thirty to fifty percent chlorinated wastewater during base flow conditions—that the Florida state government has prepared legal documents to sue upstream users. Florida has been complaining about the pollution for twenty-five years and all they have it has left to do is file the paperwork. The contamination is so bad that further downstream where the Ochlockonee backs up to form Lake Talquin, fish kills and algal blooms are common. It's so bad that the city of Cairo, Georgia has been fined $1,000 a month for the past few years for allowing untreated sewage into Tired Creek, a tributary of the river. It's so bad that research students who study the river are advised not to touch it with their bare skin.

In its watershed, the Ochlockonee River is mainly harmed by four destructive influences: point source pollution, non-point source pollution, riparian destruction, and stream flow alteration due to dams.

Point source pollution comes from a single source, such as a discharge pipe from a factory. The upper watershed has at least seven municipal wastewater facilities and three industrial inputs that have permits to put waste water into the Ochlockonee. While it is easier to control pollution at a pipe, that doesn't mean that it always is controlled. Grady County first used a spray field technology to handle municipal wastes, but the soils were too hard to absorb the waste water and it flowed off into streams. Grady County has stopped this approach to their wastes, and now appears to be dumping them directly into the river. With grant funds, Grady County plans to build a new wastewater treatment center that will help fix the problem.

Non-point source pollution is considered the nation's largest water quality issue. In general, this is when chemicals, nutrients, metals, oils, fecal matter—and whatever else falls on the ground—is washed into the network of small streams that make up a watershed from innumerable sources: roads, farm fields, parking lots, roof tops, you name it.

Approximately sixty percent of the Ochlockonee watershed in Georgia is under intensive agricultural cultivation. Every time it rains or a field is watered, tremendous amounts of fertilizers, animal wastes, pesticides, and other elements are carried off these fields into the Ochlockonee. Sediment also flows into the river, which alters water quality. Fixing this problem takes many approaches, including changing waste disposal habits, preserving riparian zones, erecting siltation barriers to catch sediments, and properly treating nutrient laden runoff before reaching major streams. Most of the main tributaries of the Ochlockonee in Georgia are on the Clean Water Act's 303(d) list of impaired waters, meaning the rivers do not meet their designative uses.

The third major water quality issue is riparian destruction. Wetlands provide a vital function to the health of the river ecosystem, but they rarely produce crops that can be sold in the marketplace. Therefore, in an agrarian area, landowners destroy natural wetlands to create more land suitable for growing marketable timber and crops. This makes non-point source pollution problems doubly worse, because it brings to the streams more sediments from land disturbance and more pesticides and fertilizers, while at the same time reduces the amount of natural buffers to stop them from entering streams.

Fourth is the problem of capturing or altering the natural course of the river. Affecting the Ochlockonee is a wide range of dams, from the huge concrete barrier at Jackson Bluff to the innumerable small earthen levies that create farm ponds. These impoundments cause many problems for rivers, including destruction of the original stream, changes in water temperature and natural hydrologic cycles, reduction of the volume of water in rivers and thus groundwater, and a reduction of native species that are intolerant to these changes. When water volume is less in a river, the pollutants that enter a stream cause greater harm. Despite these potential effects on the river, currently in the planning stages in Grady County is a 1,200-acre reservoir on Tired Creek, reportedly costing $10 million and being created for recreational uses (swimming, boating, and fishing), as well as drinking water.

Natural Areas, Parks, Historic Sites

Doerun Pitcher Plant Bog Natural Area

Hwy 133, Doerun, GA

650 acres containing excellent populations of pitcher plant species, hiking trails, educational displays.

Joseph W. Jones Ecological Research Center at Ichauway

Route 2, Newton, GA (229) 734-4706

This important research, conservation, and education center is based on a former 18,000-acre plantation and has fifteen miles of Ichawaynochaway Creek flowing through it and thirteen miles of the Flint River making up its eastern boundary. The Center's stated mission is "to understand, to demonstrate, and to promote excellence in natural resource management and conservation on the landscape of the southeastern coastal plain of the United States." To promote excellence in natural resource management and conservation, the Center develops and conducts education and outreach programs for undergraduate and graduate students, interns, land owners and managers. Much of the ground cover harbors some of the most species-rich habitats in North America, with more than 1,100 vascular plant species and over 280 vertebrate species.

