

**Assessing Significant St. Joseph Bay Archaeological Sites Following Hurricane Michael:
Richardson's Hammock (GU10) and Old Cedar (GU85)
Submitted by Pre-Columbian Archaeological Research Group, Inc.
to the Florida Bureau of Archaeological Research, Division of Historical Resources**

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Artifacts from Richardson's Hammock, 8GU10.



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Introduction

The TH Stone Memorial St. Joseph Peninsula State Park and St. Joseph Bay State Buffer Preserve were properties in the immediate path of Hurricane Michael, which struck the area in 2018. These state lands face the open Florida Gulf, and under normal circumstances, experience constant coastal forces causing soil erosion and accretion, and vegetation displacement. Michael produced these conditions on an exponential scale, damaging archaeological sites on the properties. The National Park Service Hurricane Michael relief grant provided an opportunity to record significant sites negatively affected by this natural disaster. Three archaeological sites, Presidio de San Jose (8GU8), Richardson's Hammock (8GU10), and Old Cedar (8GU85), were selected for this project; they were directly impacted by Hurricane Michael and are considered significant and eligible for the National Register Nomination.

The vulnerable location of these sites, i.e., on the "front line" of tropical storms and hurricanes, in this case, Hurricane Michael, that move through the St. Joseph Bay area, made them prime subjects for this project. Despite the damage to them, these sites have managed to survive with considerable integrity. This report describes the assessment of the two prehistoric sites, 8GU10 and 8GU85, which includes the collection of new data, and the reevaluation of previous testing and survey data, with recommendations for site stabilization. The report that follows is written in partial fulfillment of grant deliverables assigned to this project. In addition to this report, the grant project includes National Register nominations of these sites.

Environmental Setting

St. Joseph Bay is located in the Northeast panhandle of Florida in Gulf County [Figure 1a, b].

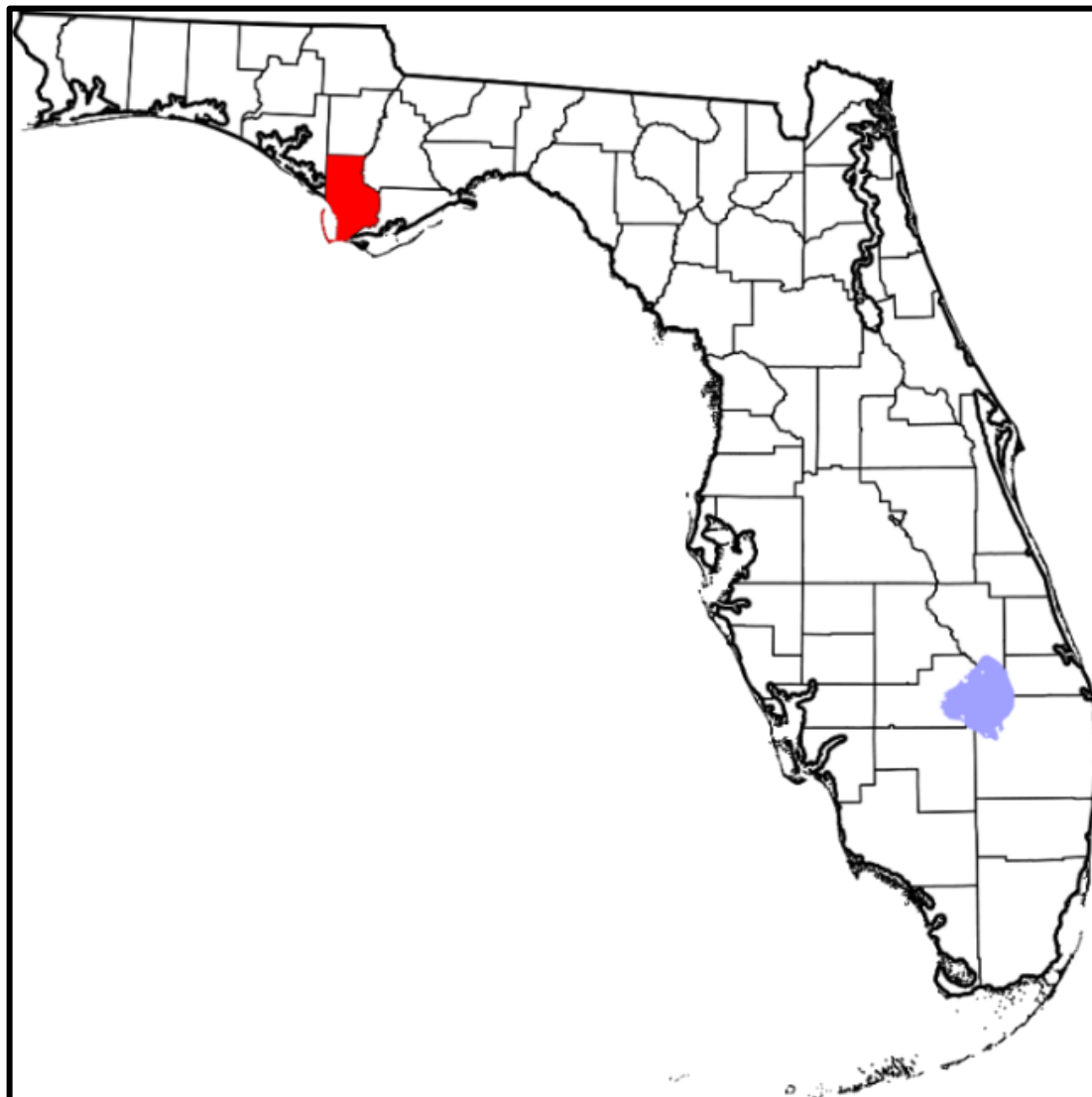


Figure 1a. Gulf County, the location of St. Joseph Bay.

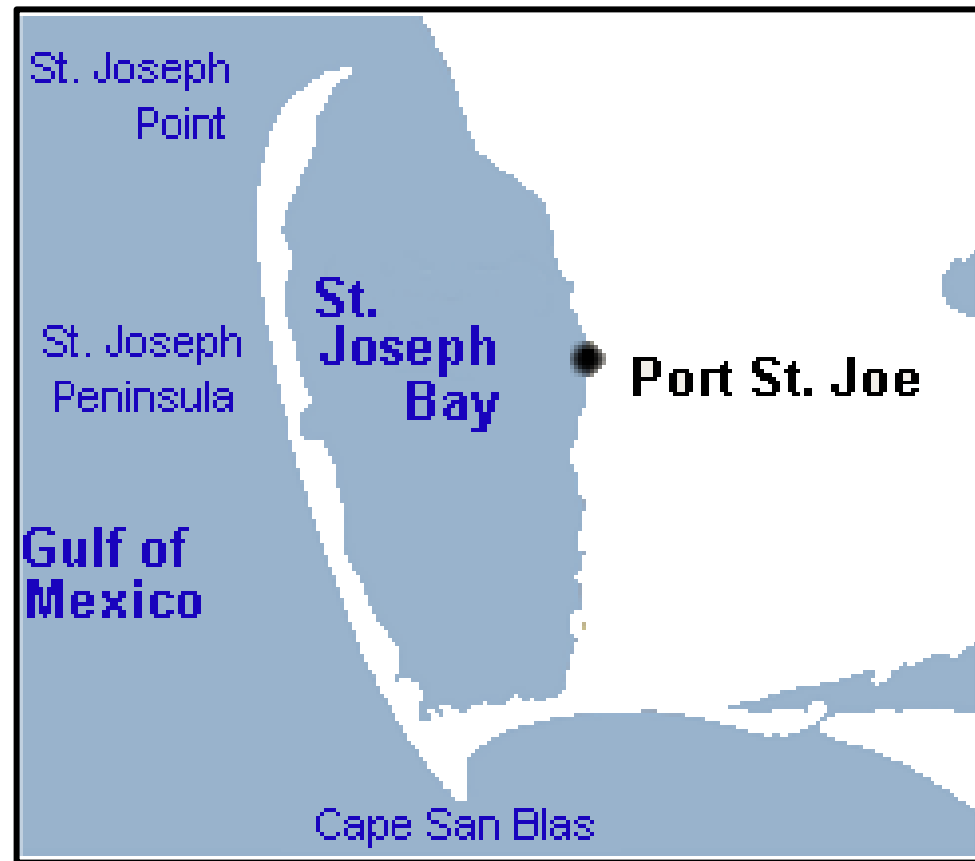


Figure 1b St. Joseph Bay.

It is defined by a 15-mi/24 km long, less than one-mi/1.6 km wide, barrier peninsula that runs north-south, and a shorter east-west arm that extends from the southern end of Cape San Blas to the mainland east. Separating the Gulf of Mexico from the bay, the peninsula forms a bay measuring 3 to 5 mi/8-13 km wide with its greatest depth at approximately 30 feet. The peninsula area is made up of salt marshes and swamps broken up by dune ridges and freshwater swales, interspersed with hardwood hammocks (Davis 1997:166-67; FDEP 2014; FDEP 2016; Rupert 1991:10).

St. Joseph Peninsula State Park runs half the length of the peninsula, covering 2,516 acres and is defined as recreation and wilderness conservation lands (FDEP 2014). The St. Joseph Bay Buffer Preserve along with the St. Joseph Bay Aquatic Preserve (FDEP 2016) [Figure 2] covers 5,019 acres of discontinuous parcels and serves to protect associated wildlife. These properties fall within the Gulf Coastal Lowlands physiographic region, which is characterized by flat, sandy terrain. The underlying bedrock of the peninsula area includes the Middle Miocene Bruce Creek Formation, overlain by the Middle Miocene to Upper Pliocene Intracoastal Formation, above which is Pliocene Chipola-like sediments, and then the Upper Pliocene Jackson Bluff Formation. It is capped by the Pleistocene and Holocene Jackson Bluff Formation (Rupert 1991:21, 27-32, 37).



Figure 2. TH Stone Memorial St. Joseph Peninsula State Park.
and St. Joseph Bay Buffer Preserve (FDEP 2014).

The soils of the park and preserve are included in the Corolla-Duckston-Newhan association (USDA 1997). The rolling dune and level terraced areas are dominated by well-drained sands of the Newhan-Corolla complex and Resota fine sand. The swales include poorly drained fine sands of the Duckston-Rutledge-Corolla complex with a high-water table which may include perched fresh water sources. Duckston sand and Bayvi loamy sand also occur on the flats next to coastal marshes along the east side of the peninsula. Vegetation of the area includes Scrub Oak, Sand Pine, Long Leaf Pine, Sabal Palmetto, Yaupon Holly, sage, rosemary, and grasses in the uplands, and Sabal Palmetto and grasses in low lying areas (FDEP 2014; FDEP 2016; USDA 1997).

St. Joseph Bay has a warm to moderate climate. The summers are long, warm, and humid, while the winters are short, cool, and dry. Prevailing winds blow from the south and southwest in the spring, summer, and fall, and from the north or northwest in the winter. Both summer and winter temperatures are moderated by proximity to the Gulf. The summer temperature averages 80 degrees Fahrenheit, and the winter temperature averages 56 degrees Fahrenheit. Annual precipitation averages 22 ins. The wettest part of the year generally is a four-

month period between June and September when over half of all rainfall occurs; the driest months are May, October, and November (Time And Date 2022).

Cultural Background

Today St. Joseph Bay is a popular tourist destination for its remote white beaches, clear bay and Gulf waters, and abundant wildlife. However, in prehistoric and historic times, this region served other purposes; archaeological remains and documentary evidence provide insight into its early human occupation.

Paleoindian Period (ca. 12,000 BC- 8,000 BC)

Paleoindians entered North American and arrived in North Florida near the end of the Pleistocene, more than 14,000 years ago. Glaciers still covered much of the northern half of the continent with much of the earth’s water frozen in ice. Climatic conditions in Florida were substantially different from today. The region was drier and cooler, sea levels were significantly lower (as much as 75 meters below sea level), and the Gulf Coast shoreline extended roughly 100 miles seaward of its present location. Modern coastal areas, which are now flat, low and wet, were formerly dry. Inland drainages, springs, and wetlands were virtually non-existent, and the water table was much lower. Fresh water was scarce and available only in rain-fed water ponds and lakes, and deep sinkholes fed by springs, most plentiful in the karstic limestone formations. Along the Gulf Coast runoff from rainwater and groundwater springs eroded the land forming valleys that later were inundated by rising sea level to remain as the bay systems of today (i.e., Tampa Bay, St. Andrews Bay, Choctawhatchee Bay, and Pensacola Bay). These water sources supported rich natural communities of plants and animals. Paleoindians took advantage of these resources, subsisting on hunting, fishing, and collecting a wide range of fauna and flora (Anderson and Sassaman 2012:36-59; Dunbar 1991; Halligan et al. 2016; Milanich 1994:37-59).

Relative to later cultural periods, the Paleoindian period is sparsely represented. This is because much of its associated archaeological remains now lie underwater, caused by sea level rise, while their inland manifestations are generally buried under later site occupations or by natural soil deposition. Paleoindians lived in small, mobile groups, recorded as ephemeral camps and procurement sites. Limited preservation of such sites is due to their great antiquity and occupations by subsequent groups. Most of the Paleoindian record consists of stone tools and debitage but some bone and ivory. The principal diagnostic stone tool of the period is the lanceolate-shaped point, namely, Clovis, Suwannee, and Simpson projectile points associated with hunting now extinct megafauna such as the mastodon and the giant bison (Dunbar and Hemmings 2004; Dunbar and Webb 1996) [Figure 3].

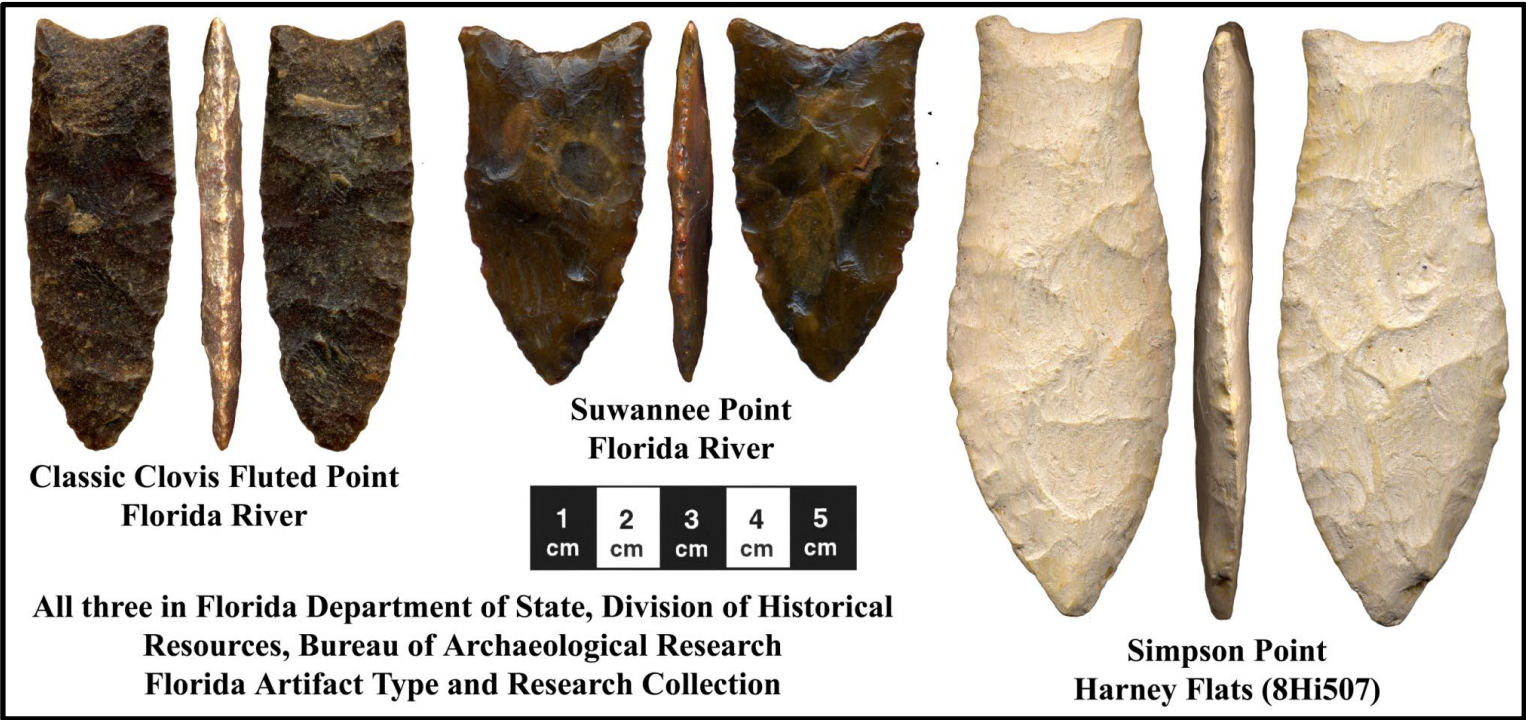


Figure 3. Classic Clovis, Suwannee, and Simpson points recovered in Florida.
Florida Bureau of Archaeological Research (BAR) Collection, Tallahassee.

While the Paleoindian Period is divided into three sub-periods, sites associated with them are difficult to differentiate. Only a handful of Paleoindian sites have been recorded in Northwest Florida, and none have been identified at St. Joseph State Park or the St. Joseph Bay Buffer Preserve. Archaeological survey at nearby Eglin and Tyndall Air Force bases found no evidence for Paleoindian sites, although unsubstantiated reports have been made of submerged ones (Thomas and Campbell 1985; Thomas and Campbell 1993). However, Paleoindian sites and artifacts have been identified at Wakulla Springs and in the Wakulla River, as well as inland along the Chipola River in Jackson County. The Chipola River is a tributary of the Apalachicola River with the western side of its bay contiguous to St. Joseph Peninsula (Tesar and Jones 2004).

Archaic Period (ca. 8,000 BC-1,000 BC)

At the end of the Paleoindian Period (the beginning of the Holocene), the climate began to resemble today's climate, being much warmer and drier than previously. Sea level had risen to within 10 meters of its present level and continued its rise during the period. By the Archaic Period, people had greatly diversified their subsistence, and a wide variety of extant animal and plant resources were exploited. There is some evidence that plant domestication began during the Archaic stage (Gremillion et al. 2008). Archaic settlements appear to be seasonally occupied as base and special use camps [Figure 4].



