CHATTAHOOCHEE BOAT LANDING

The field trip begins at the Chattahoochee boat landing near where the type section of the Chattahoochee Formation is exposed. Upon approach to the boat ramp, elevations drop rapidly toward the river and an excellent outcrop is exposed along the right hand side of the road. Carbonates of the Chattahoochee Formation are exposed here and are overlain by clays and sandy clays of the Hawthorn Group, Torreya Formation. Gremillion (1966) provided a detailed description of an outcrop near here at Jones Bluff (Figure 5).

The Chattahochee Formation, as named by Puri and Vernon (1964), is described as a very pale orange to light gray, moderately to well-indurated, dolomitic, calcilutitic, mudstone to fossiliferous micrite. Quartz sand is common, as are minor amounts of phosphorite. Some zones contain sucrosic dolomite. Puri and Vernon did not map the lateral extent of the formation; however Scott (1986) traced the extent of the Chattahoochee Formation into Leon and Gadsden Counties where it grades into the St. Marks Formation. Northward into Georgia, the Chattahoochee grades into the basal Hawthorn Group (Huddleston, 1988).

The Chattahoochee Formation is thought to be early Miocene (Aquitanian) in age based on correlation with the Parachucla Formation in the Gulf Trough and eastern Georgia (Huddleston, 1988). Some studies of benthic foraminifera have suggested a late Oligocene age for the Chattahoochee, but no planktonic forams have been discovered that collaborate this age assignment.

STOP 1 – ASPALAGA LANDING

Aspalaga Landing provides an excellent opportunity to examine the Chattahoochee Formation (Figure 6). An occasional mollusk mold or dugong rib can be found when water levels are low. For the most part, the Chattahoochee Formation is sparsely fossiliferous. Since most of the area surrounding the type section at the Chattahoochee boat landing is vegetated or paved, this outcrop provides a better chance for investigation.

There is quite a bit of relief at this locality with the maximum elevation being close to 220 feet above msl, and the elevation at the river edge being about 50 feet. Several streams have carved out steep sided valleys as they enter the Apalachicola River here. These valleys are unique, ecologically, and harbor some unique plant and animal species.

The lithology of the Chattahoochee here is predominantly a clayey dolosilt with interbedded sandy zones. The upper portion of the section is more indurated than the lower section. Dolomitization of the Chattahoochee Formation appears to have been post depositional because fossils of calcareous organisms are present now as molds (Huddleston, 1988). See T. Scott chapter in this volume for a more detailed discussion of the Chattahoochee Formation.

STOP 2 - ROCK BLUFF

The next stop is Rock Bluff. This locality is located within Torreya State Park, and is the type section of the Torreya Formation of the Hawthorn Group. It was named by Banks and Hunter (1973) for pre-Chipola, early Miocene age deposits in the eastern Florida panhandle (Huddleston, 1988). The Torreya Formation is currently only recognized in the eastern panhandle of Florida and the extreme southern most portions of Georgia. At Rock Bluff, the Torreya Formation disconformably overlies the Chattahoochee Formation (figure 7). Between Rock Bluff and Alum Bluff, the Torreya Formation either pinches out or grades laterally into the Chipola Formation. The lithostratigraphic relationship between the Torreya and Chipola Formations is poorly understood but some chronostratigraphic evidence suggests that the Chipola and Torreya Formations overlap in age and may interfinger (Bryant et al, 1992).

The Torreya Formation is described as variably fossiliferous, argillaceous, fine grained sand/finely sandy clay that is variably calcareous and dolomitic. In outcrop, the carbonate component is generally absent due to leaching, and the Torreya Formation can be divided into an upper, clayey unit, and a lower carbonate unit. Two members of the Torreya Formation are recognized: the Dogtown Member and the Sopchopee Member, neither of which occur at this locality.

STOP 3 - ALUM BLUFF

The section exposed at Alum Bluff is probably one of the most extensively studied sites in Florida. Five lithologic units are exposed at Alum Bluff, several of which contain some of the most diverse and abundant molluscan faunas in the southeast. As early as 1892, geologists had visited and described this wonderfully unique outcrop. Since then, numerous studies ranging from the stratigraphy to the paleontology of Alum Bluff have been conducted.