Lapham-Patterson House State Historic Site

626 North Dawson Street, Thomasville, GA 31792
(912) 225-4004

A Chicago shoe merchant who suffered lung damage during the Great Chicago Fire, C.W. Lapham, moved to Thomasville to improve his health based on the supposed therapeutic effects of pine-scented air and a milder climate. He built this extraordinary house in 1884-85 in Queen Anne-style, which is famous for not having any right angles in the design. None of its rooms are square and all nineteen have exterior doors because of the owner's fear of fire. The asymmetrical angles and corners were believed to aid air circulation and be better for health.

Old Confederate Bridge and Confederate Prisoner of War Camp

Thomasville, GA

Approximately five miles north of Thomasville, looking directly to the east where US 19/GA 300 crosses the river, is Old Confederate Bridge, a major river landmark for many locals. On Wolf Street on the western edge of Thomasville are a historical marker and the remains of a seven-acre Confederate prison, where 5,000 Union soldiers were temporarily held to avoid Sherman's armies on their famous "March to the Sea" to Savannah. Remnants of the trenches are found in the park. Survivors of the camp (500 died of typhoid and smallpox) were marched sixty miles north to Albany then boarded a train, which arrived at Andersonville Prison on Christmas Eve.

Greenwood Plantation

Thomasville, GA

This 5,700-acre plantation, one of the most ecologically significant, privately-held properties in the Southeastern U.S., holds an unspoiled remnant of the fire-dependent longleaf pine-wire grass ecosystem that once was found on ninety million acres across the Southeast. Today, managed by The Nature Conservancy, it contains a 1,000-acre tract known as Big Woods that has trees ranging in age from 200 to 500 years old, and an extremely diverse groundcover. Many techniques of prescribed burning and sustainable forestry were developed here by pioneering foresters Ed and Roy Komarek, Herbert Stoddard, and Leon Neel. The plantation house also has seen much history; Jackie Kennedy came to Greenwood to rest after the assassination of John F. Kennedy. The property has river frontage on the Ochlockonee.

Pebble Hill Plantation

Thomasville, GA (912) 226-2344

The public can tour the 3,000-acre grounds and eighteen-bedroom, twenty-one-bathroom house of this 1820s-era plantation, located five miles south of Thomasville on US 319.

Thomasville Rose Garden

Thomasville, GA

Located near Cherokee Lake at the corner of Smith Avenue and Covington Drive, the city rose garden provides a setting to enjoy more than 500 individual rose bushes and hundreds of plants species native to the area.

Birdsong Nature Center

2106 Meridian Road, Thomasville, GA (229) 377-4408

Located 15 miles south of Thomasville, 565 acres of lush fields, forests, and swamp provide a pristine haven for birds and other native wildlife. There are ten miles of trails, Butterfly Garden, Bluebird Trail, and original Bird Window. Open to the public.

Tall Timbers Research Station

13093 Henry Beadel Drive, Tallahassee, FL
(850) 893-4153

The mission of Tall Timbers Research Station is to foster exemplary land stewardship through research, conservation and education. Their primary research focus is the ecology of fire and natural resource management including bobwhite quail and other wildlife in the southeastern coastal plain. Tall Timbers' conservation efforts are dedicated to helping protect the distinctive Red Hills landscape of south Georgia and north Florida, and its traditional land uses. Their education program transfers research and conservation information for resource management. In addition to the 4,000-acre grounds of the research station, Tall Timbers has research access to two exceptional properties: the Wade Tract Preserve and Pebble Hill Plantation. The Wade Tract Preserve in Thomas County, Georgia is a 200-acre conservation easement that provides a snapshot of a natural ecosystem as it existed 300 years ago. Pebble Hill Plantation was originally an antebellum cotton plantation and later a southern-style shooting plantation, now owned and privately operated by the Pebble Hill Foundation.

Lake Iamonia Boat Ramp

Travel north of Tallahassee on US 319 for fifteen miles then go left on C12 for 2.2 miles. Go left on Lake Iamonia Road for 1.8 miles to ramp. There is a single-lane ramp with unimproved parking lot capable of accommodating twenty-five vehicles.

Lake Talquin State Forest and Parks

Midway, FL (850) 576-8233

Lake Talquin, a man-made lake, was formed in 1927 when the Jackson Bluff Dam was constructed on the Ochlockonee River to produce hydroelectric power. It is surrounded by state forest in ten main tracts totaling 16,896 acres. Three wildlife management areas allow hunting and camping, and two other parks have hiking and horseback riding trails.