Figure 4. Artistic rendering of a Late Archaic occupation. From floridastories.oncell.com.

The Archaic Period is the longest period of cultural development in pre-Columbian North America. It is divided into three sub-periods reflecting the gradual fluctuation in climate until current conditions were reached in the last stage. Important advancements include construction of mounds, shell rings, and other earthworks in association with larger settlements and the establishment of long-distance trade. Additionally, the Archaic Period is marked by a greater diversity of artifacts than are recorded for the Paleoindian Period. Projectile points are smaller and triangular with notched or stemmed bases along with scrapers and knives. Ground stone tools, such as celts, and ornaments, such as pendants, make up the Archaic assemblage as well as gourd and basket containers, and wooden tools and dugout canoes (Anderson and Sassaman 2012:66-113; Milanich 1994:61-87, 95-100).

No Early Archaic sites have been recorded in the St. Joseph Peninsular area, although a few Middle and possibly Late Archaic sites have been documented at Eglin Air Force Base, though they are low density surface scatters (Thomas and Campbell 1993). However, hundreds of Early Archaic projectile point/knives have been surface collected around the coastal bay shorelines and inland, especially within the Chipola River drainage and upland Jackson County, Florida locales.

The end of the late Archaic is defined by the appearance of fiber-tempered ceramics in the greater Southeastern United States. Cultural changes include increased populations and a high reliance on aquatic, estuarine, and marine resources. Regional settlements are centered around mounds and/or horseshoe, semicircular or oval shaped middens. Influences from the lower Mississippi Valley, known from Alabama to Mississippi and Louisiana as the Poverty Point Culture, and in Florida as the contemporary Elliott's Point Complex, is also noted archaeologically at this time. It is marked by a distinctive assemblage of baked clay balls, microliths, and exotic items (Milanich 1994: 95, 97-

98; Thomas and Campbell 1991) [Figure 5]. The form of the Late Archaic microliths, generally known as Jaketown Perforators, is distinct and slightly larger than the Late Weeden Island to Fort Walton period microlithic assemblage (see Morse and Tesar 1974:104 for further comparative explanation).

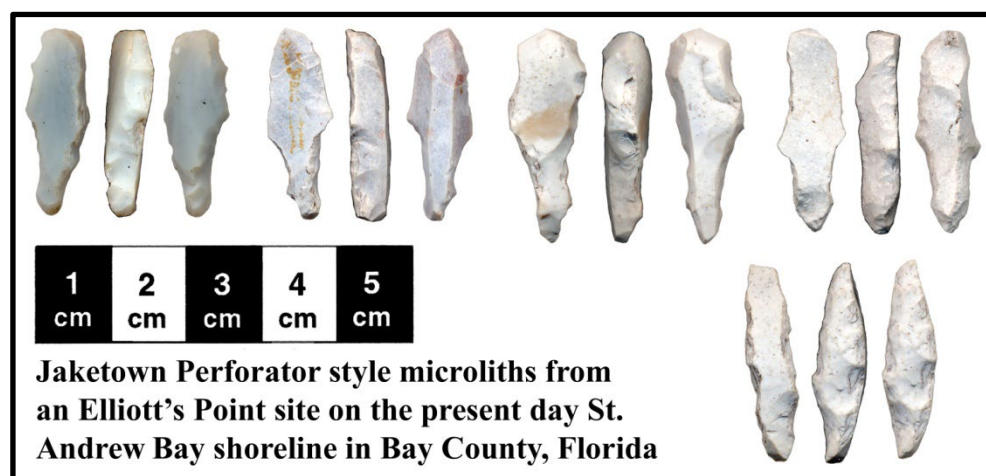


Figure 5. Examples of Florida Late Archaic microliths, after Morse and Tesar (1974).

Although there are no Late Archaic sites reported in the St. Joseph Bay Park or the St. Joseph Bay State Buffer Preserve, there are three on Tyndall Air Force Base. Moreover, nearby multicomponent coastal sites have yielded small amounts of fiber-tempered pottery (Mikell, Campbell and Thomas 1989; Thomas and Campbell 1985). Elliott's Point artifacts have been reported from five shell mound sites in the Apalachicola River region in Gulf and Franklin Counties to the east (White and Estabrook 1994) and from Saint Vincent 5 (8FR364) a north shoreline midden with over 550 fiber-tempered sherds on nearby St. Vincents Island (White 2018:85 citing White and Kimble 2016).

Woodland Period (ca. 1,000 BC-AD 1,000)

The Woodland Period is the next major stage of prehistory in eastern North America. It is characterized by significant population growth in the river valleys and along the coast, an increase in pottery use, and the introduction of elaborate ceremonies and mortuary rituals. The Woodland, likewise, is divided into three sub-periods. In Northwest Florida, each is associated with a distinct pottery type (Milanich 1994:111-227).

The Early Woodland Period (1000 BC-AD 200) in North Florida as well as southern Georgia, is characterized by coastal-riverine subsistence, which correlates with the emergence of modern climatic conditions. Principal settlements are located within maritime hammocks near brackish or fresh water (Bense 1985; Milanich 1994:116). Population growth and greater sedentism lead to the appearance of village mound complexes. Mounds built for elite burials and civic ceremonial activity are established during this period (Milanich 1994:134-135). Deptford pottery, which corresponds to this temporal phase, is defined by large, deep, and cylindrical-shaped pots with conical bottoms, and short cylindrical vessels; some Deptford vessels also are tri- and quadrupedal. The majority of Deptford ceramics are sand-tempered, and the vessel exteriors are decorated with paddle stamping, and some net and fabric impression. Checked and linear designs are the main patterns (Stephenson et al. 2002) [Figure 6].



Figure 6. Examples of Deptford pottery, courtesy of Louis Tesar.

Deptford people used stone tools, but they are rarely encountered in the archaeological record (Milanich 1994:126). Large stemmed projectile points and medium sized triangular points, bifacially worked tools, small blades, and expedient flake tools have been recovered in very limited numbers. Ground stone tools are also associated. They include basalt/greenstone celts, limestone and sandstone grinding implements, hammerstones and whetstones. Bone tools, including points, awls, flakers, pins, and gouges, are occasionally recovered as well. Oyster, clam, and whelk shells were used as ladles, spoons, cups, picks, and axes (Stephenson et al. 2002:318-351).

In the St. Joseph Peninsula area, Deptford components have been recorded at the Richardson Hammock's site (see research results below), and at several shell middens in the Indian Pass area. Fourteen sites were recorded on Tyndall Air Force Base (Mikell, Campbell, and Thomas 1989:216), supporting the Deptford coastal-riverine settlement model. In addition, a series of Deptford shell mounds have been recorded in the Apalachicola River area (White and Estabrook 1994) and sites along Lake Wimico, Howard Creek, and other tributaries to the Apalachicola River (Rawls 2000).

During the Middle Woodland Period (ca. AD 200- AD 500), Deptford cultural practices continue, but there are changes in pottery production, and sites increase in number and variety. The Swift Creek ceramic type replaced Deptford. It is represented by open jars, and bowls with footed supports and notched and scalloped rims. Its exterior decorations are unique, with complicated stamped curvilinear elements such as scrolls, concentric circles, teardrops, and spirals [Figure 7].



Figure 7. Examples of Swift Creek pottery, courtesy of Louis Tesar.

Other artifacts of stone and bone appear to be carryovers from the previous period. Mounds take on a new dimension, some with flat tops and ramps, which supported structures on the summits. These constructions suggest socio-political changes indicative of ranked or class-defined societies. Moreover, certain Swift Creek artifacts indicate participation in the Hopewellian interaction sphere (Stephenson et al. 2002:381-351). On the west side of Apalachicola the Pierce Mounds site (8FR14) excavated by C.B. Moore shows the variety of Swift Creek ceramic artifacts and exotic trade items from northern tribes.

Swift Creek component sites have been identified at Richardson's Hammock (see below for report results). Additionally, there is another on Conch Island (8GU20) in St. Joseph Bay (Rawls 2000). A Weeden Island mound with a Swift Creek component was recorded on the mainland. Known as the St. Joseph Bay Site (8GU6), it was excavated around the turn of the 20th Century. Twenty-one Swift Creek (and Santa Rosa, the farther west Panhandle manifestation) sites were recorded on Tyndall Air Force Base. Eighteen are large coastal shell middens located on elevated shorelines near saltwater marshes (Thomas and Campbell 1985). Farther east in Gulf County, Nancy White excavated a Swift Creek camp site in Indian Swamp (8GU38) and reported a related burial mound (8GU41) along Howard Creek, a tributary of the Apalachicola (White 1992). Other Swift Creek habitation sites in the region are reported on Howard Creek and Lake Wimico (Rawls 2000).

The Late Woodland Period (ca. AD 500-AD 1,000) in Northwest Florida is called Weeden Island (Willey 1949). Weeden Island pottery is best known for its decorative technique using incising and punctation, and for the manufacture of effigy vessels in human and animal forms. Willey originally subdivided the ceramic sequence into two phases. Later George Percy and David Brose (1974) further broke down the sequence in five phases. More recently, Greg Mikell and colleagues (Mikell et al. 1989) reworked the Weeden Island chronology to define three periods for the Tyndall Air Force Base sites and seems the most relevant sequence for the North Florida region.

Following the latter system, Weeden Island I is characterized by late varieties of Swift Creek Complicated Stamped and St. Andrews Complicated Stamped ceramics, small quantities of Weeden Island incised and punctate types (e.g., Carrabelle Punctated, Keith Incised, and Weeden Island Incised). Weeden Island II is marked by high percentages of Wakulla Check Stamped ceramics, check stamping returning in popularity from the Deptford Period, and an increase in frequency of Weeden Island incised, punctated and other types with surface-related treatments. Weeden Island III is dominated by Wakulla Check Stamped, and very limited numbers of Weeden Island incised and punctated types (Mikell et al. 1989:219-229) [Figure 8].

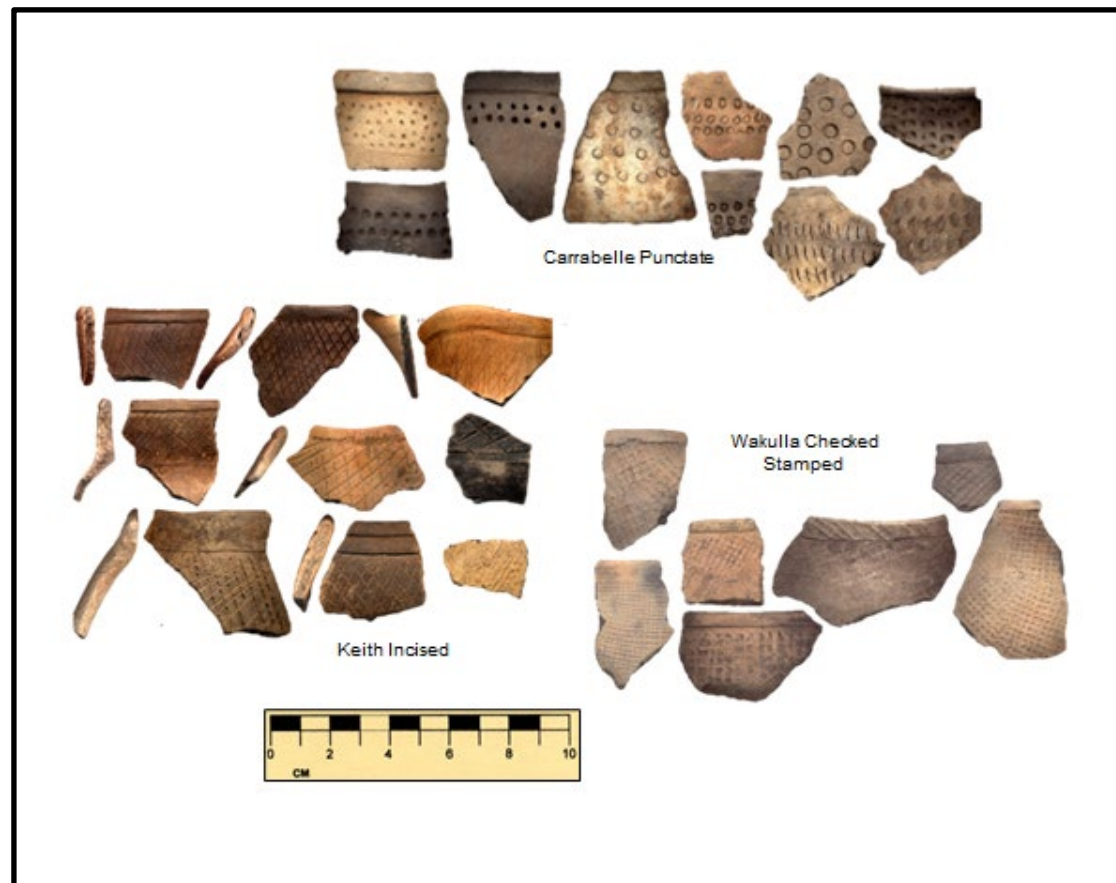


Figure 8. Examples of Weeden Island pottery, courtesy of Louis Tesar.

Late Woodland village midden and mound sites are often found in different settings than earlier Middle Woodland period sites. New settlements appear in the upper reaches of the bay systems (Bense 1989). These new settlements reflect a regional population increase and the need to redistribute people to areas of new resources. At these new locations, the ring midden pattern continues. New burial mounds, some with ramps and flat summits were constructed. The mounds contained sacred paraphernalia found throughout the culture area, such as effigy vessels, mica, galena, and shell ornaments, such as gorgets. Subsistence studies, however, show that Weeden Island peoples continued to exploit shellfish, fish, deer, and plants as primary food resources as did their predecessors (Anderson and Mainford 2002:15-19). The rise in sea level to current and slightly higher levels increased the salinity in Northwest Florida coastal embayments creating a habitat suitable for thicker-shell marine conchs. When these entered the shallow waters they were harvested by Weeden Island and Early Fort Walton culture people. The thicker shell made them ideal for fashioning into tools in areas lacking suitable stone sources, as well as into ornaments for personal and trade purposes. These activities included the use of microlithic stone tools as drills and gravers. The harvesting and processing of marine conchs during this period occurred at both the Old Cedar (8GU85) and Richardson Hammock (8GU10), the latter of which also yielded a microlithic graver (see Appendix II and III). The Lake Jackson Mounds site (8LE1) was a major early Fort Walton site in Leon County that controlled the distribution of marine conch shell artifacts from the Ochlockonee Bay and portions of the Apalachicola Bay area based on artifacts excavated at that site by B. Calvin Jones (1994).

Several Weeden Island sites (and sites with Weeden Island components) have been reported in the vicinity of St. Joseph Peninsula. The Old Cedar Site (8GU85), the subject of this report, is a substantial Weeden Island shell midden within the park. The Eagle Harbor site (8GU81) also produced Weeden Island ceramics from an underwater context within the park. Richardson's Hammock (8GU10), the second subject of this report, located in the St. Joseph Bay State Buffer Preserve, has been identified as having been a substantial Weeden Island midden site. Other nearby sites with Weeden Island components include Hog Heaven (8GU99) at Cape San Blas, and three sites at Indian Pass (8GU1, 8GU15, and 8GU17). One or more Weeden Island burial mounds have been reported along the coast near St. Joseph Peninsula including Gotier Hammock (8GU2) and St. Joseph Bay (8GU6). At Tyndall, Weeden Island sites are the most numerous of those recorded. Twenty-four of Tyndall's Weeden Island sites are coastal shell middens, and four additional shell middens are associated with burial mounds (Mikell et al. 1989). Numerous Weeden Island habitation and mound sites are reported inland and along tributaries of the Apalachicola River in Gulf County (Percy and Brose 1974; White 2018). Southeast of Cape San Blas is the major Weeden Island-Ft. Walton complex, Pierce Mounds (8FR14; White 2013). This site, comprised of 8 mounds and middens, located on the outskirts of current day Apalachicola, was certainly in

the orbit of Woodland islanders of St. Joseph Bay and surrounding area and would have likely played an important role in the activities of the region through the Ft. Walton period.

Mississippian Period (AD 1,000-AD 1,500)

After approximately AD 1,000 Weeden Island culture transitioned into Fort Walton culture. Research suggests that Mississippian cultural influences appear in the Apalachicola River valley at this time, including new social, religious, and political ideas, namely chiefdom organizations with ruling elites, supported by maize agriculture and redistribution tribute systems. However, in coastal areas of Northwest Florida, the Woodland settlement and subsistence patterns continued with large communities located on coastal hammocks, surrounded by many smaller satellite camps, in a variety of coastal and upland environments. Agriculture is not considered to have been as important on the coast as in the river valleys due to the very poor nature of the coastal soils (Scarry 1980, 1981; Tesar and Jones 1981).

Diagnostic artifacts of the Mississippian period in Florida include Ft. Walton pottery, characterized by exterior decoration of zone incising complemented by punctation, as represented by Fort Walton Incised [Figure 9]. Effigy vessels also are part of the assemblage, a carryover from Weeden Island. At large, ceremonial inland centers, such as Lake Jackson (8LE1), burial goods associated with elite mound burials, include copper artifacts such as breast plates, shell and pearl beads crafted into jewelry, and shell gorgets and cups; steatite pipes, and ochre (Milanich 1991:365-380).

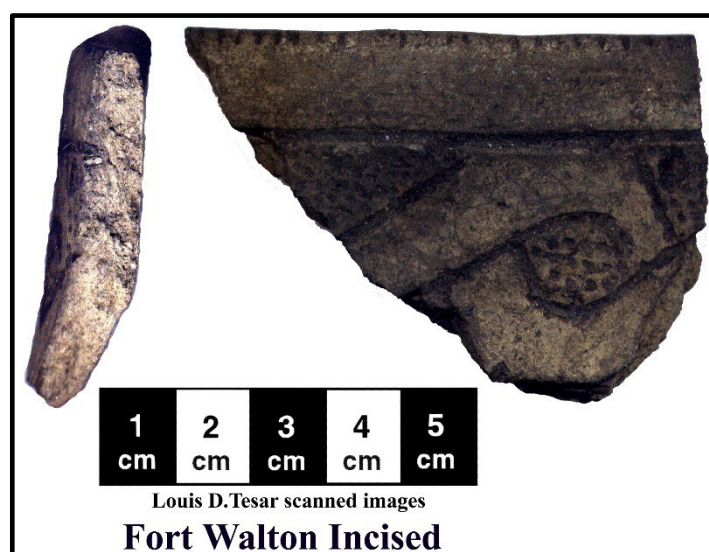


Figure 9. Example of Ft. Walton pottery, courtesy of Louis Tesar.