The Alum Bluff exposure is the result of the erosional forces of the mighty Apalachicola River. The river has cut a broad floodplain through the surrounding highlands and at the summit of Alum Bluff you can see the extent of this erosion to the west. The top of the bluff is at about 190 feet of elevation, and the base is around 50 feet depending on water levels. Thus, approximately 140 feet of vertical exposure occurs here. This makes Alum Bluff the tallest natural exposure in the state (Figure 8).

At Alum Bluff, sediments exposed include the Miocene Chipola Formation and Alum Bluff Group, undifferentiated, Pliocene Jackson Bluff Formation, Plio-Pleistocene Citronelle Formation, and a section of undifferentiated surficial clastics (Figure 9). During flood stage of the river, water levels can cover the Jackson Bluff Formation. At low river stage, as much as 10 feet of Chipola Formation can be exposed.

The Chipola Formation is probably the best known and most fossiliferous unit of the Florida Miocene. Its lithologies include carbonate and clay rich sands with biofacies

ranging from shoreline beach, to lagoonal to coral patch reefs. None of the formation appears to have been deposited in more than 30 meters of water (Vokes, 1989). The fauna preserved in this unit is one of the most ecologically diverse and well preserved in the western Atlantic, and has been estimated to contain as many as 1100 molluscan species (Vokes, 1989). The Chipola Formation is considered to be late Early, or Middle Miocene in age and may interfinger with the Torreya Formation.

The Alum Bluff Group, undifferentiated, lies unconformably on the Chipola Formation at Alum Bluff. Matson and Clapp (1909) first proposed the Alum Bluff Formation to describe units with Alum Bluff lithologies; namely the Chipola, Oak Grove Sand, and the Shoal River Formations. This unit consists of sands and clays, some of which are cross bedded. Within some of the clay beds, various plant remains can be found. This is one of the few localities where terrestrial plant remains can be found. Some plants remains recovered include palm fronds, deciduous leaves, nuts and seed pods. Also, some terrestrial vertebrate remains can be found within this unit. These sediments are interpreted as deltaic deposits and are thought to be Middle to Late Miocene in age.

The Jackson Bluff Formation, as named by Puri and Vernon (1964), unconformably overlies the Alum Bluff Group sediments. The Jackson Bluff Formation is clayey sand containing numerous, well preserved mollusks, corals and microfossils. The upper section has been leached, leaving behind moldic impressions of marine organisms. Based on fossil evidence, the Jackson Bluff Formation is thought to be Pliocene in age. It represents a shallow water, estuarine deposit.

The Citronelle Formation, named by Matson (1916), unconformably overlies the Jackson Bluff Formation at Alum Bluff. The Citronelle consists of sands and gravels with minor amounts of clay. The typical reddish, oxidized iron color of the Citronelle Formation can be observed at this locality. For the most part, the Citronelle Formation is devoid of fossil material and only in rare, isolated outcrops can any fossil material be found. Based on this limited fossil evidence, the Citronelle Formation is thought to be Pliocene in age. For the most part, the sediments of the Citronelle Formation were deposited fluvially.

Undifferentiated sands overlie the Citronelle Formation. These sands are thought to have originated from the underlying Citronelle, and represent reworking of the Citronelle Formation. The deep sequence of undifferentiated sands and Citronelle Formation sands overlying the clayey Jackson Bluff Formation creates the perfect situation for the formation of steephead ravines. These geomorphic features are abundant in the vicinity of Alum Bluff and have provided refuge to numerous relict species now found further north.



Figure 8 – USGS 1:24,000 map of Alum Bluff – Stop 3.