Lake Talquin Wildlife Management Areas

Ochlockonee River Wildlife Management Area is located approximately five miles west of Tallahassee on US 90. This tract consists of 2,790 acres on the eastern bank of the river. Joe Budd Wildlife Management Area is located on the north shore of the lake and Talquin Wildlife Mangement Area is on the southern shoreline north of SR 20.

Lake Talquin State Park

1022 Desoto Park Dr., Tallahassee, FL (850) 922-6007

Many Tallahassee fishermen ply the waters of Lake Talquin for sport fish. The lake offers outstanding recreational opportunities for largemouth bass, shellcracker and speckled perch sport fishing, nature walks, picnicking and boating. Boaters should take notice because the lake is inundated with logs and stumps. Nature trails, picnic areas, and restrooms abound. The park is ten miles west of Tallahassee on SR 20 on Jack Vause Landing Road.

Ft. Braden Tract

A twelve-mile equestrian trail and nine-mile hiking trail offers an excellent way to experience a rare beech-magnolia hardwood forest. The trailhead and parking area is located on SR 20 (Blountstown Highway) approximately 9.2 miles west of SR 263.

Bear Creek Educational Forest and Arboretum

(850) 627-9064

The forest consists of more than 500 acres of rolling north Florida hardwoods and pines, featuring a steep ravine, spring-fed streams, pond, and complex mix of native trees, shrubs, and wildflowers. Head west on I-10 to 267 South, follow 267 South for approximately 3.5 miles until you see the sign for Bear Creek on your left.

Lake Jackson Mounds Archeological State Park

Tallahassee, FL (850) 385-7071

The park features two ceremonial Indian mounds from prehistoric times. There is a nature trail and picnicking areas. The park is located two miles northwest of Tallahassee on US 27.

Alfred B. McClay Gardens State Park

Tallahassee, FL (850) 487-4556

The park features azaleas, camellias, and rare native species. Other features include a House museum, picnicking, fishing swimming, and boating on Lake Hall.

Ochlockonee River State Park

Sopchoppy, FL (850) 962-2771

The 392-acre park consists of scenic pine flatwoods and marsh, where Ochlockonee is joined by the Dead River. The park offers a variety of activities, including nature hiking, camping, boating, canoeing, picnicking, and wildlife watching. Swimming is available on a small protected beach on the Dead River. A boat ramp provides access to excellent fishing, where fresh and saltwater species may be caught including largemouth bass, catfish, speckled perch, redfish, and speckled trout. Rare plants such as grass pine (*Calopogon* family), ladies tresses (*Spranthes eatonii*), and yellow-fringed orchids (*Plantathera ciliaris*) can be found, along with red-cockaded woodpeckers, scrub jays, gopher tortoises, fox squirrels, and white squirrels.

Ochlockonee River (Upper) Canoe Trail

The Upper Canoe Trail is twenty-six miles long, beginning near the Georgia state line at SR 12 and winding south to SR 10 at Lake Talquin. This is a winding trip around cypress trees, willows, and sand bars. If attempted at low water, this section of the officially designated Florida statewide system of greenways and trails will require the canoeist to navigate deadfalls and portage in the narrow, blocked parts of the river, especially in the upper section above SR 157. Water quality coming from Georgia is very poor and should not be consumed.

Ochlockonee River (Lower) Canoe Trail

Officially designated as part of Florida's statewide system of greenways and trails, this sixty-five-mile trip begins below Lake Talquin at the Jackson Bluff Dam and ends at Ochlockonee State Park near Sopchoppy. The river is more scenic, easier to navigate, and cleaner on the Lower Trail. Overnight camping is required to complete the journey, but campsites are numerous.

Gulf Specimen Marine Laboratory

Panacea, FL

Founded by renowned environmental writer and activist Jack Rudloe, this marine institute collects specimens for scientific research and also serves as an educational facility open to the public.