Two sites at St. Joseph Peninsula State Park include Fort Walton components. Eagle Harbor (8GU81), an underwater occurrence, includes Fort Walton ceramics in an assemblage dominated by Weeden Island materials, and Old Cedar site (8GU85), a Weeden Island shell midden with reported Fort Walton ceramics. On the State Preserve, Richardson's Hammock (8GU10), is reported to have a substantial Fort Walton component (Childers 1984; White et al. 2002). Moreover, nineteen Fort Walton sites were recorded at Tyndall, eighteen of which are coastal (Mikell, Campbell and Thomas 1989:231). Various Ft. Walton sites are reported in the Apalachicola River Valley region to the east with the center of activity further east in the Tallahassee area (Tesar 1981; White 2018).

Ft. Walton is associated with Pensacola culture to the west, and Safety Harbor to the south along the Big Bend. They produced pottery types, given the same names and appearing at Ft. Walton sites. These are considered regional variations of Ft. Walton (Milanich 1994:355-412).

Leon-Jefferson is the archaeological name for the Ft. Walton culture as it transitions into the historic Apalachee. It is named for present day Leon and Jefferson counties, where the associated ceramic type was identified. This change brought about through contact with Lamar phase peoples from central Georgia. During this time period ceramic traditions change and styles of decoration and manufacture from central Georgia become incorporated into the local traditions associated with the Fort Walton culture. This period also represents the transformation of the Apalachee people of the Fort Walton tradition and the collapse of the chiefdom as aboriginal populations declined following contact with European explorers and colonizers. Early in the period larger settlements appear, possibly because of the influx of Lamar peoples, although they are still located in typical Fort Walton locations such as near ridges and hilltops and around water sources such as ponds and lakes.

Historic Background

European Exploration and Settlement Period

Much of this section is extrapolated from local St. Joseph historian, Wayne Childers' (2001) *History of the TH Stone Park, St. Joseph Peninsula*.

The Spanish period of exploration and initial settlement of European colonies were initiated by Ponce de Leon, Narvaez, de Soto, Ayllón, Luna, and Menendez. De Soto (1539-40) utilized St. Marks, east of the project area, as the port for receiving supplies to support his four-year expedition in the greater La Florida. Luna (1559-1561) tried to establish a colony in Pensacola, west of the project area, but was thwarted by a hurricane (Gannon 1996:16-39). Following these initial contacts, indigenous populations began to drop, caused by European disease. By the time of the Spanish Mission Period, one hundred years later, villages are smaller and located around Spanish mission churches. This was the case for the Apalachee, who were represented by more than a dozen missions in North Florida during the 1600s. By the beginning of the 1700s, most native Florida people were gone (Hann 1996:78-99).

In the area of St. Joseph Bay and Cape San Blas, tribal groups, such as the Apalachee and the Apalachicola, lived, but were soon replaced with Creek Indians from Alabama and Georgia, filling the void indigenous groups. Archaeological evidence for this transition is seen in the gradual replacement of Ft. Walton to Lamar and Leon Jefferson.

The Spanish were the first Europeans to settle the Florida Panhandle. After the hurricane decimated the 1551 Luna colony in the Pensacola Bay area, the first permanent settlement of Florida began at St. Augustine in 1565. Tallahassee became an important food producing region for St. Augustine through Spanish missionization of the local Apalachee beginning in 1633. Corn, wheat, poultry, pigs, and cattle were shipped to St. Augustine (and Cuba) through a small, fortified settlement at St. Marks (San Marcos de Apalache) near Apalachee Bay. In 1698 the Spanish settled Pensacola Bay with the Presidio Santa Maria de Galve. St. Joseph Bay became an important intermediate port between San Marcos de Apalache and Pensacola (Childers 2001).

In approximately 1701, the Spanish established a settlement on St. Joseph Bay to prevent the French from controlling the area disrupting Spanish movement of goods to Pensacola. A fort was built close to the entrance of the bay on the mainland. It included a church for the Spanish and Mexican residents, and a second one for the Christianized Chacato Indians who moved into the area. A small lookout station was placed at the tip of the peninsula to manage ships entering the bay (Childers 2001).

In 1715, the French planned a settlement in St. Joseph to ship goods from St. Marks to France and its colonies. In early 1718 the French in Mobile established a fort in St. Joseph Bay called Fort Crevecoeur (Childers 2001). When the Spanish from Pensacola discovered the fort under construction, they demanded that the French leave and occupied the site, and in 1718-1719, eight hundred men arrived from Pensacola and began to construct a new fort at the tip of St. Joseph Peninsula. At about this same time, France, England, and Austria challenged Spain in the European War of Quadruple Alliance. The French in Mobile captured Pensacola in 1719. The Spanish took Pensacola back briefly, but it was lost to the French again in the same year. Spanish soldiers and convicts from Cuba, Veracruz and Mexico City, occupied St. Joseph. More than 1,200 soldiers along with their wives, children, and servants lived at the fortified settlement. It was the capital of the Principality of Nueva Asturias and was called Presidio de Asturias or Presidio de San Jose in Pensacola (Childers 2000; Saccente and White 2015).

Following the end of the war, Pensacola was returned to Spain. A new fort and village were built on the tip of Santa Rosa Island on Pensacola Bay (Presidio Isla de Santa Rosa in Pensacola). The Presidio San Jose was dismantled, and its architectural elements were transported to Pensacola to build the new fort. By 1723 Presidio San Jose was abandoned and its remaining residents were resettled in Pensacola.

San Jose (8GU8) is part of the Hurricane Michael grant project that PCARG will address in a subsequent report. Archaeological evidence from Hale Smith (1968) and Elizabeth Benchley and Judith Bense (2001) recorded this site, placing it in its current location. Artifacts recovered from surface survey and Smith's 1965 trench excavations include Spanish ceramics (i.e., Mexican majolica), bricks (*ladrillos*), bottle glass, and metal artifacts [Figure 10].



Figure 10. Spanish artifacts recently observed by PCARG on the surface of 8GU8, San Jose. These include fragments of majolica and a piece of brick (*ladrillo*).

Other artifacts reported were Indian ceramics known as Leon-Jefferson ware, associated with the Apalachee. In the Tyndall area Apalachee Indian occupations are suggested by the presence of Leon Jefferson ware at two sites (Thomas and Campbell 1989:232-233) The fort was believed to have been bounded by a linear sand dune to the south (Childers 2001). Only a few other archaeological sites from the Spanish settlement period have been reported in the region. The Spanish/French Brick Site (8GU97), is located along the eastern shore of the Peninsula within the park boundaries, identified by two Spanish-style bricks along the shoreline.

Small Spanish ranches and homesteads have been reported in the St. Joseph area. A fort, predating San Jose, was referred to in the Spanish records that was located directly across the peninsula on the mainland, as previously stated. Indian missions also have been said to have been established near St. Andrews Bay, at Cape San Blas (San Blas), and near Apalachicola (San Vincente and Santa Teresa). Indian groups, primarily the Apalache and Tocobaga from the Tampa Bay area, lived in the area as well (Childers 2001).

There is no documentary evidence for the British settling in the St. Joseph area, and there is also little evidence of Spanish use of the area during the Second Spanish period from 1781 to 1818. The St. Marks area was intensively used as a trading outpost during the Second Spanish period (Coker and Watson 1986), but there is no evidence that the St. Joseph Bay continued to serve the Spanish. One archaeological site (8GU7) near the tip of the St. Joseph peninsula has produced ceramics that may date to the British, Second Spanish, or (more likely) the American period. Two archaeological sites reported at Tyndall Air Force Base also may relate to this based on the presence of Chattahoochee Brushed ceramics (Thomas and Campbell 1989:232-233) [Figure 11] at two sites. This pottery type is associated with Creek Indian groups in the British period and point to Indian occupation during late colonial times, eventually to be known as the Seminoles.

The Seminoles

The Seminole and Miccosukee tribes of current day Florida are descendants of the Creek, Yuchi, and other groups that filled the void of the indigenous tribes, migrating into the peninsula from Georgia and Alabama, beginning around 1716. These later peoples followed their predecessors who built the great mound complexes that characterized the Mississippian Period and region. The coalescence of these groups was in part of the collective need to succeed among Europeans and Americans, filling their new frontier with commodities from hunting, farming, raising livestock, and craft production. The Seminole Wars (1817-1858) eventually led to the removal of tribal members north to reservation life and south to the protection of the Everglades. The archaeology of Seminole peoples is ephemeral, much like the Anglo-settlements of this same time period. Historic, mostly military records, provide references for Seminole activities and communities, which otherwise, would not be documented (Mahon and Weisman 1996:183-206).



Figure 11. Example of Chattahoochee Brushed pottery, Museum of Natural History, University of Florida.

American Period

In the 1820s Apalachicola became a significant port for shipping cotton, timber, barrel staves, and other commodities from the interior. The city of Port St. Jose was established in 1835 and became a major center, having built a railroad and canal system that ran from it to the Apalachicola River (Doherty 1984). In 1841 a yellow fever epidemic killed many residents, and in 1844 a hurricane destroyed most of the town. Even into the Civil War, St. Joseph's area was largely unoccupied (Childers 2001), though Confederate fortifications and salt works have been reported in the nearby Apalachicola River area (White et al. 1999).

In 1910 the town of Port St. Jose was established and grew due to the success of the local fishing and tourist industries. Rum running was also important during Prohibition. The east side of the St. Joseph Peninsula was used for fish camps. Subsequent industrial growth on the mainland was based on the production of fish oil and meal, paper, and chemicals (Childers 2001).

In the 1940s most of the Gulf coastline was vacant and subsequently condemned and bought by the U.S. military, including the St. Joseph Peninsula. During World War II the U.S. Coast Guard built a house at Eagle Harbor for the coast guardsmen who patrolled the Peninsula looking for signs of German submarines or infiltrators. The Peninsula was also used for gunnery and bombing practice during the war, while the Peninsula continued to be used by locals for grazing cattle (Childers 2001) [Figure 12].



Figure 12. WWII ammunition found on surface of Park property at the site of Old Cedar (8GU85).

Following the Korean War, the US Army auctioned off portions of land south of St. Joseph Peninsula State Park. In 1962 and 1963 the Army Reserve took over the remaining military property, conducting training exercises. They established a large camp near the tip of the Peninsula, which included bulldozing roads and other areas. Two sites, 8GU7 and 8GU8, on the east side of the Peninsula were negatively affected; however, the clearing work exposed artifacts that helped identify the latter site, Fort San Jose.

In the mid-1960s the military surplused the rest of St. Joseph Peninsula land, which was later acquired by the State of Florida for the Park. It was dedicated in 1967 as the T. H. Stone Memorial St. Joseph Peninsula State Park (FDEP 2014).

St. Joseph Bay State Buffer Preserve was acquired by the State in 1995. The Florida Department of Environmental Protection's (DEP) Florida Coastal Office (FCO) was given management authority in 1996. There have been several additional purchases since the original acquisition. The State purchased 235 acres from Troy M. Deal, where the site of Richardson's Hammock is located. An additional 639 acres of the project was completed in October 2000 from multiple owners, and by 2005 was completed, though various tracts with significant natural and cultural resources are still desired (FDEP 2014; FDEP 2016).

Previous Research

Archaeological investigation of the project area began in the early 20th century by Clarence B. Moore, an avocational archaeologist, who tested over 60 sites across the region, focusing on burial mounds and shell middens (Moore 1918; Brose and White 1999). He dug at Gotier Hammock site (8GU2), located south of Port St. Jose on St. Joseph Bay shore, and the Indian Pass Point site (8GUI) located at Indian Pass east of Cape San Blas along the Gulf. These were both burial mounds that correspond to the occupations of Old Cedar and Richardson's Hammock.

With funding from the National Park Service, archaeologist Gordon Willey (1949), then affiliated with Columbia University, carried out a major survey of 500 miles of the Gulf Coast. The resulting publication established a prehistoric chronology and artifact typology for the region. He reported on various sites within the general region.

The next professional archaeological investigation was conducted in 1963 by Hale G. Smith from Florida State University. At the request of the Gulf County Historical Commission, Smith investigated two sites at the end of the peninsula, the current State Park. The first (8GU7) was identified as an unnamed historic habitation site, one mile south of the point, severely damaged by the military. The second site (8GU8) was speculated to be a Spanish Mission site; however, no report was ever produced.

In 1965 Smith returned with students. Ross Morrell, under the supervision of Smith (Childers 1984), dug at Richardson's Hammock (8GU10). White and students reported on this material much later when the collection was reidentified (White 2018). White characterized the artifacts as Fort Walton, associated with the southern end of the site (White et al. 2002). Morrell dug two trenches south of the access road.

Smith then carried out test excavations at 8GU8 and revisited 8GU7, having been told of exposed material at the former from military road construction. His work, entailing 5, foot-wide trenches dug 1.5 to 2 feet deep, indicated that 8GU8 was a Spanish fort (Fort San Jose) occupied between 1718 and 1722. Smith also identified evidence for a pre-Civil War lighthouse north of San Jose, eventually recorded as 8GU7 (see Florida Master Site Files of 8GU7, 8GU8). Some years later, an FSU graduate student, Jennifer Azzarello (1996, 1997), analyzed Smith's collection from 8GU8. Based on data associated with excavated material, she thought that Smith dug eleven trenches in 0.5-ft levels. She returned in 1997 to carry out a systematic walk over. She identified a surface scatter of Spanish ceramics, bricks, and iron fragments like those recovered by Smith. Azzarello also performed limited probing (Azzarella 1996, 1997; Azzarella and Hamlin 1997) but found no evidence for foundations or other associated features.

In 1983-84 Richardson's Hammock site was tested by local historian Wayne Childers, who was hired by the then owner, Troy Deal, before the property was purchased by the State of Florida (Florida Master Site File, 8GU10). Childers dug 32 test units (shovel tests) and two trenches; the latter located in proximity to a known burial mound. He wrote a comprehensive report indicating that the site was a Weeden Island site overlain by a Ft. Walton site at least three times larger (Childers 1984).

In 1989, B. Calvin Jones, with the Florida Bureau of Archaeological Research (BAR), conducted a damage assessment at the south end of the park caused by plowing during a forest fire. Jones recorded the Old Cedar Site (8GU85) as an intact and extensive Weeden Island midden and burial mound site based on surface inspection.

Also in the 1980s, Nancy White, University of South Florida archaeologist, conducted a survey of shell midden sites in the lower Apalachicola River valley (White 1992, 1994), and more recently, investigated sites along the Apalachicola delta in Gulf County including Indian Pass Point (8GU1) east of Port St. Joe (White 1999). More recently, she and her students (White et al. 2002) conducted test excavations at Richardson's Hammock (8GU10) and Lighthouse Bayou (8GU114), southeast of Richardson's Hammock. At Richardson's, six units (between 1 x 1 m and 2 x 2 m units were dug in addition to 7 cores. All were places south of the burial mound. At Lighthouse Bayou, 5 cores and various trenches testing 15 "shell piles" were excavated. The results indicate that these sites showed evidence for significant occupations from the early Woodland through Mississippian period, with Ft. Walton being the dominant component. Richardson's was substantiated with contextual data, while there was considerable disturbance at Lighthouse Bayou. Nonetheless, White's work demonstrates that various sites in the St. Joseph Bay area associated with the Woodland and Mississippian presence were tied to acquisition and use of large gastropods, namely, conchs, whelks, and tulip shell. These include not only the forementioned sites but also Black's Island (8GU11), Conch Island (8GU20), Gotier (8GU2), and Old Cedar (8GU85).

Following Hurricane Opal in 1995, Louis Tesar, a BAR archaeologist, visited St. Joseph Peninsula State Park twice to inspect cultural resources for storm damage. During the first visit, Tesar reported two new sites. One, the Hudson Site (8GU96) was a 19th and 20th Century historic site. The second was the Spanish/French Brick Site (8GU97) found a mile further south, consisting of two Spanish-style bricks.

During Tesar's second visit in 1996, he inspected sites for storm damage (Tesar et al. 1996). Tesar found that 8GU85 was intact and was potentially eligible for the National Register, noting the midden showed a predominance of Lightning Whelk rather than oyster shell. Tesar was unable to locate any remains of 8GU8, believing that the site had been destroyed.

In 2000 the University of West Florida conducted a phase I survey of the TH Stone Memorial St. Joseph Bay Peninsula State Park, acquired by the State of Florida. New sites included 8GU106, 8GU107, 8GU108, 8GU109, 8GU110, 8GU81, 8GU96, and 8GU97. 8GU106 was a 20th century fish camp, 8GU107, 108, and 110 are WWII training camp locations, and 8GU109, was an 1856 shipwreck. 8GU96-97 were unable to be located. Previous recorded sites included 8GU7, 8GU8, 8GU81, and 8GU85. Relevant to this report, nine shovel tests were dug at 8GU85, Old Cedar, in association with a handful of auger holes. They indicated the presence of a Woodland- Mississippian site with a high concentration of large gastropods (Bense and Benchley 2001).

After Hurricane Michael in 2018, The Division of Historical Resources, Bureau of Archaeological Research staff conducted a damage assessment of Richardson's Hammock (8GU10) at the request of St. Joseph Bay State Buffer Preserve land managers.

Research Design and Methodology

The research design for the St. Joseph Peninsula Hurricane Michael Archaeological assessment was developed to meet the primary objectives of the grant: 1) to assess the impact of Hurricane Michael on known archaeological sites of significance in the cone of impact; 2) prepare nominations for their addition to the National Register of Historic Places. PCARG chose three sites for this project. They are located on St. Joseph Peninsula in the primary storm zone, 5 to 7 miles east of the Hurricane's official landfall at Mexico Beach in October of 2018. Two of the three sites are pre-historic Woodland-Mississippian period shell middens (Old Cedar (8GU85), and Richardson's Hammock (8GU10)); the third is an historic Spanish garrison, the Presidio de San Juan (8GU8). The presidio and Old Cedar lie within the St. Joseph Peninsula State Park while Richardson's Hammock is situated on the St. Joseph Bay State Buffer Preserve. This report addresses 8GU10 and 8GU85.