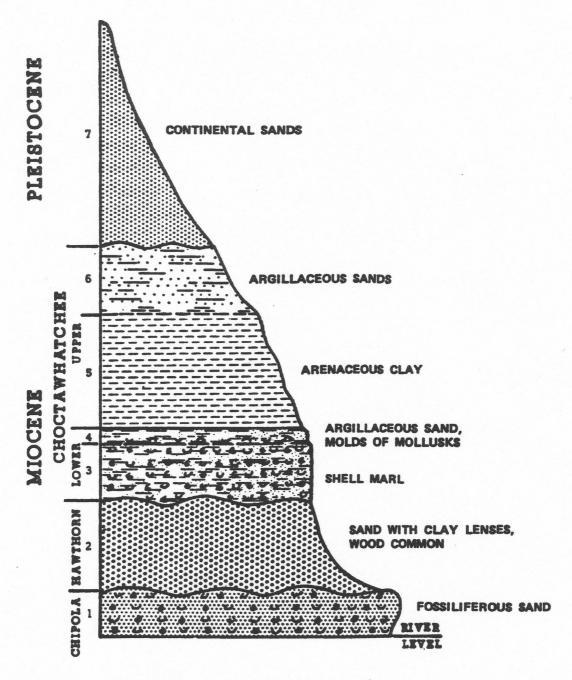


Figure 9 – 1961 graphic representation of the Alum Bluff section. The Hawthorn is now Alum Bluff Group, undifferentiated, the lower and upper Choctawhatchee are now the Jackson Bluff Formation, and the Continental Sands are the Citronelle Formation and upper reworked undifferentiated sands. After Dubar and Beardsly, 1961.

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Human History of the Apalachicola River

By

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Humans have occupied the Apalachicola River corridor continuously for at least 12,000 years. Evidence of their existence has been recovered from submerged sites on the riverbed and from land sites along the river course. The river was an excellent living site for both prehistoric and European people because it provided abundant food, water, transportation, raw materials for tool making, and relatively warm climate. In this chapter, we will discuss the people of the Apalachicola River beginning from the late Pleistocene through historic times. Their occupation carries continuously through all recognized archaeological time periods for the southeastern U.S. The general time periods that will be addressed include the Paleo, Late Paleo, Archaic (early, middle, and late), Woodland, and Historic Periods.

The earliest evidence of human occupation along the Apalachicola includes a

fluted Clovis projectile point and associated unifacial flake tools that were recovered on the submerged riverbed in 2001 (pictured at right). These tools were made out of locally occurring chert that had eroded out of the underlying limestones.



Clovis points have been recognized as being approximately 11,500 years old from sites that have been radiocarbon dated in the Southwest. This places them within the Paleo Period, or late Pleistocene Epoch at the end of the last Ice Age. Clovis points are lanceolate-shaped, have concave bases, and they have a distinct channel or "flute" running from the base toward the center. Interestingly, Clovis is the most widely distributed lanceolate point type in North America, but their abundance is very low in any one location. This suggests that the people responsible for their making were nomads, perhaps migratory hunters, and scarce in numbers.

Clovis points and tools have been found in association with extinct large vertebrate animals known as "megafauna." Well known examples of Pleistocene megafauna in North America include mammoth, mastodon, giant ground sloth, horse, bison, saber-tooth cat, and giant tortoise. All told, there were about 25 species of

megafaunal vertebrates alive until very recently, geologically speaking. There is much evidence suggesting that Paleoindians hunted megafaunal animals (painting at right). In the nearby Aucilla River, east of the



Apalachicola, butchering scars have been detected on the bones of mastodons and giant ground sloths. In the Wacissa River, an Aucilla tributary, an extinct bison skull with a projectile point tip embedded was recovered. With increased archaeological exploration on the Apalachicola, finds like these probably will be found. Fossil bones and teeth of mammoth, mastodon, and horse have been found on the riverbed and gravel bars.

Pleistocene peoples of North America who coexisted with the megafauna are referred to as Paleoindians. Paleoindians lived throughout North America during the late Pleistocene. They are thought to have arrived on this continent anywhere from 12,000 yrs. BP to as much as 20,000 yrs. BP. Prior to the recent discovery of Clovis material in the Apalachicola River, there had been virtually no known Paleoindian artifacts from there.

At the close of the last Ice Age approximately 10,000 years ago, the great Pleistocene megafauna became extinct. Climate change during this time often is cited as the cause for their disappearance; however, Paleoindians may have had a hand in causing the megafaunal extinctions. Around this time, climate in the Southeast had become warmer and less arid, and plant community composition had changed into something similar to what exists today. During this time of great ecological change and extinction, a cultural transition also took place. The region's people had to adapt to new climate and ecological conditions. Consequently, their way of life changed, and they became hunters and gatherers. The largest game animals were now gone, and this ushered in a greater dependence on plant material, fish, and shellfish for food. The transition took perhaps



500 or 1000 years. Lanceolate points transitioned into points that had side or corner notches, like the Bolen point pictured at left from the Apalachicola riverbed. These point types belong to the Late Paleo Period.