Bald Point State Park

Alligator Point, FL (850) 349-9146

This new state park is located on the eastern tip of the St. James Peninsula in Franklin County, where the Ochlockonee Bay meets the Apalachee Bay. Visitors experience outdoor activities on land as well as in the water at this coastal park. Pristine coastal marshes, maritime hammocks, mesic flatwoods, and oak thickets provide many birding, hiking, and wildlife viewing opportunities. Monarch butterflies pause at Bald Point before beginning their yearly autumn trek across the Gulf of Mexico. Bald Point's white sand beaches are the setting for picnicking, sunbathing, fishing, windsurfing, canoeing, kayaking, and wildlife observation. Seasonal wildflower blooms are abundant throughout the park. In season, bald eagles, osprey, and migrating falcons are very common sights. Picnic shelters and restroom facilities are available at Sunrise Beach Access. A newly constructed observation boardwalk overlooks pristine marshes which are full of wildlife.

Edward Ball Wakulla Springs State Park

550 Wakulla Park Drive, Wakulla Springs, FL
(850) 224-5950

At approximately three acres, Wakulla Springs is one of the world's largest and deepest freshwater springs. Visitors may observe the natural serene beauty of the Wakulla Spring and river from boat tours offered daily. Two types of boat tours are available. From glass bottom boats, fish and fossilized mastodon bones can be seen in the spring depths. The pristine river and sanctuary provide a natural habitat for an abundance of wildlife. The three-mile riverboat tour offers a chance to observe alligators, birds, turtles and occasionally white-tailed deer and wild turkey. Guest rooms are available for rent. The park is located roughly twelve miles south of Tallahassee off of SR 61.

St Marks, FL. (850) 925-6121.

65,000 acres of salt marsh, tidal flats, hardwood swamps, and pinelands run along the Apalachee and Ochlockonee bays. Dikes built to produce impoundments to feed migratory birds help attract many of the 272 species of birds that have been identified here, including waterfowl, wading birds, shore birds, marsh species, raptors, and nesting bald eagles. Alligators, deer, and Florida black bear inhabit the refuge. There is a visitor center, observation tower, extensive hiking trails, fishing, hunting and crabbing in season. Historic features include the St. Marks Lighthouse, built in 1831 of stones from the old fort at San Marcos de Apalachee. Located three miles south of US Highway 98 on County Road 59.

Apalachicola National Forest

Approximately 557,000 acres make up this national forest, the largest in Florida, consisting of longleaf and slash pine, hardwood forests, swamps, springs, sinkholes, four rivers, and a multitude of streams. The forest, with a western boundary at the Apalachicola River, is divided by the Ochlockonee River into two administrative districts, with the Apalachicola District to the west and the Wakulla District to the east. Between 1880 and 1920, logging and turpentining by timber companies exhausted the area and the lands were purchased by the federal government. The national forest was established in 1936. There are numerous recreational opportunities including hiking, wilderness canoeing, and bird watching. Sportsmen hunt deer and turkey in different seasons, between October and the end of March and fish throughout the year. Most recreation occurs around the two rivers at boat landings and campgrounds. There are several developed recreation areas with picnic areas, fire pits, water, and restrooms and a dozen developed campgrounds. Contact the ranger office for more information on facilities, hunting seasons, and directions to campgrounds. Apalachicola Ranger District Office, Bristol, (850) 643-2282. Wakulla Ranger District Office, Crawfordville, FL, (850) 926-3561.

Tate's Hell State Forest

290 Airport Road, Carrabelle, FL (850) 697-3734

Approximately 185,000 acres of state forest hold twleve major community types and many species types. Recreation activities include thirty-five miles of canoeing, boating, and fishing rivers and streams, primitive camping, and hunting activities. The forest is located in Franklin County between the Apalachicola and Ochlockonee Rivers, and is accessed from US 98, CR 67, or SR 65.

Rare, Threatened, and Endangered Species in the Ochlockonee Watershed

Federal Status Key (From: http://species.fws.gov/)

E: Endangered

T: Threatened

SAT, T(S/A): Similarity of Appearance to a Threatened Taxon

None: No Federal Status

Georgia State Status Key

(From: http://georgiawildlife.dnr.state.ga.us/content/specialconcernplants.asp, and/or From: http://georgiawildlife.dnr.state.ga.us/content/specialconcernanimals.asp/, Georgia Department of Natural Resources web sites)

The following abbreviations are used to indicate the status of state-protected plants and animals or those proposed for state protection in Georgia.

E: Listed as endangered. A species which is in danger of extinction throughout all or part of its range.

T: Listed as threatened. A species which is likely to become an endangered species in the foreseeable future throughout all or parts of its range.

R: Listed as rare. A species which may not be endangered or threatened but which should be protected because of its scarcity.