The field methodology was designed to bound the site horizontally and vertically through systematic shovel testing and unit excavation. In accordance with Module 3 of the Division of Historical Resources guidelines for survey, shovel tests were placed on a cartesian grid and excavated to a minimum depth of one meter where no evidence of the midden was observed on the surface. The data were used to determine the placement of excavation units.

Shovel tests consisted of 50 x 50-cm units excavated to a depth of one meter unless terminated due to reaching the water table or natural obstructions such as tree roots. All material was screened through ¼ in mesh screen and all diagnostic artifacts collected and bagged. At Old Cedar (8GU85), shovel testing was conducted systematically on a Cartesian grid. The grid was sighted in by handheld compass and measured with a walking tape at 15-m intervals. At Richardson's Hammock (8GU10), locations of shovel tests were judgmentally placed. All individual shovel tests were recorded on filed forms, photographed, and locational data collected by handheld GIS unit.

Test units were either 2 x 2-m or 1 x 2-m units excavated in 10-cm arbitrary levels within strata. Each level was recorded using photography, Munsell descriptions, and written notes. All diagnostic artifacts were collected and bagged. Archaeological features were documented through forms, photographs, and scaled drawings and were sampled for both ¼-in fraction and flotation samples. Finished test unit walls were photographed and scaled drawings produced identifying discernable stratigraphic units. Finally, a 25 x 25-cm column sample was collected from the finished wall of three of the fourth test units excavated. These samples were bagged by identified strata and collected for flotation analysis.

Radiocarbon dating was a major component of our research design in terms of the "vertical bounding" or dating of the site. Features were recorded in all the excavation units and carbon was collected for their dating from the fill as well as the column samples. The results are reported below.

Fieldwork

From the end of June (2022) through the month of August, PCARG conducted field investigations at the sites of Old Cedar (8GU85) and Richardson's Hammock (8GU10). This work was carried out to fulfill the objectives of the Hurricane Michael grant: To assess the integrity of Old Cedar (8GU85) Richardson Hammock (8GU10), and San Jose (8GU8), the latter to be address in a subsequent report; and to evaluate the sites for nomination to the National Register of Historic Places as well as determine site conditions following the aftermath of Hurricane Michael.

Old Cedar (8GU85)

Old Cedar is a Woodland/emergent Mississippian shell midden covering approximately 11,256 m² (based on PCARG's current survey) and was the first site investigated. During reconnaissance, it became apparent that laying a 15 m grid across the shell midden was unnecessary, as much of the site is exposed on the surface and is bounded on three sides by bay and salt marsh.

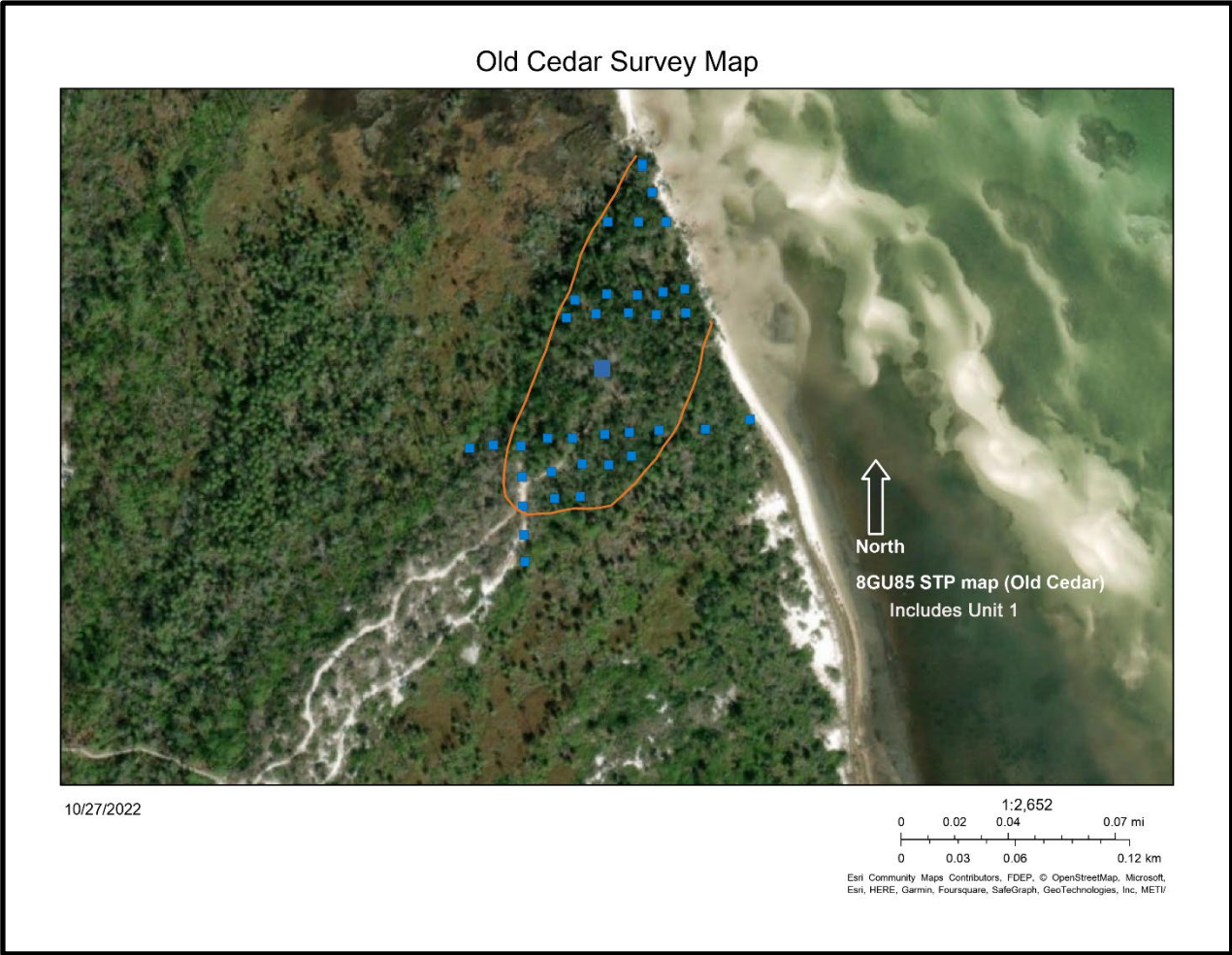
Fieldwork was initiated in July at Old Cedar, the smaller of the two sites, located on St. Joseph Peninsula State Park. The work began with a complete walkover reconnaissance of the site, which included identifying exposed midden and relocating the test units of Bense and Benchley (2001), who were the only researchers to formally investigate the site. Based on the placement of their shovel tests, PCARG used a cartesian grid to place additional units. The strategy was to establish horizontal and vertical parameters of the site. A total of 35, 50 x 50-cm shovel tests were dug as well as one 2 m x 2-m excavation unit on the highest point of the site.

Shovel Tests

Old Cedar is located on a relict paleo-dune just inside the southern boundary of the St. Joseph Peninsula State Park. Broken shell and dark, organic dirt mixed with a light scattering of pot sherds can be observed on the surface throughout the hammock, confirming the presence of a midden. We began shovel testing on the northern most tip of the landform, and it soon became evident that the midden covered the entire dune inside the hammock. Being that the north, east, and west boundaries of the site extended to the marsh and bay, we utilized our shovel tests to identify the central and southern boundaries of the site. Shovel testing was conducted at 15 m intervals until two consecutive, negative shovel tests were recorded [Map 1; Figures 13-18; Table 1].

The positive shovel tests represented midden below a humic layer, made up of dark grey sandy loam (10YR 2/1-5/1) extending generally to a depth of 40-65 cm. Below this level, the units reached the water table associated with low lying areas, muck associated with marshes, or dune sand. The midden contents were dominated by worked and unworked whelk, conch, tulip and pear shells, and scallops. There were various examples of *columellas* modified into various working instruments. Pottery was primarily Woodland, with a high frequency of plain sand tempered sherds; however, decorated sherds were also present and included Carrabelle Punctated and Wakulla Check Stamped.

Shovel tests were begun in the northern tip of the hammock, where we confirmed the site terminated (Shovel Tests 1-5). This is where a burial mound had been suspected to exist. Testing showed that the area was a deflated dune. Testing and land formation (marsh and bay) established the northeast portion of the site. Shovel Tests 6-15 established the upper midsection of the site with two sets of transects dug east to west. This area articulated to the highest area of the northeast-southwest running dune, where surface scatter confirmed site concentration. The next set of shovel tests was placed south of the crest of the dune (Shovel Tests 16-35). As the site plan shows, two negative shovel tests were used to delimit the south boundary in conjunction with the drop in elevation associated with the marsh to the east, west, and south. As indicated in Table 1 in correspondence with Map 1, midden density correlated with the elevated areas along the spine of the dune.



Map 1. Old Cedar (8GU85) survey map.



Figure 13. Excavating shovel test at Old Cedar (8GU85).



Figure 14. Shovel Test 9 profile showing likely feature, Old Cedar (8GU85).

Table 1. Inventory of Material Recovered from Shovel Test Units, Old Cedar (8GU85).

Shovel Test	Pottery Sherds		Flaked Stone		Modified Shell		Vert.	Misc.	Historic
	ct	wt(g)	ct	wt(g)	ct	wt(g)	Fauna wt(g)	Rock wt(g)	
1	18	130.3			2	28.7	0.03		
2	51	561.61			5	180.63	9.86		
3	140	693.75					38.84		
4	191	1017.19			3	104.5	164.7		
5	59	359.03			3	131.48	23.12		
6	1	7.09			2	446.46			
7	81	405.45					0.64		
8	68	464.26			1	98.06	8.75		
9	200	763.93					36.09		
10	35	303.99			1	10.73			
11	47	255.03			1	148.3	0.47		
12	146	608.34					60.54	23.01	
13	43	228.53			2	170.08	5.55		
14	99	194.24			2	50.89	21.51		
15	22	111.87							
16	31	244.7			1	10.36			
17	27	148.24			1	34.12			
18*									
19*									
20	26	173.91							
21	39	340.96							
22	23	111			3	63.73			
23*									
24	1	9.46			1	19.77			
25*									
26	8	71.5							
27	3	6.16			1	4			
28	3	35.47			1	4.49			
29	15	70.71							
30*									
31	12	131.58							
32	5	33.24							
33	18	80.48			2	335.57	1.31		
34	8	75.71							
35	3	12.44			2	488.51			45.15
Total	1423	7650.17	0	0	34	2330.38	371.41	23.01	45.15



Figure 15. Bone artifact recovered from Shovel Test 3, Old Cedar (8GU85).

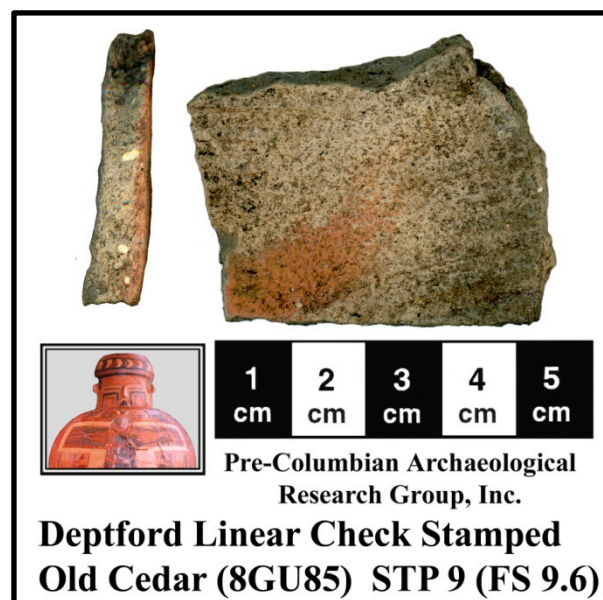


Figure 16. Early Woodland period pottery recovered from Shovel Test 9, Old Cedar (8GU85). This early Deptford phase does not appear to have been significantly represented at the site.

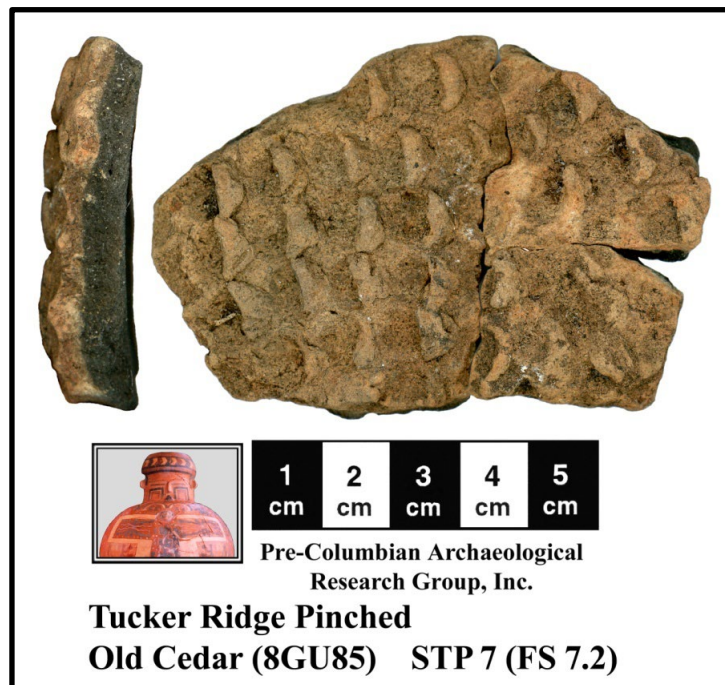


Figure 17. Middle Woodland period pottery recovered from Shovel Test 7, Old Cedar (8GU85). This phase appears to be the predominant occupational phase of the site.



Figure 18. Late Woodland pottery recovered from Shovel Test 26, Old Cedar (8GU85). This phase is modestly represented at the site.

Excavation- Test Unit 1

We chose the highest point on the dune ridge to excavate a 2 m x 2-m test unit (See Map 1, large blue square in middle of site). This location had the most likelihood of generating evidence for an occupation with features (Test Unit 1) [Figures 19-26; Tables 2, 3].

Test Unit 1 revealed a deep, intensively occupied Weeden island shell mound. Four stratigraphic levels were identified: Strat I- a humic level (0-33 cm) of sandy loam; at the interface of Strat I and II the midden begins; Strats II and III represent the midden (10 YR 2/1-4/1- black loamy to gray, fine sand); it extends from 33-85 cm; Strat IV is the white sand dune (10 YR 8/1) beginning at 86 cm. The stratigraphy can be summarized as 50-60 cm of black midden soil with dense concentrations of bone, shell, ceramics and a few exotic artifacts (sandstone/flint) with multiple pit/post mold features appearing on the dune sand interface. The faunal material was primarily represented by scallop and lesser amounts of *Busycon*, tulip shell, pear whelk, sunray venus, and crown conch. Pottery associated with this test unit corroborates shovel test findings. The large majority of decorated ceramics were represented by Wakulla Check Stamped, with an even larger percentage of undecorated represented by sand-tempered plain.

Strat II represented not only midden, debris but also crushed material redeposited to establish new cultural occupational and/or use areas.

Three definite features were recorded at the interface of Level III and IV. Two circular ones are believed to be postholes associated with structures that were built on top of the dune. The third feature is irregular in shape; it is either the result of midden having extended into dune, since the surface undulates, or a pit feature, the result of something like a fire pit built on the dune surface. These were bisected, profiled, and sampled.



Figure 19. Excavation of Test Unit 1, Old Cedar (8GU85).

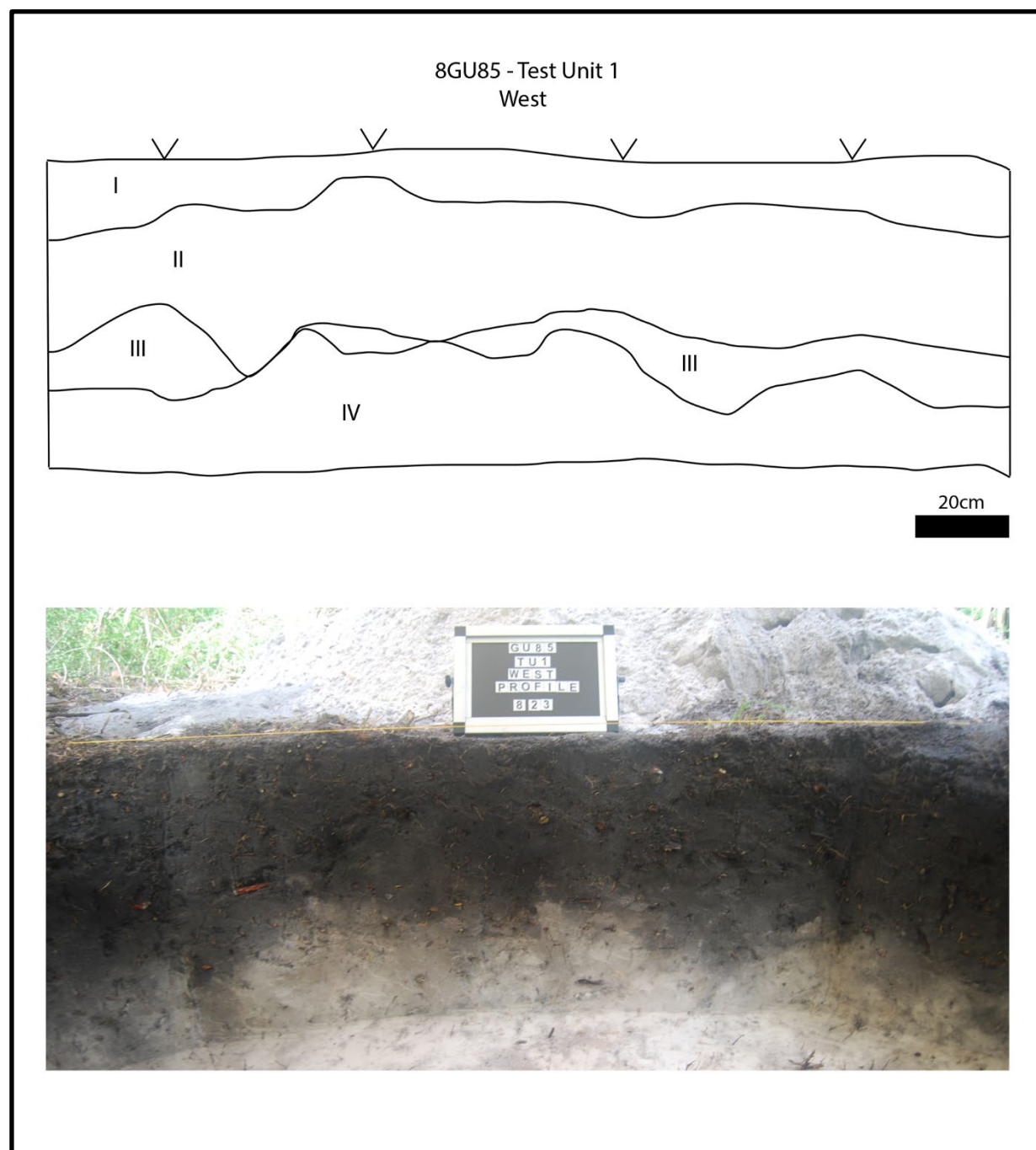


Figure 20. Test Unit 1, west wall, Old Cedar (8GU85).