After the ecological and cultural transition, a new general style of projectile point that had a distinct stem at the base appeared. The longest archaeological period of

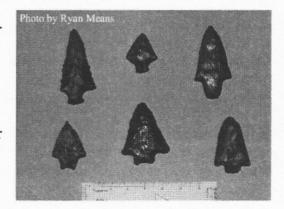
Southeastern human history, called the Archaic period, began with the appearance of the stemmed projectile point and lasted for perhaps 7,000 years, from around 9,500 yrs. BP to 2,500 yrs BP. The Archaic period is further broken down into the early, middle, and late Archaic.

There are many recognized varieties of Archaic-stemmed points in the Southeast,

and along the Apalachicola, this is no exception.

The stemmed points in the photo at right were all recovered from the riverbed and gravel bars.

They probably represent a several thousand year time spread, and they are all skillfully chipped from local chert found along the exposed river



corridor. These points were made to function as knives hafted to antler handles or projectile tips hafted to the end of a spear. An ingenious mechanism, known as the "atlatl," or spear thrower, was used to hurl spears at game such as the white-tailed deer. The human arm alone can throw a spear perhaps 30 mph with some accuracy. When a spear was thrown using the atlatl, speeds of near 100 mph were achieved with accuracy.

If stemmed points were the first cultural invention of Archaic peoples, then the second, and arguably the most important, was fired ceramics. During the later portion of the Archaic period, approximately 4,000 yrs. BP, the first fired ceramic pottery appeared. From that time onward, all of Florida's people manufactured pottery. Pottery was made from clay, an abundant resource along the Apalachicola River. The clay was hand-shaped into vessels and figurines, then carefully fire-baked. The first type of pottery was

strengthened by mixing organic fibers into the clay before shaping the vessel. This kind of pottery is referred to as "fiber-tempered."

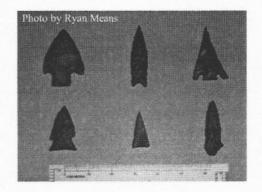
The importance of ceramics in the lifestyles of late Archaic people was paramount. Now people could store and haul water with greater efficiency. They could cook and store food within containers. And they could express their artistic genius through designs on clay vessels and with figurines. Clay could be hand sculpted into most any shape for utilitarian or artistic purposes.

The Archaic people occupied coastal and riverine locations throughout Florida.

They developed villages and discarded large amounts of trash where they lived along rivers and coastlines. These trash piles are called "middens." In the Apalachicola Basin, middens were composed of empty conch and oyster shells sometimes intermixed with pottery shards, like the one on St. Vincent Island. Middens can be several meters thick and dozens of meters long. Eventually they grew so large after centuries of trash deposition that they began to serve as higher ground suitable for living on. The human population grew throughout the long Archaic Period.

Around 2,500 yrs. BP vessels were hardened by other materials such as sand or

sponge spicules, and they were elaborately incised with regular designs that are temporally, geographically, and culturally specific. Projectile point styles also changed and basal stems were replaced by basal notches (pictured at right on the



top row). These technological advances begin the Woodland Period of human occupation along the Apalachicola River and in the Southeast. Specific Woodland

cultures that are recognized within the Apalachicola Basin include Deptford, Swift Creek, Weeden Island, and Ft. Walton. These cultures are identified mainly by the style of pottery they produced. Pottery shards from these cultures like the ones pictured below are very common finds on gravel bars along the Apalachicola. Other tools and decorative



objects that have been recovered in the region include stone celts and axes, drills, scrapers, gaming stones, smoking pipes, plummets, and gorgets (breast plates).

Most of the raw materials that were used in the manufacture of tools along the Apalachicola were

located along the river. In some instances; however, raw materials were transported long distances both up and downstream. Slate from the southern Appalachians has been recovered along the Apalachicola and was used in the manufacture of smoking pipes, gorgets, and other tools. Also, shell material from Florida crafted into tools and pendants occasionally can be found at archeological sites hundreds of miles north of their coastal origin. The Apalachicola River system served as a trade corridor.

By the later part of the Woodland Period, projectile points again changed in association with a new hunting and warfare invention, the bow and arrow. Points were much smaller in order to fit onto the tip of an arrow and travel efficiently (bottom row last point picture). The atlatl and spear became obsolete in the presence of the more efficient bow and arrow, and eventually disappeared.