U: Listed as unusual (and thus deserving of special consideration). Plants subject to commercial exploitation would have this status.

N/A: Not listed in GA

Georgia State Rank Key

(From: http://georgiawildlife.dnr.state.ga.us/content/specialconcernplants.asp, and/or http://georgiawildlife.dnr.state.ga.us/content/specialconcernanimals.asp - Georgia Department of Natural Resources web sites)

S1: Critically imperiled in state because of extreme rarity (5 or fewer occurrences).

S2: Imperiled in state because of rarity (6 to 20 occurrences).

S3: Rare or uncommon in state (on the order of 21 to 100 occurrences).

S4: Apparently secure in state (of no immediate conservation concern).

SX: Apparently extirpated from state. GXC is known only in cultivation/captivity.

SH: Of historical occurrence in the state, perhaps not verified in the past 20 years, but suspected to be still extant.

?: Denotes questionable rank; best guess given whenever possible (e.g. S3?).

SP:** This code appears in the chart for *Glebula rotundata*, however, there is no corresponding code in the key.

N/A: Not listed in GA

FNAI GLOBAL RANK DEFINITIONS (From: www.fnai.org)

G1: Critically imperiled globally because of extreme rarity (5 or fewer occurrences or less than 1000 individuals) or because of extreme vulnerability to extinction due to some natural or man-made factor.

G2: Imperiled globally because of rarity (6 to 20 occurrences or less than 3000 individuals) or because of vulnerability to extinction due to some natural or man-made factor.

G3: Either very rare and local throughout its range (21-100 occurrences or less than 10,000 individuals) or found locally in a restricted range or vulnerable to extinction from other factors.

G4: Apparently secure globally (may be rare in parts of range)

G5: Demonstrably secure globally

GH: Of historical occurrence throughout its range, may be rediscovered (e.g., ivory-billed woodpecker)

G#?: Tentative rank (e.g., G2?)

G#G#: Range of rank; insufficient data to assign specific global rank (e.g., G2G3)

G#T#: Rank of a taxonomic subgroup such as a subspecies or variety; the G portion of the rank refers to the entire species and the T portion refers to the specific subgroup; numbers have same definition as above (e.g., G3T1)

G#Q: Rank of questionable species - ranked as species but questionable whether it is species or subspecies; numbers have same definition as above (e.g., G2Q)

G#T#Q: Same as above, but validity as subspecies or variety is questioned.

FNAI GLOBAL RANK DEFINITIONS (From: www.fnai.org) (CONTINUED)

GNR**:** This code appears in the chart for *Sphodros abboti*, however, there is no corresponding code in the key.

G?: Not yet ranked (temporary)

FLORIDA STATE RANK KEY (From: www.fnai.org)

S1: Critically imperiled in Florida because of extreme rarity (5 or fewer occurrences or less than 1000 individuals) or because of extreme vulnerability to extinction due to some natural or man-made factor.

S2: Imperiled in Florida because of rarity (6 to 20 occurrences or less than 3000 individuals) or because of vulnerability to extinction due to some natural or man-made factor.

S3: Either very rare and local throughout its range (21-100 occurrences or less than 10,000 individuals) or found locally in a restricted range or vulnerable to extinction from other factors.

S4: Apparently secure in Florida (may be rare in parts of range)

S5: Demonstrably secure in Florida

SH: Of historical occurrence throughout its range, may be rediscovered (e.g., ivory-billed woodpecker)

SU*:** This code appears in the chart for *Lasiurus cinereus*, however, there is no corresponding code in the key.

N/A: Not listed in Florida

FLORIDA STATE LEGAL STATUS (From: www.fnai.org)

Provided by FNAI for information only.

For official definitions and lists of protected species, consult the relevant federal agency.

Animals: *Definitions derived from "Florida's Endangered Species and Species of Special Concern, Official Lists" published by Florida Fish and Wildlife Conservation Commission, 1 August 1997, and subsequent updates.*

LE: Endangered: species, subspecies, or isolated population so few or depleted in number or so restricted in range that it is in imminent danger of extinction.

LT: Threatened: species, subspecies, or isolated population facing a very high risk of extinction in the future.

LS: Species of Special Concern is a species, subspecies, or isolated population which is facing a moderate risk of extinction in the future.

N: Not currently listed, nor currently being considered for listing.