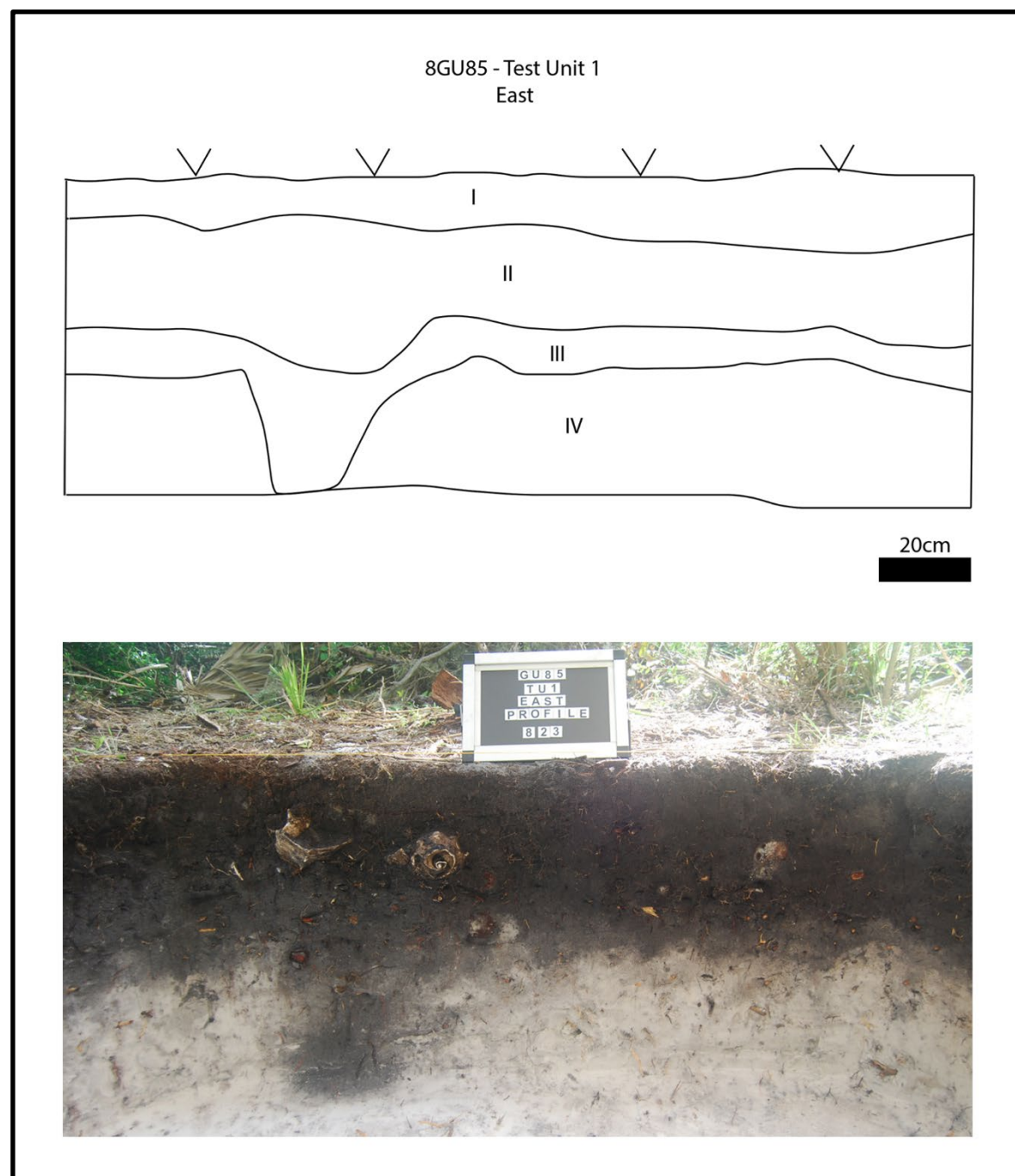


Figure 21. Test Unit 1, East wall, Old Cedar (8GU85).

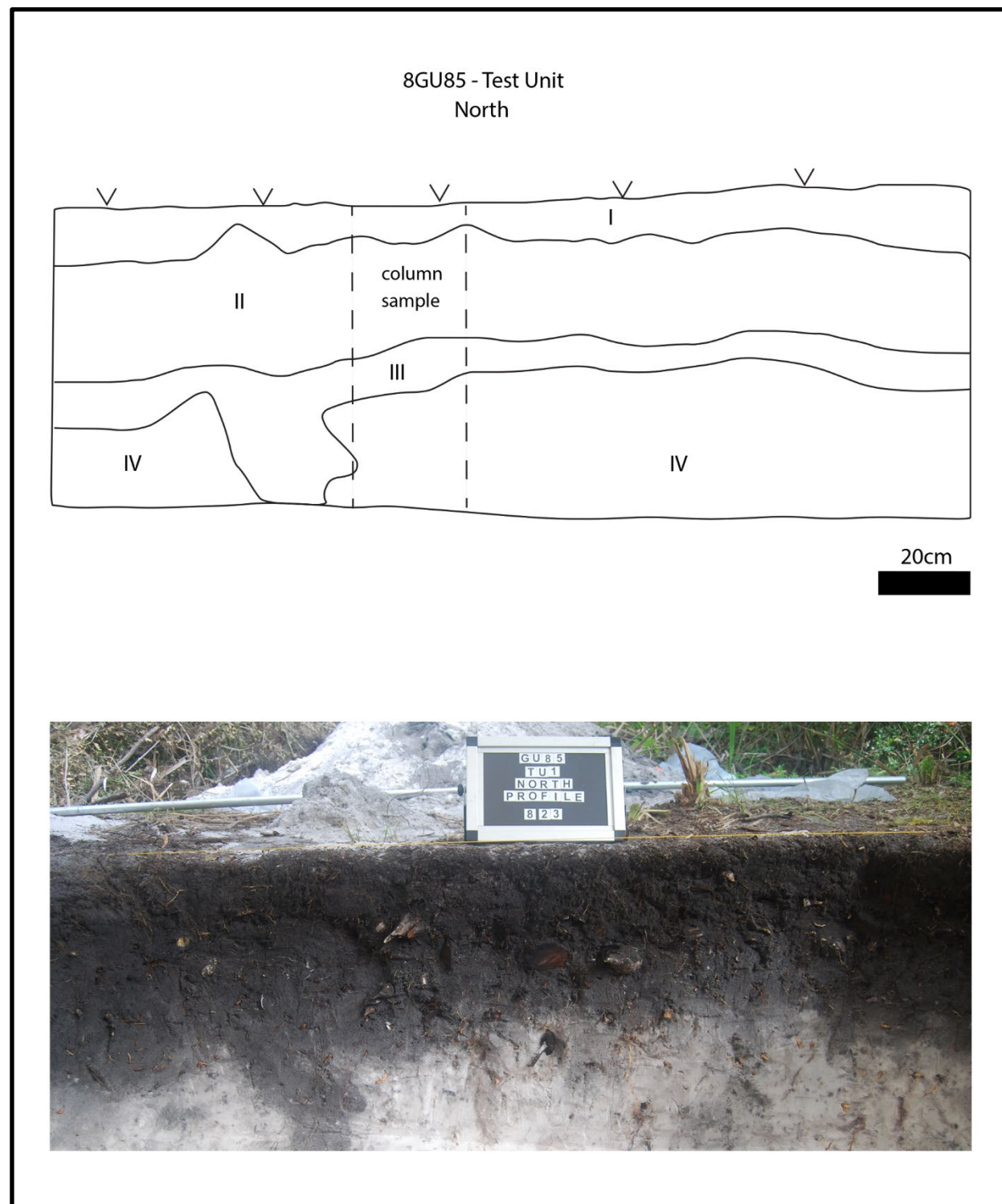


Figure 22. Test Unit 1, North wall, Old Cedar (8GU85). The profile illustrates large shells (whelk and conch) and shell tools within the midden.

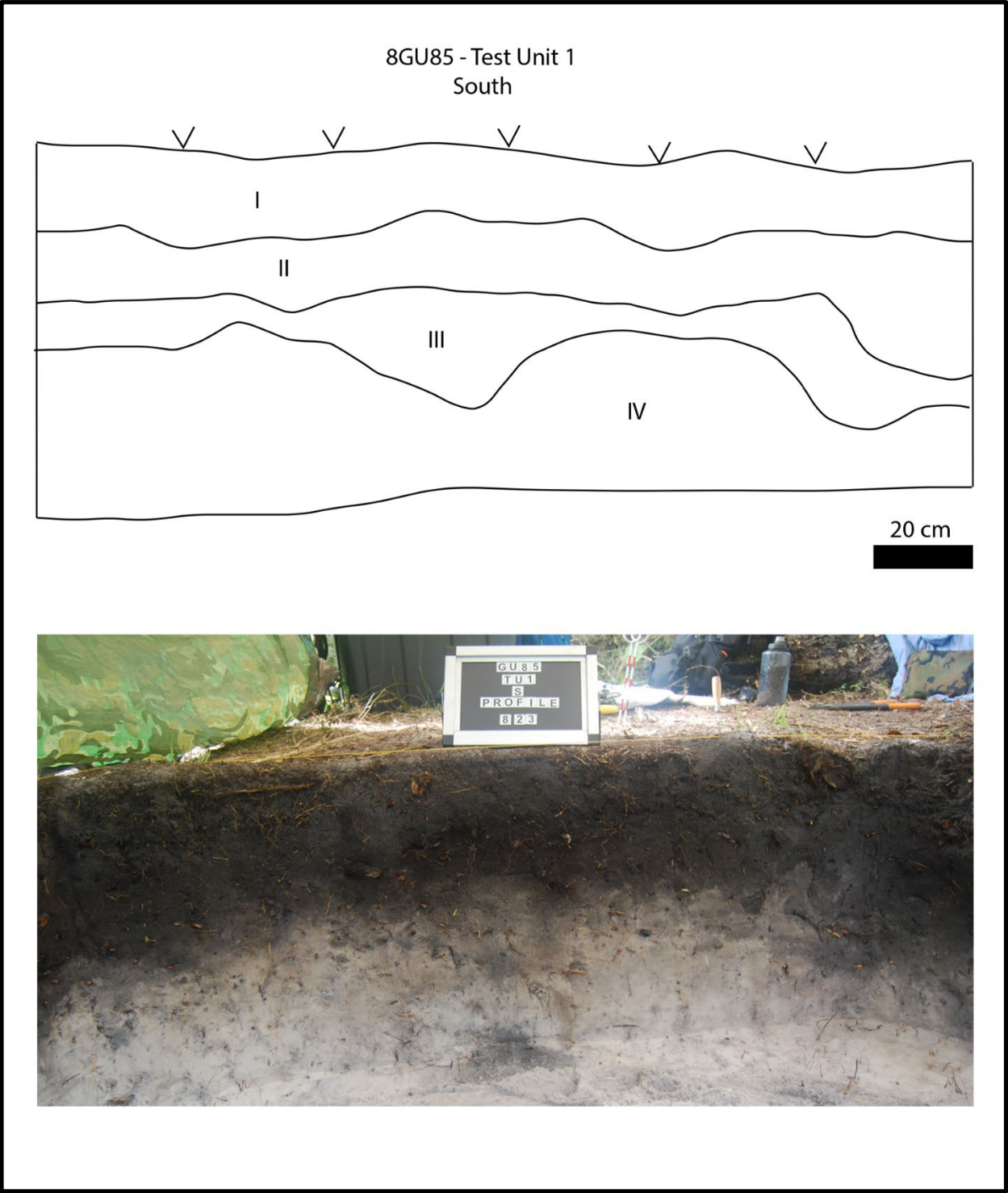


Figure 23. Test Unit 1, South wall, Old Cedar (8GU85).

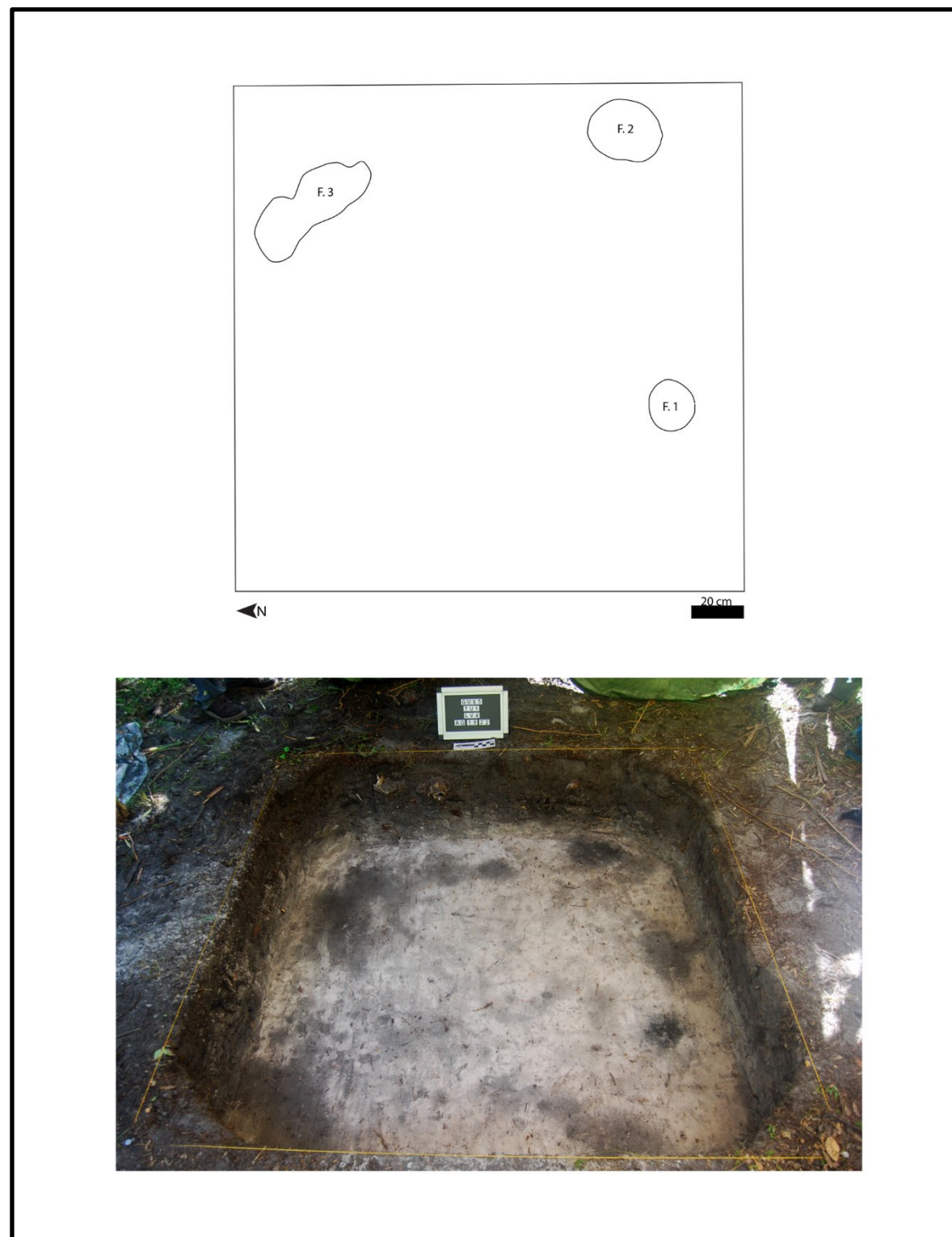


Figure 24. Test Unit 1, plan view at base of level 4 (50 cmbd), Old Cedar (8GU85).



Figure 25. Profile of Feature 2, Test Unit 1, Old Cedar (GU85).

Table 2. Stratigraphic Units of Test Unit 1, Old Cedar (8GU85).

Stratum	Max. Depth (cmbd)	Munsell Color	Description
I	33	10YR3/1	Very dark grey sandy humis, high number of small roots, and relatively low frequency of artifacts and
II	57	10YR2/1	Black loamy sand midden with high frequency of whole and crushed shell and artifacts.
III	68	10YR4/1	Dark grey with some mottling of lighter grey (10YR5/1) poorly consolidated fine sand.
IV	86	10YR8/1	White fine sand, devoid of shell and artifacts.

Table 3. Inventory of Material Recovered from Test Unit 1 by Level, Old Cedar (8GU85).

Level	Pottery Sherds		Flaked Stone		Modified Shell		Vert.	Misc.	Historic
	ct	wt(g)	ct	wt(g)	ct	wt(g)	Fauna wt(g)	Rock wt(g)	
1	498	2113.68			3	1128.69	2.07		
2	323	2222.18			7	438.32	8.08		
3	171	885.19			2	112.23	10.69		
4	35	165.2			2	82.27	1		
5	13	30.22					6.17		
Total	1040	5416.47			14	1761.51	28.01		



Figure 26. Late Woodland/Mississippian transitional pottery associated with Test Unit 1, upper level, Old Cedar (8GU85).