Throughout the Woodland Period, Native American villages and cultures were regionally developed and thriving in North Florida. The Apalachicola River Basin supported a relatively large human population as evidenced by its rich archaeological

record. During a short time period beginning nearly 500 years ago, human history of the Apalachicola and North America would drastically change with the arrival of Europeans.

An estimated 100,000 Indians inhabited La Florida when Juan Ponce de León first sighted eastern North America in 1513. The predominant tribe along the Apalachicola River, the Apalachee, ranged between the Aucilla and Apalachicola rivers above Apalachee Bay. They were an agricultural people who depended on the river as a source of food, transportation, and recreation. They also depended extensively on fish and shellfish, remnants of which, in the form of shell middens, can still be found today.

The first European-Indian contact along the Apalachicola River occurred in 1528



when Pánfilo de Narváez (pictured at left) entered Apalachee terriority, but he soon withdrew due to persistent Indian attacks.

Eleven years later, Hernando de Soto crossed the Apalachicola River at Chattahotchee and was also forced to find more hospitable lands. Not until the middle 1600s did the Spanish

successfully expand their missions westward past Tallahassee and into the Apalachicola River area.

The first mission along the Apalachicola River was established in 1633 and a business relationship soon began between the Spanish and the Apalachee tribe. The British, who occupied lands to the north, feared the Spanish were encroaching on their territory and allied with the Creek Indians to fight against them. In 1702, James Moore, the English Governor from South Carolina, led a raiding party into eastern Florida, leaving the coastal missions in ruins. Moore returned again two years later to destroy the

missions in Apalachee territory. A few survivors escaped to Mobile, but the whole of the Apalachee tribe vanished from the area by the end of 1704.

The Treaty of Paris 1763 transferred Florida from Spanish to British rule. The Apalachicola River served an important function during this era as the dividing line between the two British colonies: East Florida and West Florida. Florida was again ruled by the Spanish (1784 – 1821), who regained control of Florida as part of the peace treaty that ended the American Revolution. During these times, the United States of America formed and the expansion of European colonies continued. As settlement spread in the North, the native peoples were pushed farther West and South. Seminoles, composed of bands of Creeks, Alabama, and Yamasee, filtered into Florida throughout the 1700s, establishing permanent towns along the Apalachicola River. These Indians occupied northern Florida until the end of the 2nd Seminole War 1835-1842.

Skirmishes along the borders of Florida heightened in the early 1800s. Settlers

increasingly looked to Seminole lands as their expansion increased. Additionally, Indian communities provided a sanctuary for the runaway slaves that the settlers wanted returned. In 1816, U.S. Colonel D.L. Clinch attempted to quell the conflicts by invading Spanish Florida from Fort Scott on the Apalachicola River (in present day Georgia). Over 300 Indians and escaped slaves took refuge at Fort Gadsden



downstream, also known as Negro Fort. A cannonball shot from a U.S. ship hit the Fort's

powder magazine and killed all the people in the fort instantly. The Seminole Indians retaliated by increasing their attacks on settlers. The pivotal point in the conflicts was reached when a band of Seminoles attacked a U.S. military supply ship led by Lieutenant R.W. Scott. The boat, carrying men, women and children, was ascending the Apalachicola River on its way to Ft. Scott in Georgia. Only six men escaped. As a result of these conflicts, General Andrew Jackson (pictured above) invaded Seminole territory burning villages and capturing former slaves. The Seminoles were pushed farther south into peninsular Florida.

By 1830s, with Florida officially ceded to the United States, Seminole lands were becoming more attractive to settlers. The Second Seminole War began over the question of whether Seminoles should be moved westward across the Mississippi River into present-day Oklahoma. A small number of Seminoles signed the Treaty of Payne's Landing, agreeing to cede Seminole land and move west. However, the majority of Seminoles refused, which ignited the Second Seminole War. In 1842, a nominal end to the hostilities occurred, though no peace treaty was ever signed. A Third Seminole War, which ended in 1858, reduced the Seminole population to about 200, concentrated in the Everglades area of South Florida.