N/A: No listing found

Plants: *Definitions derived from Sections 581.011 and 581.185(2), Florida Statutes, and the Preservation of Native Flora of Florida Act, 5B-40.001. FNAI does not track all state-regulated plant species; for a complete list of state-regulated plant species, call Florida Division of Plant Industry, 352-372-3505 or see: http://doacs.state.fl.us/~pi/5b-40.htm#.0055.*

LE: Endangered: species of plants native to Florida that are in imminent danger of extinction within the state, the survival of which is unlikely if the causes of a decline in the number of plants continue; includes all species determined to be endangered or threatened pursuant to the U.S. Endangered Species Act.

LT: Threatened: species native to the state that are in rapid decline in the number of plants within the state, but which have not so decreased in number as to cause them to be Endangered.

N: Not currently listed, nor currently being considered for listing.

N/A: No listing found

SPECIAL ANIMAL LISTINGS - STATE AND FEDERAL STATUS (From: www.fnai.org)

***Pandion haliaetus* (osprey):** State listed as LS (Species of Special Concern) in Monroe County only; not listed in rest of state. *Monroe County is not part of the Ochlockonee River watershed.

***Ursus americanus floridanus* (Florida black bear):** State listed as LT but not applicable in Baker and Columbia counties or the Apalachicola National Forest.

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SPECIES		STATUS/RANK					
Scientific name	**Common name**	**Federal Status**	**Global Rank**	**FL State Rank**	**FL State Status**	**GA State Status**	**GA State Rank**
AMPHIBIANS							
Ambystoma cingulatum	Flatwoods Salamander	T	G2G3	S2S3	LS	T	S2
Ambystoma tigrinum	Tiger Salamander	None	G5	S3	N	N/A	S3S4
Amphiuma pholeter	One-toed Amphiuma	None	G3	S3	N	R	S1
Desmognathus apalachicolae	Apalachicola Dusky Salamander	None	G3G4	S3	N	N/A	S3
Haideotriton wallacei	Georgia blind salamander	None	G2	N/A	N/A	T	S1
Hemidactylium scutatum	Four-toed Salamander	None	G5	S2S3	N	N/A	S3
Notophthalmus perstriatus	Striped Newt	None	G2G3	S2S3	N	R	S2
Rana capito	Gopher Frog	None	G3	S3	LS	N/A	S3
AMPHIPODS							
Crangonyx grandimanus	Florida Cave Amphipod	None	G3G4	S2	N	N/A	N/A
Crangonyx hobbsi	Hobbs' Cave Amphipod	None	G5	S2S3	N	N/A	N/A
BIRDS							
Accipiter cooperii	Cooper's Hawk	None	G5	S3	N	N/A	N/A
Aimophila aestivalis	Bachman's Sparrow	None	G3	S3	N	R	N/A
Ajaia ajaja	Roseate Spoonbill	None	G5	S2	LS	N/A	N/A
Ammodramus maritimus peninsulae	Scott's Seaside Sparrow	None	G4T2	S3	LS	N/A	N/A
Aramus guarauna	Limpkin	None	G5	S3	LS	N/A	S1S2
Ardea alba	Great Egret	None	G5	S4	N	N/A	N/A
Charadrius alexandrinus	Snowy Plover	None	G4	S1	LT	N/A	N/A
Charadrius melodus	Piping Plover	T	G3	S2	LT	T	S1
Cistothorus palustris marianae	Marian's Marsh Wren	None	G5T3	S3	LS	N/A	N/A
Egretta caerulea	Little Blue Heron	None	G5	S4	LS	N/A	S3?
Egretta rufescens	Reddish Egret	None	G4	S2	LS	N/A	N/A
Egretta thula	Snowy Egret	None	G5	S3	LS	N/A	N/A
Egretta tricolor	Tricolored Heron	None	G5	S4	LS	N/A	N/A
Elanoides forficatus	Swallow-tailed Kite	None	G5	S2	N	R	S2
Elanus leucurus	White-tailed Kite	None	G5	S1	N	N/A	N/A
Eudocimus albus	White Ibis	None	G5	S4	LS	N/A	N/A
Falco columbarius	Merlin	None	G5	S2	N	N/A	N/A
Falco peregrinus	Peregrine Falcon	None	G4	S2	LE	E	S1
Falco sparverius paulus	Southeastern American Kestrel	None	G5T4	S3	LT	N/A	S3
Grus canadensis pratensis	Florida Sandhill Crane	None	G5T2T3	S2S3	LT	N/A	S1
Haematopus palliatus	American Oystercatcher	None	G5	S2	LS	R	S2
Haliaeetus leucocephalus	Bald Eagle	T	G4	S3	LT	E	S2
Helmitheros vermivorus	Worm-eating Warbler	None	G5	S1	N	N/A	N/A
Lxobrychus exilis	Least Bittern	None	G5	S4	N	N/A	N/A
Laterallus jamaicensis	Black Rail	None	G4	S2	N	N/A	S2?
Mycteria americana	Wood Stork	E	G4	S2	LE	E	S2
Nyctanassa violacea	Yellow-crowned Night-heron	None	G5	S3	N	N/A	S3S4
Nycticorax nycticorax	Black-crowned Night-heron	None	G5	S3	N	N/A	S3S4
Pandion haliaetus	Osprey	None	G5	S3S4	LS*	N/A	N/A
Pelecanus occidentalis	Brown Pelican	None	G4	S3	LS	N/A	N/A
Picoides borealis	Red-cockaded Woodpecker	E	G3	S2	LS	E	S2
Picoides villosus	Hairy Woodpecker	None	G5	S3	N	N/A	N/A
Plegadis falcinellus	Glossy Ibis	None	G5	S3	N	N/A	S2S3
Rallus longirostris scottii	Florida Clapper Rail	None	G5T3?	S3?	N	N/A	N/A
Recurvirostra americana	American Avocet	None	G5	S2	N	N/A	N/A
Rynchops niger	Black Skimmer	None	G5	S3	LS	N/A	S1
Seiurus motacilla	Louisiana Waterthrush	None	G5	S2	N	N/A	N/A
Sitta carolinensis	White-breasted Nuthatch	None	G5	S2	N	N/A	N/A
Sterna antillarum	Least Tern	E	G4	S3	LT	R	S3
Sterna caspia	Caspian Tern	None	G5	S2	N	N/A	N/A
Sterna maxima	Royal Tern	None	G5	S3	N	N/A	N/A
Sterna sandvicensis	Sandwich Tern	None	G5	S2	N	N/A	N/A