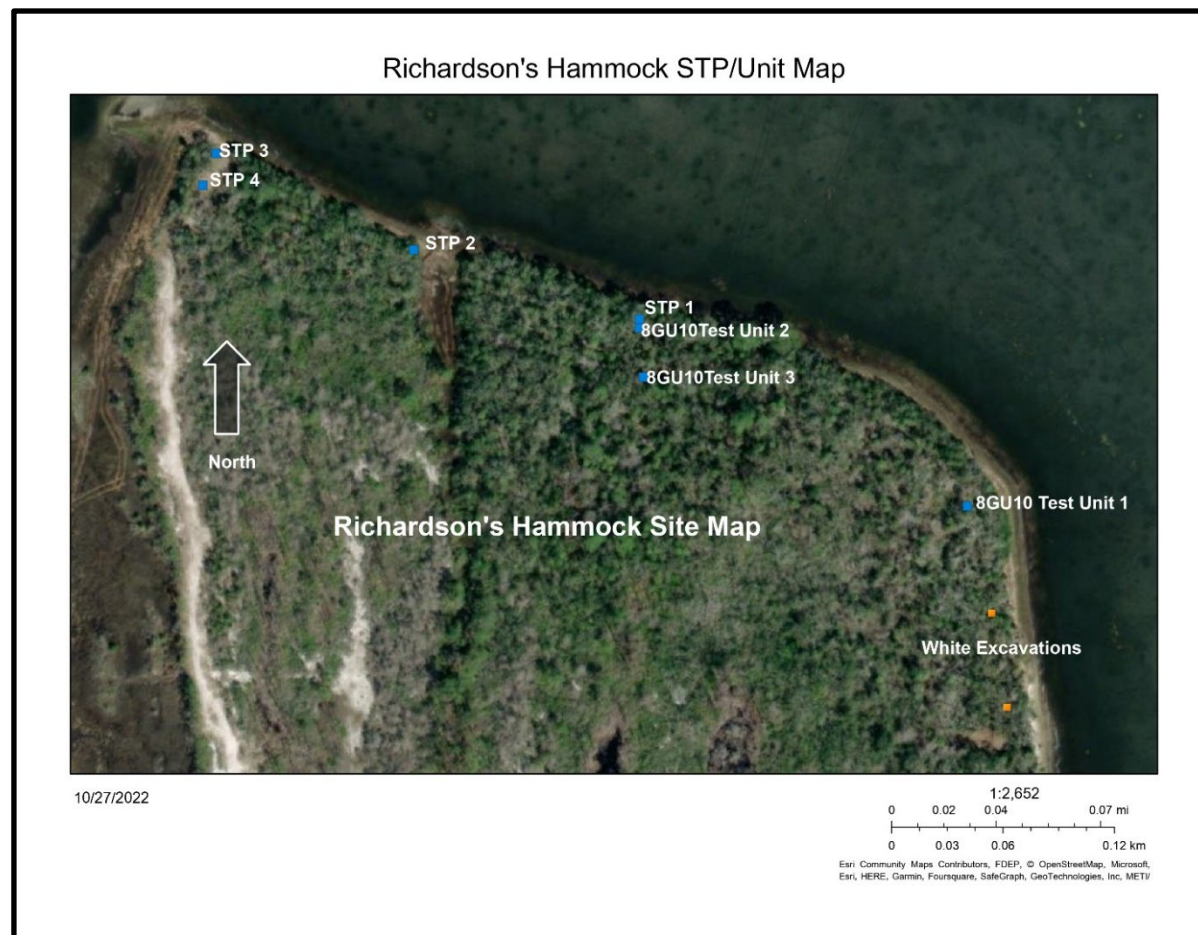
Summary

Our work at Old Cedar defines the site as concentrated on the spine of the dune running northeast-southwest. It is bordered by the marsh to the north, west and south, and by the bay to the east, as depicted in Map 1. The midden is Woodland, but broken shell and dark, organic dirt mixed with a light scattering of pot sherds can be observed on the surface throughout the hammock, confirming the presence of a midden dating from the Woodland period to the Fort Walton period. Radiocarbon dates, discussed below, help refine the chronology. Our research corroborates Elizabeth Benchley’s and Judith Bense’s (2001) identification of this site as a center for large gastropod acquisition, consumption, processing, and exchange.

Richardson’s Hammock (8GU10)

Richardson’s Hammock, the larger of the two sites, covering 66,361 m², has been the most studied by previous researchers. Based on these earlier studies, we focused on the northern limits of the site, where little to no previous work had been conducted. Much like Old Cedar, Richardson’s Hammock is bounded environmentally by the bay and a salt marsh that surrounds the paleo-dune on the north, east and west. The site is clearly visible on the surface with large piles of Lightning Whelk scattered in discrete concentrations for approximately 400 to 500 meters. The size, scope, and imminent visibility of the archaeology on the surface dictated a strategy of 5 judgmental shovel tests in the untested, northern half of the hammock and three 1 m x 2 m test units. Excavation data revealed midden habitation. The first test unit was

placed near two units that previous researchers reported as an intensive midden occupation. The other excavation units were placed on the northern edge of the landform (bayside); one was approximately 40 m inland adjacent to a marsh/creek. The excavation units revealed a deep, intensively occupied area yielding a dense concentration of artifacts spanning a millennium.



Map 2. Richardson's Hammock survey map.

Considering the previous work conducted by Wayne Childers (2001) in the early 1980s and Nancy White (2002), testing was focused on the more northern portion of the site not previously investigated through test unit excavation. One of our units (Test Unit 1) was placed in the vicinity of one of both Childers' and White's units in an effort to corroborate their results. In total, five shovel test units and three 1 x 2-m test units were excavated. What follows is a description of that work.

Shovel Tests

Five shovel test units were excavated at Richardson's Hammock in late August 2022. All shovel tests measured 50 x 50-cm and were dug to 100 cm unless impeded by natural obstructions such as roots or the water table was encountered. All materials were passed through 1/4 in mesh screen and all artifacts and shell that were observably modified by humans were bagged and collected for processing (see Table 3 for list of recovered material). The locations were chosen judgmentally, and all were placed in the area of the site north and east of the reported burial mound. This area consists of a series of distal ends of relict dune ridges and mound-like formations adjacent to St. Joseph Bay and Pig Bayou and is bisected by two watercourses, a small intermittent freshwater stream and a salt marsh creek.

The northwestern-most point of the peninsula appears as a high sand mound mostly devoid of overhead tree cover typical of the rest of the hammock. Here, two shovel tests were excavated approximately 15 m from one another. Both shovel tests produced a small number of pottery sherds and worked shell, although Shovel Test 2 [Figure 27], located closer to the Bay shore was markedly more productive. This produced one small Deptford Linear Check Stamped sherd. The archaeological deposits in both were relatively shallow, and the area appears to have been subject to some surface and potentially shallow subsurface disturbances. We were informed later by the land manager that large tree debris had been relocated there following Hurricane Michael, which may have contributed to the disturbance, although evidence of past illicit digging was observed as well as the presence of historic artifacts.



Figure 27. Photograph of Shovel Test 2, Richardson's Hammock (8GU10).

Shovel Test 3 was placed on the apex of a sand mound adjacent to and across the marsh creek from the first two shovel tests. East of the marsh creek the vegetation returns to dense hammock of sand Live Oak, Yaupon Holly, and Sago Palmetto and the landscape adjacent to the bay rises to a conical mound. Here, a high density of shell and a small number of pottery sherds were observed, although these materials were confined to the upper 30 cm. Below 35 cm this dark gray stratum gives way to white fine relict dune sands.

Shovel Test 4 [Figures 28, 29] was located just northwest of the small intermittent freshwater stream and roughly ten meters from the bay. Along the shore midden can be seen in an erosional face that measures approximately 50 cm. Ten meters south of the bay and 10 meters northwest of the stream on a relatively gently sloping terrace-like landform midden deposits extended to 70 cm below the surface. The midden deposits here consisted of a high frequency of whole, crushed, and worked shell, vertebrate fauna, as well as ceramic and lithic artifacts in a black sandy loam matrix. Ceramics recovered included a number of sand-tempered, plain sherds, Weeden Island and Swift Creek types, as well as a modelled bird-effigy tail of the type identified on Point Washington Incised vessels.



Figure 28. Photograph of Shovel Test Four, Richardson's Hammock (8GU10).

Given the productivity of STP4 and the presence of visible mounded shell eroding along the opposite edge of the small slough, we chose to investigate this area further, following the slough as it wound back into the hammock away from the bay. Then dry, the slough extends some 70 m toward the interior of the peninsula angling to the south before ending in a low grassy area. South and east the land rises in what can be described as a large, mostly flat terrace that ultimately rises to another high conical mound directly adjacent to the bay. Shell is visible everywhere the ground has been disturbed by fallen trees.

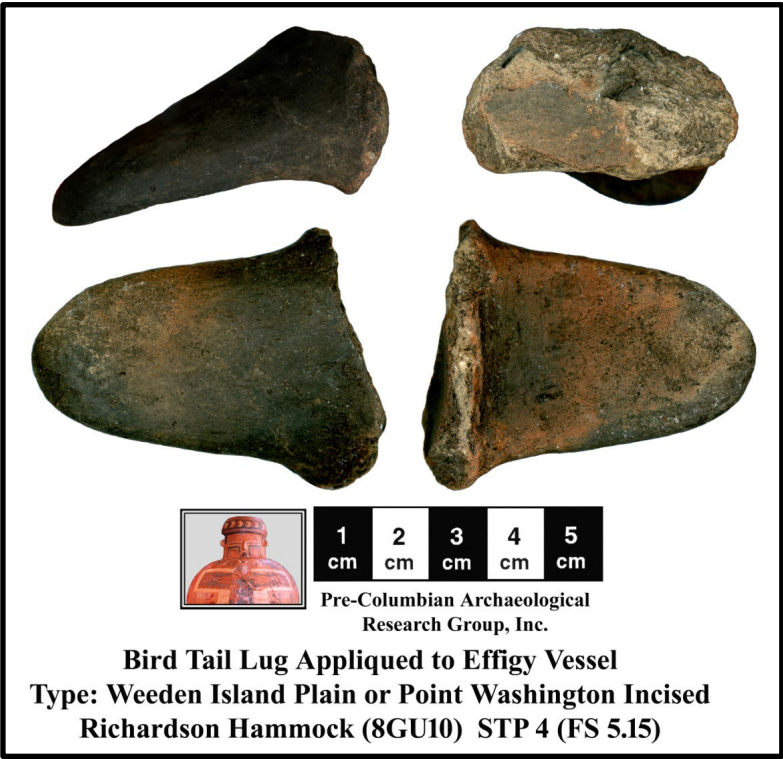


Figure 29. Potsherd recovered from STP 4. Fragment appears to be modelled effigy feature, namely a possible bird tail feather.

Shovel Test Five was placed on this terrace about 15 m east of the slough and 50 m south of the bay. Whole and crushed shell was encountered immediately below the surface. Relative to all previous shovel tests, shell and vertebrate fauna occurred in very high frequencies while the amount of soil matrix was comparatively lower. What appeared to be an area of very dense shell midden proved extremely difficult to shovel test with a square shovel. At a depth of 50 cm with no change noted in the frequencies of shell, bone, and artifacts the decision was made to abandon the shovel test and return later to further investigate the area through test unit excavation.

Table 4. Inventory of Materials Recovered from Shovel Test Units, Richardson’s Hammock (8GU10).

Shovel Test	Pottery Sherds		Flaked Stone		Modified Shell		Vert.	Misc.	Historic
	ct	wt(g)	ct	wt(g)	ct	wt(g)	Fauna wt(g)	Rock wt(g)	
1	6	45.92			1	40.81			
2	14	64.68			1	4.49	3.28		
3	20	159.63							
4	84	388.07	2	14.54			57.49		
5	74	471.49			5	390.89	135.62	122.51	
Total	198	1129.79	2	14.54	7	436.19	196.39	122.51	

Summary

Shovel testing at Richardson’s Hammock (8GU10) proceeded following a different strategy than that used at Old Cedar (8GU85) consistent with the altered overall testing strategy, privileging judgmental testing locations over systematic for the sake of identifying suitable locations for test excavation units. In total, five shovel tests were dug, all within the area of Richardson’s Hammock northeast of the reported burial mound. Each of the five shovel tests contained some form of marine shell and were found positive for cultural material, all producing a range of Woodland and early-Mississippian pottery types. Shovel Tests One and Two, located on the far northwestern portion of the peninsula, were noticeably less productive than other tests and suggest this was a location of more ephemeral pre-Columbian occupation. In comparison,

Shovel Tests Four and Five yielded relatively deeper midden deposits and a greater concentration of shell, faunal material, and ceramic and lithic artifacts.

Excavation- Test Units

Based upon the results of the two previous research projects at Richardson's Hammock (8GU10) and the results of our own shovel tests survey locations were chosen for three test units. As mentioned above, overall objectives for the 2022 investigation at Richardson's Hammock included horizontal and vertical bounding of the site and building on the two previous archaeological investigations. Regarding the latter, specific testing objectives were to corroborate the findings of both previous researchers, to find suitable contexts for obtaining radiocarbon samples for dating and ceramic type seriation, and to investigate the area of the site that had been not yet well documented.

All three units measure 1 x 2-m. Excavation proceeded using a common local datum to gauge depth of level excavation and point plots, if necessary. The first level of all units was excavated to a depth of 20 cm (or to just below modern overburden), with all thereafter removed in 10 cm arbitrary levels (unless stated otherwise). All level fill was passed through ¼-in mesh screens, and all ceramics, lithic artifacts, vertebrate faunal remains, shell tools, and other worked shell were retained and bagged for collection and analysis. We note that the abundance of large to medium-sized marine shells in various states of completeness, and present in each of our Test Units confounds attempts to distinguish in each circumstance between which shells have been modified by a human or used by people for some purpose and those that are broken through natural weathering. Additionally, many shells exhibit wear evidence associated with modifications made as a result of food preparation. To best negotiate this and to alleviate storage constraints at collection facilities, the modified shell retained for analysis were those that showed specific evidence of modification or wear be identified as a tool or possible preform.

Test Unit 1

Test Unit 1 (TU1) was placed in relation to Childers' (2001) Trench II from the early 1980s and Nancy White's (2002) TU E. Although little or no visual evidence exists now to define the edges of Childers' Trench 2, Childers' report provides locational information in relation to an existing Coast Guard marker on the bay shore which was relocated and used with sighting compass and walking tape to find the general location of Trench 2. Nancy White's (2002) report includes a map with locations of her test units. The location for Test Unit 1 places it in between White's and Childers' excavations. This location just so happened to coincide with the location of an exposed root ball that had been found during initial reconnaissance. One Indian Pass Incised and two Lake Jackson Incised rims were surface collected from the root ball.

A local datum was established in the northeast corner of the unit to obtain depth measurements with a line level. The first level of Test Unit 1 was removed in one 25 cm level of mostly what appeared to be more recently disturbed soil, perhaps the overburden of one of the previous excavations. The second level was removed in a 15-cm level to get below the remaining overburden. At approximately 35-40 cm below datum (cmbd), soil color changes from a dark grey sand to a black midden soil. Below 40 cm was dense shell midden dominated by scallops but including lesser amounts of *Busycon*, Tulip Shell, Pear Whelk, Sunray Venus, and Crown Conch. Vertebrate fauna began to occur in higher frequency and the artifact assemblage included ceramic sherds of various types including New River and Swift Creek Complicated Stamped, Weeden Island Red Filmed, Carrabelle Punctated, Fort Walton Incised, and more. Additional items of note include a *Busycon* adze blade, a small quantity of sheet mica, and a quartz crystal fragment.

The midden stratum continues to about 60 cm before transitioning from dark grey to lighter grey sand. At 60 cm four circular features were visible in the floor of the unit. Features 1, 2, 3, and 4 are all presumably post molds. Feature 1 has a recorded diameter of 25 cm while the remaining are about 10 cm, and all features terminated between 65 and 70 cm with the exception of Feature 2, which continued to 87 cmbd. In plan it appears that Features 2-4 are aligned in an arc around Feature 1 and opening towards the bay.

At 70 cmbd two additional and larger (50-100 cm) circular features were visible in the northwest and southwest corners. Features 5 and 6 were designated and both removed entirely by keeping half of the contents for flotation samples and half of the contents processed the same as the general level fill. Feature 5 consisted of black fine loamy sand with crushed and fragmented shell and charcoal. The widest of all the features documented, Feature 5 was 30 cm at its deepest toward the south wall of the unit and becoming shallow toward the North. Feature 6 is a straight-walled silo-shaped pit measuring about 40 cm deep and 50 cm wide, as measured from where it was first visible to termination at depth. Feature 6 contained some Swift Creek Complicated Stamped ceramics, charcoal, vertebrate fauna, bivalve, and smaller *Busycon* specimens.

Test Unit 1 was excavated down to 120 cmbd where the black and darker grey soils gave way to white relict dune sands [Figures 30-34, Tables 3, 4]. Four distinct stratigraphic units were visible in the wall profiles and recorded. From the South wall of TU1 a 25 x 25 cm column was removed by strata and bagged in entirety for analysis as flotation samples.



Figure 30. Test Unit 1, Richardson's Hammock. Excavation results show dark shell midden overlaying white dune sand.