In the early nineteenth century, virtually all travel and commerce was dependent on the rivers. The Apalachicola River was the main artery flowing from the cotton farmers in the North to ports along the Gulf of Mexico. With each new farmer, timberland was cleared for cotton and the iron-rich soils eroded into the streams that fed the river. The formerly clear Apalachicola River became the more silt laden, turbid waterway it is today. In early 1822, farmers poled boats and rafts to carry the first cotton

from Georgia downstream to Apalachicola Bay. The first attempt to run a steamboat up the river was in 1827 with the *Fanny*, but navigating the rocks, falls and tree dams proved to be difficult. Steamboats were later employed to carry cotton (pictured at right) and other trade goods up and down the river. By the 1850s, railroads threatened the steamboat trade along the Apalachicola River.



Florida was not ravaged by the Civil War as much as other states in the South. The interior of Florida saw

little of the war and remained in Confederate hands, however many coastal towns and forts were seized by the Union. In 1862, Union forces seized the port of Apalachicola, which enabled them to blockade Confederate ships and reduce the importation of food, supplies and munitions. In response, Confederates placed blockades along the Apalachicola River and established two batteries, at Rock Bluff and Ricco's Bluff, to prevent Federal gunboats from moving inland. Additionally, a Confederate arsenal was established in Chattahoochee. The end of the Civil War found the Apalachicola silted up and choked with wreckage but the golden age of the postwar steamboat era was soon to begin.

During the late 1800's, steamboats along the Apalachicola River functioned both as pleasure cruises as well as transports for lumber, honey, and cotton. The longest running steamer on the river was the *Naiad* (pictured below). Its cooks were renowned for their fare, serving plates piled high with fresh shrimp, oysters, and fish on their return

trips from the port of Apalachicola. In addition to the Apalachicola River, steamboats cruised up and down the Suwannee, St. John's, and the Ocklawaha Rivers. Florida became a popular tourist destination for people from all over the U.S.



July 18 2 Land West Strategy W.

In the early 1900s, railroads and automobiles flourished and the steamboats became an era of the past.

The Apalachicola River has remained an important transportation corridor throughout its human occupation. In the early years of boat traffic, seasonal fluctuations in the river's water level prevented vessels from traveling the entire stretch. The U.S. government became involved in improving navigation along the river in the early 1800s. Ultimately, congress authorized a series of Acts, which resulted in the 9ft deep and 100ft wide channel that is dredged today.

The damming of the Apalachicola River began the last period of the river's history. In 1957, the Jim Woodruff Lock & Dam was completed (pictured below), the first of three locks and dams constructed for navigation, hydro-power, and recreation on



Cooperative Observer Program Photo Gallery

the Apalachicola, Chattahoochee, and Flint
River systems. The dam is located on the
Florida Georgia state line, about 1000ft below
the confluence of the Chattahoochee and Flint
Rivers, which unite to form the Apalachicola
River. Human benefits from the Lake are many

but the negative ecological impacts of the dam are far-reaching as natural water fluctuations are altered and nutrient-rich sediments are blocked from continuing downstream.

For almost 200 years, the federal government has dredged the river, removing sediment to improve navigation and at the same time disturbing natural habitats and ecosystems. Recently, Florida Governor Jeb Bush voted along with the Florida Cabinet for a resolution that would end dredging in the Apalachicola River. This resolution currently is awaiting legislation in the U.S. Congress.

Another major issue facing the Apalachicola River today involves water rights.

The waters of the Apalachicola flow through Atlanta and other major Georgia cities.

Increased use upstream lowers water levels downstream. As water demands soar from unbridled population growth along and proximal to the river, conflicts between cities up and downstream are increasing. The future of the Apalachicola River may be played out in a courtroom.

There are many reasons why the Apalachicola River has proven to be an ideal living location throughout its human history. Evidence supports that raw materials and cultural ideas were exchanged up and down the river at least since middle Archaic times (ca. 5000 yrs BP). The river provided an excellent source of water and food with its abundant shellfish and fisheries. Raw materials for tool making such as chert nodules, quartzite cobbles, and clay were distributed with great abundance along the river. The river was used as a transportation corridor, spanning from northern Georgia to the Gulf of Mexico. Lastly, the relatively warm climate of the Apalachicola has provided an ideal living existence for both prehistoric and historic people. From Paleo-indians to the

Explorers, the Steamboat Era and modern day, the waters of the Apalachicola River are steeped in history and continue to carry their stories down to the Gulf.

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