SPECIES		STATUS/RANK					
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BIVALVES							
Alasmidonta undulata	Triangle Floater	None	G4	S1	N	N/A	S1S2
Alasmidonta wrightiana	Ochlockonee Arc-mussel	None	GH	SH	N	N/A	SX
Amblema neislerii	Fat Three-ridge	E	G1	S1	N	E	SH
Anodonta heardi	Apalachicola Floater	None	G1	S1	N	N/A	S1
Anodontoides radiatus	Rayed Creekshell	None	G3	SH	N	N/A	S2
Elliptoideus sloatianus	Purple Bankclimber	T	G2	S1S2	N	T	S2
Glebula rotundata	Round Pearlshell	None	G4G5	S3	N	N/A	SP**
Lampsilis subangulata	Shiny-rayed Pocketbook	E	G2	S1S2	N	E	S2
Medionidus penicillatus	Gulf Moccasinshell	E	G1	S1	N	E	S2
Medionidus simpsonianus	Ochlockonee Moccasinshell	E	G1	S1	N	E	SX
Megalonaias nervosa	Washboard	None	G5	S3	N	N/A	N/A
Pleurobema pyriforme	Oval Pigtoe	E	G2	S1S2	N	E	S2
Utterbackia peggyae	Florida Floater	None	G3	S3	N	N/A	S2
DECAPODS							
Cambarus pyronotus	Fire-back Crayfish	None	G2	S2	N	N/A	N/A
Procambarus horsti	Big Blue Spring Cave Crayfish	None	G2G3	S1	N	N/A	N/A
Procambarus orcinus	Woodville Karst Cave Crayfish	None	G3G4	S1	N	N/A	N/A
Procambarus youngi	Florida Longbeak Crayfish	None	G2	S2	N	N/A	N/A
DRAGONFLIES & DAMSELFLIES							
Cordulegaster sayi	Say's Spiketail	None	G2	S1S2	N	N/A	S2
FISH							
Acantharchus pomotis	Mud Sunfish	None	G5	S3	N	N/A	S3
Acipenser oxyrinchus desotoi	Gulf Sturgeon	T	G3T2	S2	LS	N/A	SH
Agonostomus monticola	Mountain Mullet	None	G5	S3	N	N/A	N/A
Ameiurus brunneus	Snail Bullhead	None	G4	S3	N	N/A	N/A
Ameiurus serracanthus	Spotted Bullhead	None	G3	S3	N	R	S2
Cyprinella callitaenia	Bluestripe Shiner	None	G2G3	S2	N	T	S2
Cyprinella leedsi	Bannerfin Shiner	None	G4	S3	N	N/A	S3S4
Etheostoma parvipinne	Goldstripe Darter	None	G4G5	S2	N	R	S2
Luxilus zonistius	Bandfin Shiner	None	G4	S1S2	N	N/A	N/A
Micropterus cataractae	Shoal Bass	None	G3	S1	LS	N/A	S3
Micropterus notius	Suwannee Bass	None	G3	S3	LS	R	S1
Moxostoma sp. 1	Apalachicola Redhorse	None	G3	S2	N	N/A	S?
Notropis cummingsae	Dusky Shiner	None	G5	S4	N	N/A	N/A
MAMMALS							
Corynorhinus rafinesquii	Rafinesque's Big-eared Bat	None	G3G4	S2	N	R	S?
Lasiurus cinereus	Hoary Bat	None	G5	SU***	N	N/A	N/A
Mustela frenata olivacea	Southeastern Weasel	None	G5T4	S3?	N	N/A	N/A
Mustela vison halilimnetes	Gulf Salt Marsh Mink	None	G5T3	S3	N	N/A	N/A
Myotis austroriparius	Southeastern Bat	None	G3G4	S3	N	N/A	S3
Myotis grisescens	Gray Bat	E	G3	S1	LE	E	S1
Neofiber alleni	Round-tailed Muskrat	None	G3	S3	N	T	S3
Podomys floridanus	Florida Mouse	None	G3	S3	LS	N/A	N/A
Sciurus niger shermani	Sherman's Fox Squirrel	None	G5T3	S3	LS	N/A	S?
Trichechus manatus	Manatee	E	G2	S2	LE	E	S1S2
Ursus americanus floridanus	Florida Black Bear	None	G5T2T3	S2	LT	N/A	S2
MAYFLIES							
Baetisca rogersi	A Mayfly	None	G4	S3	N	N/A	N/A
REPTILES							
Agkistrodon contortrix	Copperhead	None	G5	S2	N	N/A	N/A
Alligator mississippiensis	American Alligator	T(S/A)	G5	S4	LS	N/A	S4
Caretta caretta	Loggerhead	T	G3	S3	LT	T	S2
Chelonia mydas	Green Turtle	E,T	G3	S2	LE	T	S1
Clemmys guttata	Spotted Turtle	None	G5	S3?	N	U	S3
Crotalus adamanteus	Eastern Diamondback Rattlesnake	None	G4	S3	N	N/A	S4
Dermochelys coriacea	Leatherback Sea Turtle	E	G2	S2	LE	E	S1
Drymarchon corais couperi	Eastern Indigo Snake	T	G3	S3	LT	T	S3