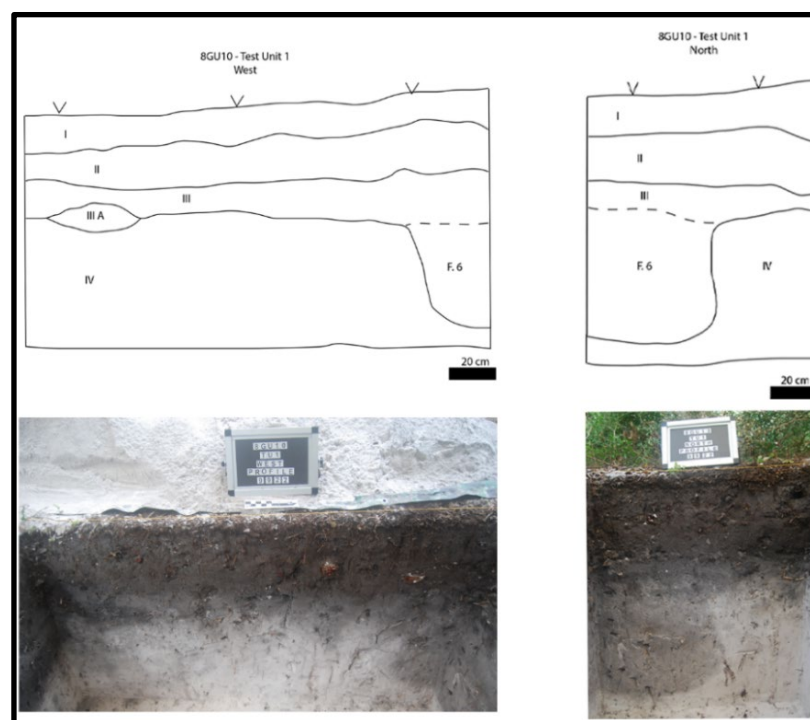


Figure 31. Photographs and scaled drawings of West and North profiles, Test Unit 1, Richardson's Hammock (8GU10).

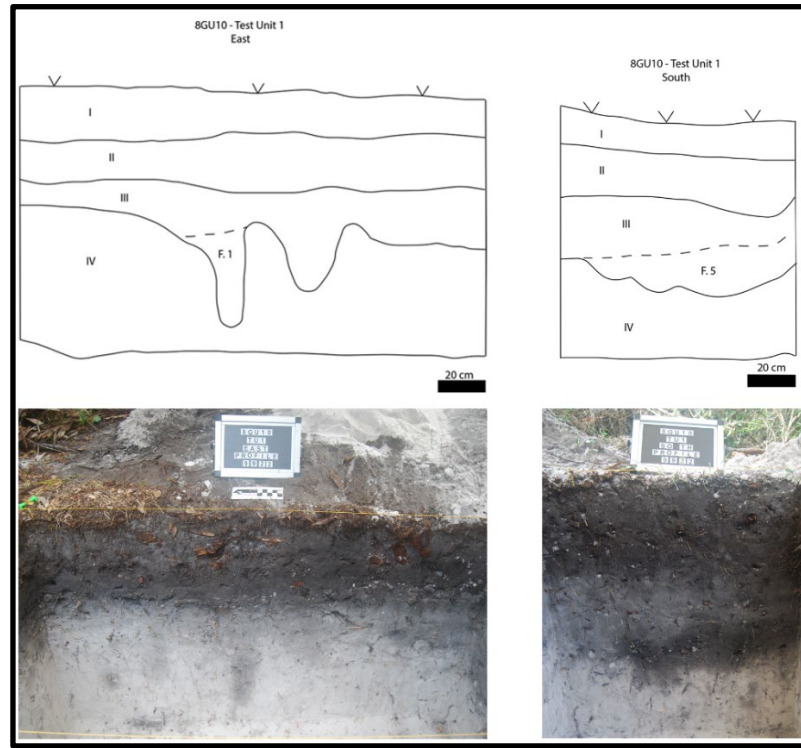


Figure 32. Photographs and scaled drawings of East and South profiles, Test Unit 1, Richardson's Hammock (8GU10).

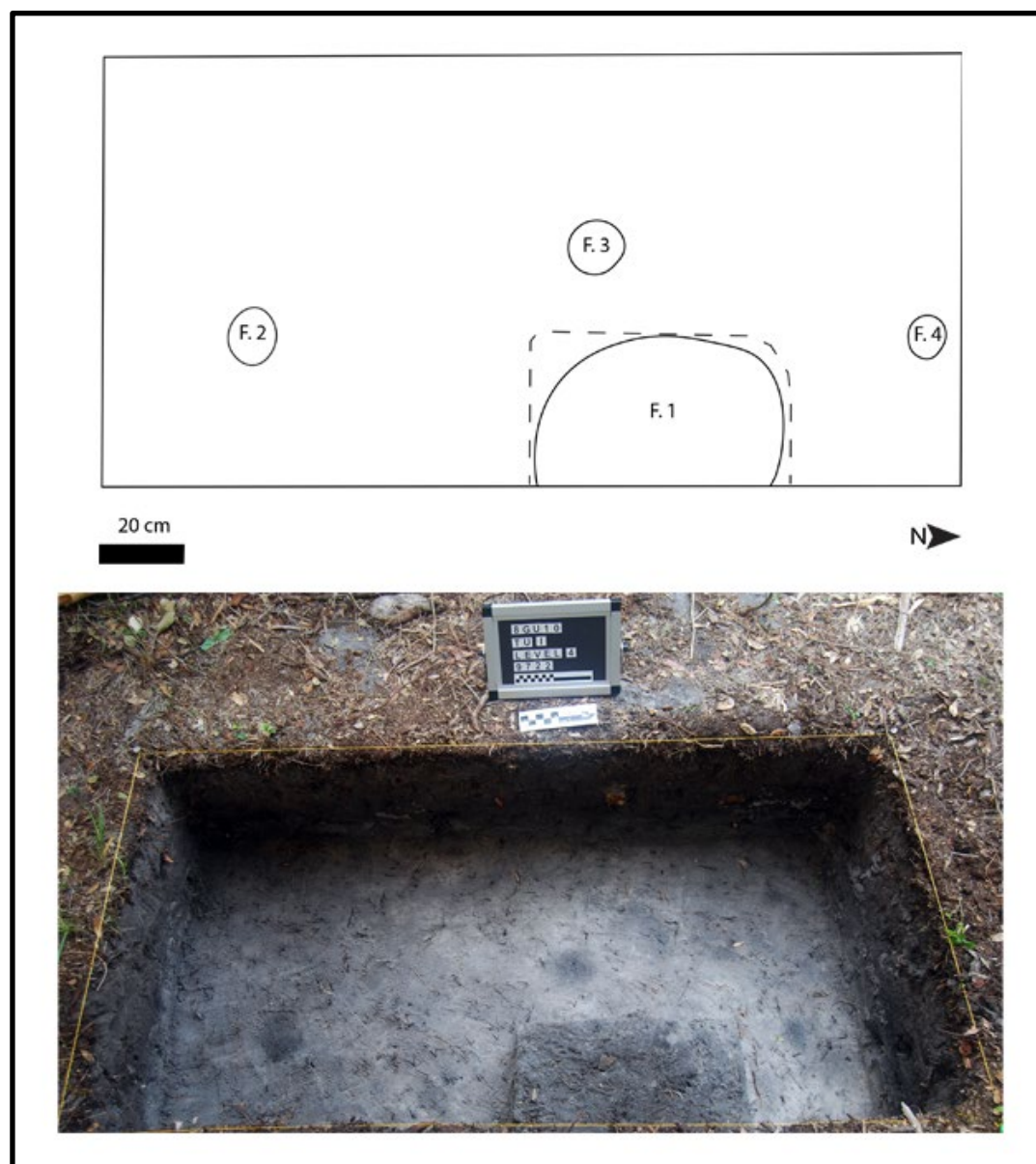


Figure 33. Photograph and scaled drawing of plan map at 60 cmbd, Test Unit 1, Richardson's Hammock (8GU10).

Table 5. Stratigraphic Units of Test Unit 1, Richardson's Hammock (8GU10).

Stratum	Max. Depth (cmbd)	Munsell Color	Description
I	35	10YR4/1	Dark grey fine sand with large number of small roots. Moderate frequency of pottery sherds and crushed
II	56	10YR2/1	Black loamy sand midden with high frequency of whole and crushed shell and artifacts.
III	80	10YR5/1	Grey poorly consolidated fine sand. Possible buried A horizon associated with subterranean features.
IV	120	10YR8/1	White fine sand, devoid of shell and artifacts.
F. 1	70	10YR2/1	Black loamy sand with moderate amounts of charcoal and crushed shell.
F. 5	100+	10YR4/1	Dark gray fine sand with crushed shell and flecks of charcoal.
F. 6	109	10YR4/1	Dark gray fine sand with flecks of charcoal and moderate amount of shell.

Table 6. Inventory of Materials Recovered from Test Unit 1 by Level, Richardson's Hammock (8GU10).

Level	Pottery Sherds		Flaked Stone		Modified Shell		Vert.	Misc.	Historic
	ct	wt(g)	ct	wt(g)	ct	wt(g)	Fauna wt(g)	Rock wt(g)	
1	65	334.15	1	21.22	6	101.06	12.38	112.27	
2	90	1147.28	1	0.95	11	142.38	60.33	53.56	
3	35	281.14			3	81.04	388.46		
4	14	48.8					27.5	0.43	
5	3	65.45	1	2.7	1	1.95	10.06		
6							1.39		
7	1	3.65					4.51		
8	3	16.53	1	9.17			9.94		
9	8	11.16					10.92		
Total	219	1908.16	4	34.04	21	326.43	525.49	166.26	

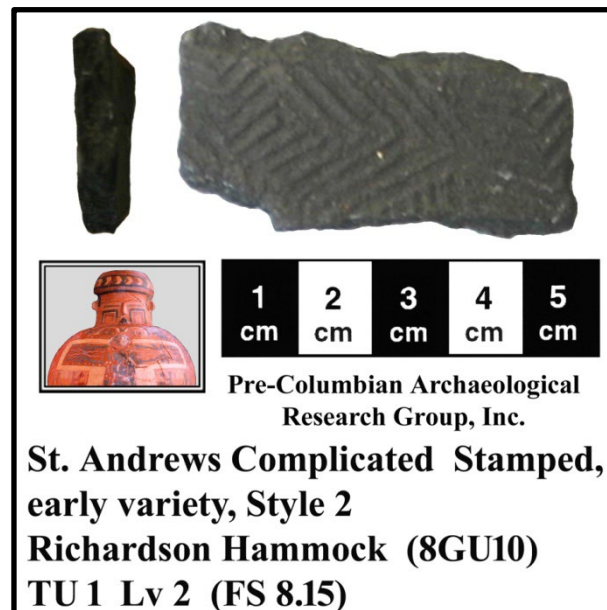


Figure 34. Woodland pottery from Test Unit 1, Richardson's Hammock, 8GU10.

Test Unit 2

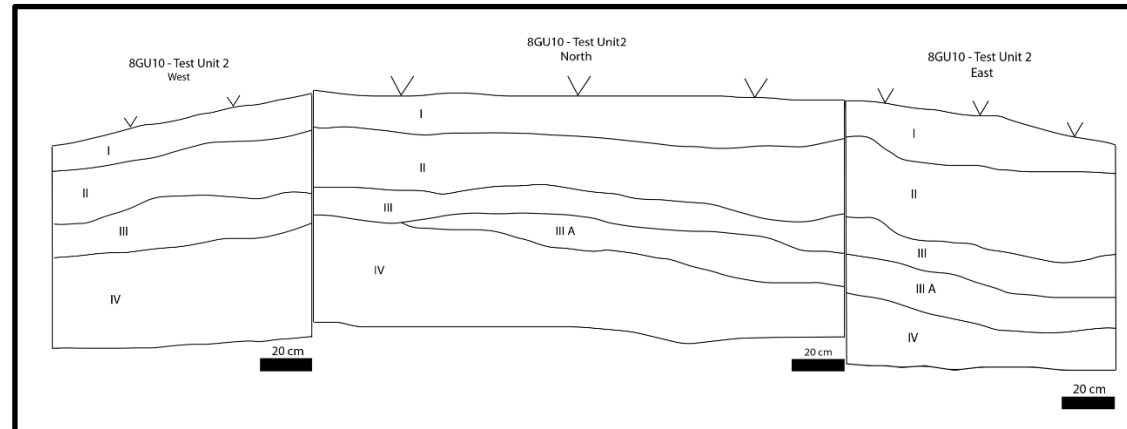
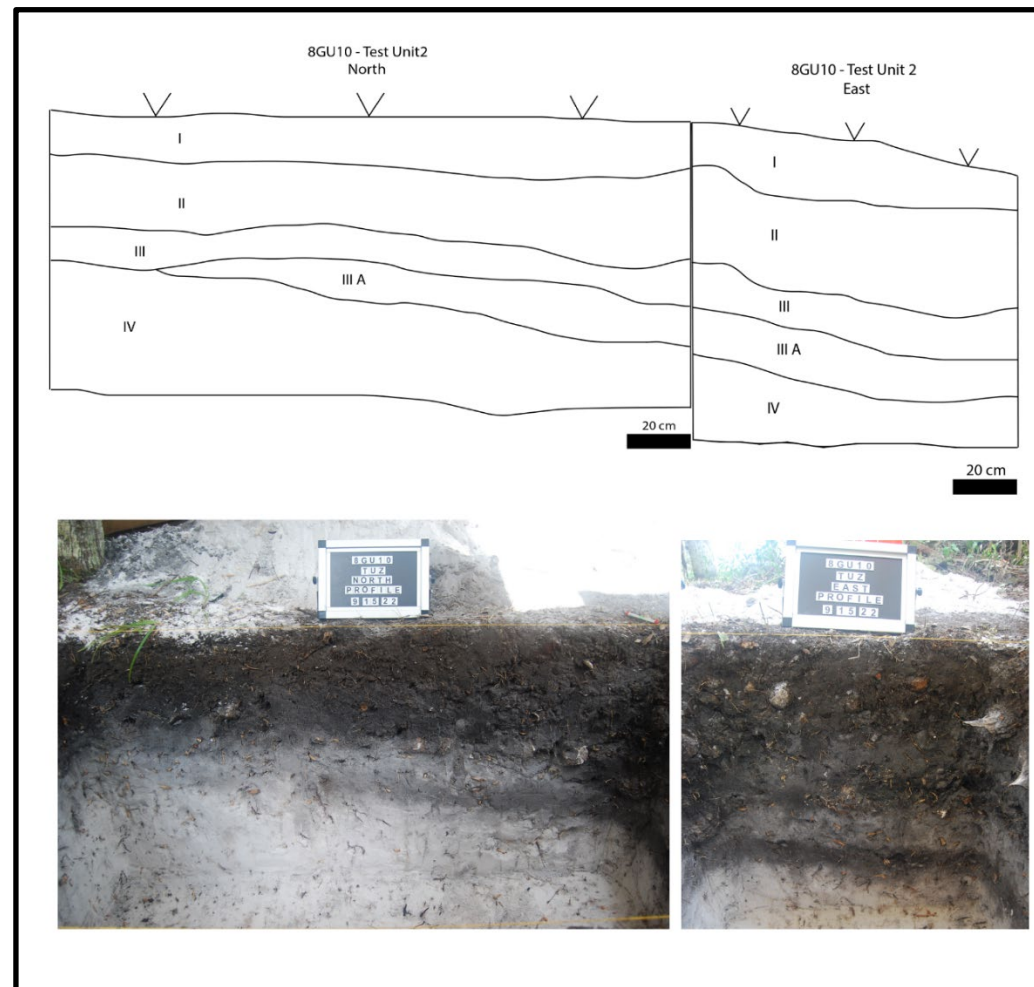
Test Unit 2 (TU2) is located northwest of the burial mound at Richardson's Hammock. The location for TU2 was determined based upon the results of Shovel Test 4 which had yielded a variety of artifacts and where the midden was known to extend some 70 cm below the surface. The landscape rises to the west above the small freshwater slough that drains the interior of the peninsula. Here, adjacent to Shovel Test 4, TU2 was placed as a 1 x 2-m test unit between the apex of a relict dune with St. Joseph Bay to the north.

A local datum was established in the north/northeast corner of the unit to obtain depth measurements with a line level, and excavation proceeded removing the first 20 cmbd as Level 1 and 10 cm levels thereafter. In total, eight levels were removed to a depth of 112 cmbd. All level fill was excavated by trowel and shovel and was passed through ¼-in mesh screen. No column sample was retained from this unit. As the results of Shovel Test 4 suggested, the shell midden layer was slightly larger and denser than that found in TU1, although it did not extend as deep as the midden layer exposed in Shovel Test 4.

Four distinct stratigraphic units were identified in the profiles of TU2. Among them are two distinct midden strata, separated by and then overlain by a grey sand stratum. This alternating pattern of midden below grey sand is reflected in the recorded stratigraphic unit where Strat III A represents the first midden depositional event. Strat III overlies Strat III A where it occurs. It may be noted that Strat III A does not extend across the 2 m profile of TU2, but rather stops about 35 cm short. This may be evidence of intentional placement of midden deposition with the objective of terraforming the land there along the bay and the slough. Strat III A appears in the northeastern portion of the unit and builds as it extends to the north, in the direction of Shovel Test 4, where some 70 cm of shell midden were recorded.

One feature was identified and sampled from TU2. At 70 cmbd an area of dark grey sand was visible in the northeastern third of the 1 x 2-m unit where the remaining floor consisted of the white dune sand. This area was designated Zone A and removed by 10 cm level and screened and bagged separately from the rest of the general level fill. After 10 cm, the dark gray soils of Zone A gave way to light dune sand while a postmold became visible beneath the Zone. Designated Feature 7, this potential postmold measured 15 cm in diameter and 35 cm deep. The entire feature was bagged and retained for later flotation analysis [Figure 34-38, Tables 7, 8].

Given that stratigraphy was recorded sloping toward recorded areas of deeper midden along the shore, the evidence for repeated midden-capping episodes, and the general location on the edge of both St. Joseph Bay and the freshwater slough, TU2 represents a portion of a use area perhaps where a shelter or food processing structure was located and remains of vertebrate animals and marine shell were deposited to build the landscape up directly adjacent to the slough.



Figures 35, 36. Photographs and scaled drawings of West, North, and East profiles, Test Unit 2, Richardson's Hammock (8GU10).