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Eumeces anthracinus	Coal Skink	None	G5	S3	N	N/A	S2
Gopherus polyphemus	Gopher Tortoise	None	G3	S3	LS	T	S2
Graptemys barbouri	Barbour's Map Turtle	None	G2	S2	LS	T	S2
Heterodon simus	Southern Hognose Snake	None	G2	S2	N	N/A	S2
Lampropeltis calligaster	Mole Snake	None	G5	S2S3	N	N/A	N/A
Lampropeltis getula pop. 1	Apalachicola Kingsnake	None	G5T2Q	S2	N	N/A	N/A
Lepidochelys kempii	Kemp's Ridley Sea Turtle	E	G1	S1	LE	E	S1
Macrochelys temminckii	Alligator Snapping Turtle	None	G3G4	S3	LS	T	S3
Nerodia clarkii clarkii	Gulf Salt Marsh Snake	None	G4T3	S3?	N	N/A	N/A
Pituophis melanoleucus mugitus	Florida Pine Snake	None	G4T3?	S3	LS	N/A	S3
Pseudemys concinna suwanniensis	Suwannee Cooter	None	G5T3	S3	LS	N/A	S1
SPIDERS							
Sphodros abboti	Blue Purse-web Spider	None	GNR****	S4	N	N/A	N/A

Ochlockonee Bay