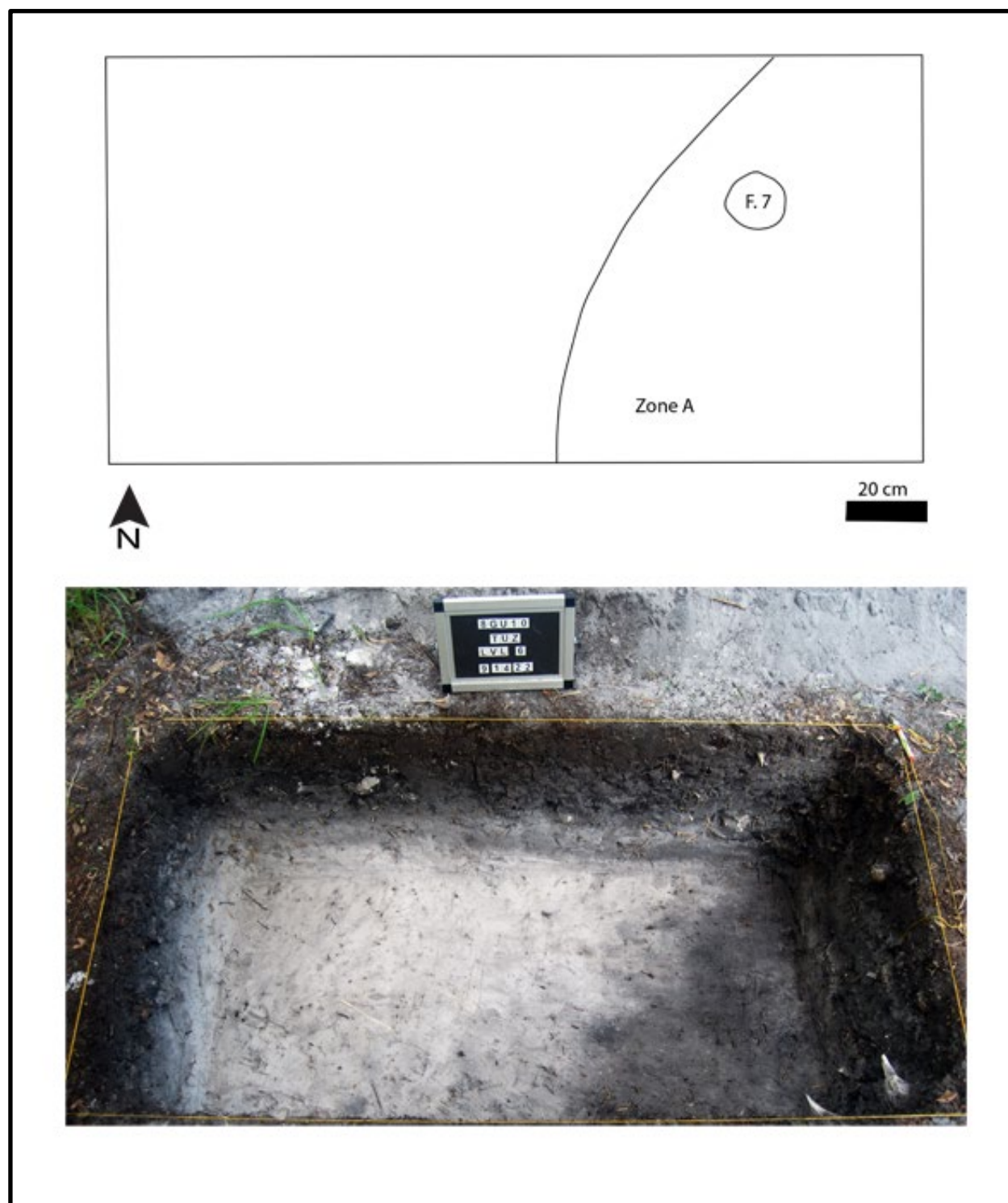


Figure 37. Photograph and scaled drawing of plan view at 85 cmbd, Test Unit 2, Richardson's Hammock (8GU10).

Table 7. Stratigraphic Units of Test Unit 2, Richardson's Hammock (8GU10).

Stratum	Max. Depth (cmbd)	Munsell Color	Description
I	39	10YR3/1	Very dark grey sand within root mat and humic layer.
II	74	10YR2/1	Black loamy sand midden with high frequency of artifacts and shell.
III	86	10YR5/1	Gray fine sand.
IIIa	99	10YR4/1	Dark gray fine sand.
IV	113	10YR8/1	White fine sand with some mottling with 10YR6/1 gray fine sand.

Table 8. Inventory of Materials Recovered from Test Unit 2 by Level, Richardson's Hammock (8GU10).

Level	Pottery Sherds		Flaked Stone		Modified Shell		Vert. Fauna	Misc. Rock	Historic
	ct	wt(g)	ct	wt(g)	ct	wt(g)	wt(g)	wt(g)	wt(g)
1	103	348.05	2	2.34	3	58.54	15.25		
2	105	836.48			9	1060.92	27.31		
3	77	963.69					26.41		
4	24	336.08	6	10.9			4.51		
5	9	139.9	2	1.94			0.91		
6	4	22.84	1	0.37			0.01		
7	3	75.97			1	429.86			
Total	325	2723.01	11	15.55	13	1549.32	74.4		



Figures 38, 39. Woodland pottery recovered from Test Unit 2, Richardson's Hammock (8GU10).

Test Unit 3

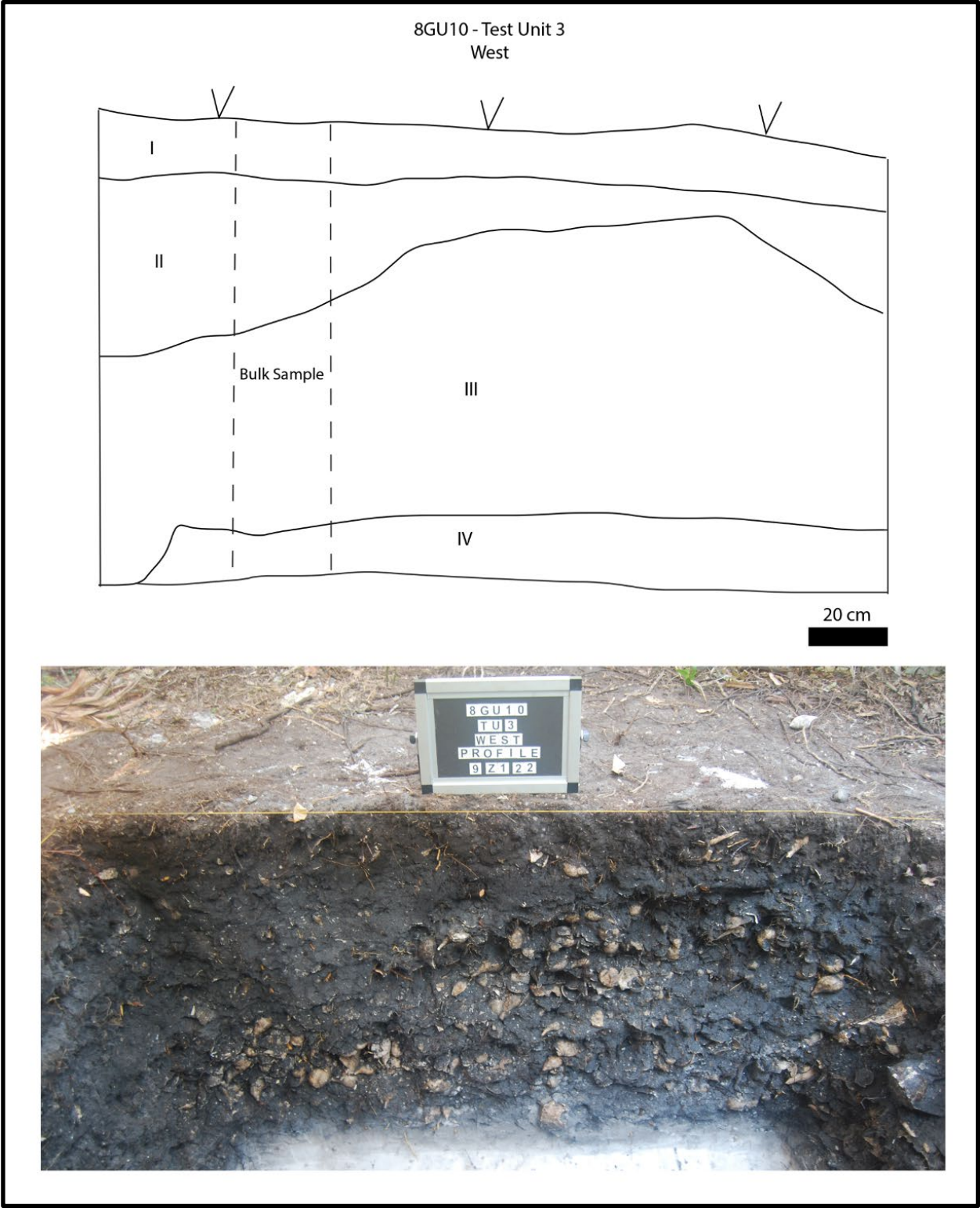
On the opposite bank of the slough and about 30 m south of the Bay TU3, a 1 x 2-m test unit, was placed on a southwest facing slope rising above a wetland in the interior to the south. During shovel testing this location was tested due to the nearness to the slough where shell midden was exposed on the eastern bank. Our shovel test here was abandoned due to the difficulty of excavating a shovel test in such dense shell, but the 50 cm excavated in that test recovered enough information to suggest there were undisturbed archaeological contexts. Test Unit 3 was emplaced adjacent to Shovel Test 5.

A local datum was established in the southeast corner of the unit to obtain depth measurements with a line level, and excavation proceeded removing the first 20 cmbd as Level 1 and 10-cm levels thereafter. In total, 11 levels were removed to a depth of 125 cmbd. All level fill was excavated by trowel and shovel and was passed through ¼-in mesh screen. Following removal of all level fill and recording the North wall profile, a 25 x 25-cm column sample was removed from the North wall. The overall composition of the level contents in TU3 were a departure from the previous test units. Where Test Units 1 and 2 contained distinguishable midden layers in relation to over- and underlying sand layers. In TU3 this dense shell midden extends to 120 cm below the surface. Variation was present in the dominant species in TU3. Where large (and small) whelks and horse conchs were still present, there was a much higher amount of whole clean scallop and tulip shell. This midden layer sits atop fine white sand typical of the relict dune sands found elsewhere on Richardson's Hammock. The amount of whole and crushed shell was higher in TU3 than any other unit while the percentage of soil matrix was less.

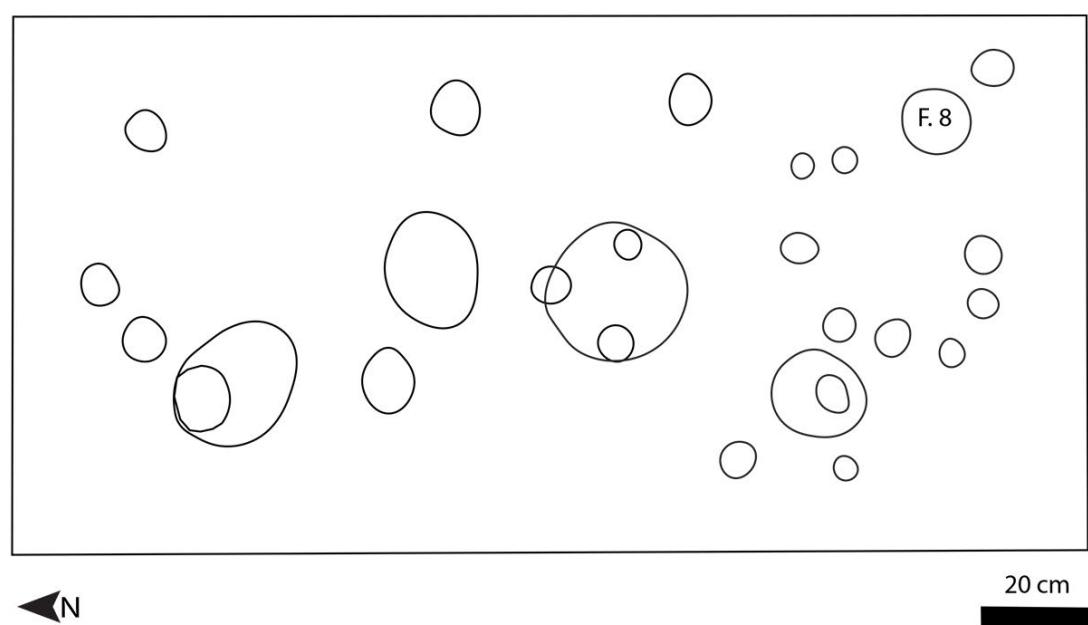
Four distinct stratigraphic units were identified in the profiles of TU3. Strat I represents the humic layer, which here consists of forest duff and many small and medium sized roots along with black soil and whole and crushed shell. Strats II and III are both very dense shell midden in black soil matrix with their difference being in the amount of soil matrix present. Strat III contains less soil matrix overall and included many pockets of whole clean shell with no matrix present. Strat IV represents the fine white dune sand underlying midden deposits.

While Strat III contains more pockets of whole clean shell, they are still present in fewer numbers in Strat II. These two strata are likely composed of several depositional events where large amounts of used shell, ceramics, and animal and vegetal remains were discarded. The pockets of whole clean shell present throughout the midden strata might have been individual basket loads deposited onto an uneven surface of other deposits. The deep midden deposits present in TU3 might suggest that the surrounding area extending from the dune apex and possible mound to the north, west to the slough, and south to the interior wetlands may be a terrace formed from deposited midden.

At the base of Level 10, at 115 cmbd a number of small circular features thought likely to be post molds. In total, there were 27 of these features recorded in plan, although only one of these was sampled. This was designated Feature 8. It was composed of black soil with charcoal and crushed shell. The feature fill was removed in total and bagged for flotation analysis. From where it was first identified, Feature 8 extended 30 cm in depth.



Figures 40, 41. Photographs and scaled drawing of West profile, Test Unit 3, Richardson's Hammock (8GU10).



Figures 42, 43. Photograph and scaled drawing of plan view at 115 cmbd, Test Unit 3, Richardson's Hammock (8GU10).

Table 8. Stratigraphic Units of Test Unit 3, Richardson's Hammock (8GU10).

Stratum	Max. Depth (cmbd)	Munsell Color	Description
I	29	10YR2/2	Very dark brown loamy sand with thick root mat and high concentration of mostly crushed shell
II	65	10YR2/1	Black loamy sand matrix within high concentration of whole and crushed shell
III	125	10YR2/1	Black loamy sand matrix with very high concentration of whole and crushed shell. Several pockets of whole shell.
IV	128	10YR8/1	White fine sand with small areas of 10YR6/1 gray fine sand where midden is leaching to strata below.

Table 9. Inventory of Materials Recovered from Test Unit 3 by Level, Richardson's Hammock (8GU10).

Level	Pottery Sherds		Flaked Stone		Modified Shell		Vert.	Misc.	Historic
	ct	wt(g)	ct	wt(g)	ct	wt(g)	Fauna wt(g)	Rock wt(g)	
1	133	743.24	1	0.67	4	191	170.52		
2	80	682.64	1	0.18	1	21.59	155.86	58.01	
3	66	452.1			2	303.59	231.03	80.49	
4	42	331.75			2	114.35	135.93		
5	41	292.27	1	0.16	3	273.99	236.26		
6	27	292.45			2	75.31	261.59		
7	22	165.27			1	216.39	98.17		
8	33	249.63					243.44		
9	15	130.21					229.38		
10	14	157.94			1	149.42	72.19		
Total	473	3497.5	3	1.01	16	1345.64	1834.37	138.5	

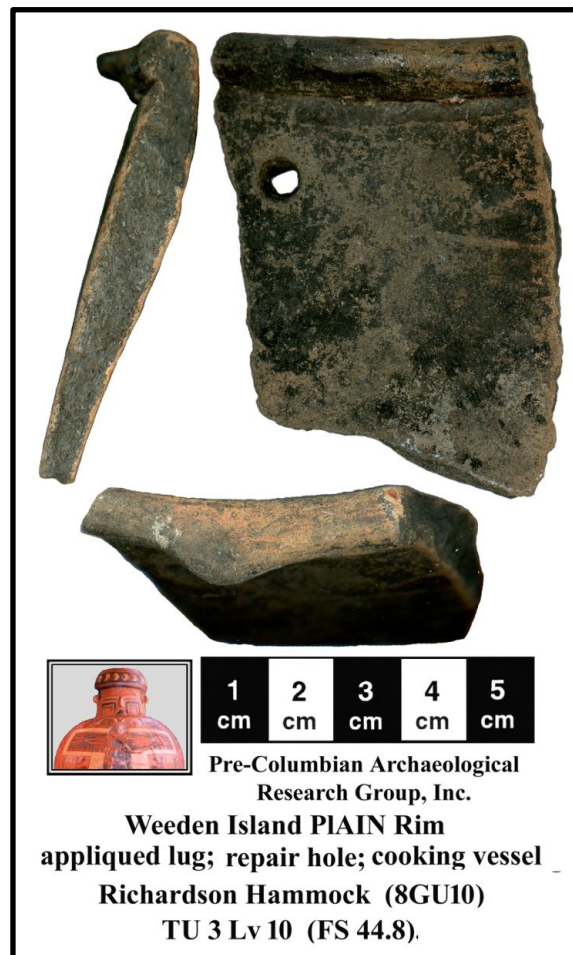


Figure 44. Woodland period pottery recovered from Test Unit 3, Richardson's Hammock (8GU10).

Summary

Three 1 x 2-m test units were excavated at Richardson's Hammock (8GU10) by PCARG staff in September 2022. Test Unit 1 was emplaced along the bayfront shell ridge in the vicinity of two units from the site's two previous intensive archaeological investigations (Childers 2001; White 2002). Test Units 2 and 3 were placed on either side, and at varying distances from St. Joseph Bay, of a freshwater slough that drains wetlands located in the interior of the peninsula south of the bay.

All test units were excavated to a depth where culturally sterile soil occurred and all level fill passed through ¼ in screen. An inventory of the materials collected in the ¼ in sample from each test unit by level is available in the tables above. A total of eight distinct archaeological features were recorded across all three units and sampled both for ¼-in dry screen and flotation. Finally, 25-25-cm column samples were taken from finished walls of Test Units 1 and 3.

Radiocarbon Dating

Radiocarbon dating (C-14) was a major component of our strategy to fix the site in time. Ten radiocarbon samples, three from Old Cedar (8GU85) and seven from Richardson's Hammock (8GU10) were processed and run by Beta Analytic Laboratory (See Appendix I for results). All three samples from Old Cedar were taken from TU1- two from features and one from a middle stratigraphic level within a column sample. The seven samples from Richardson's Hammock were taken from test units, three from TU1 (one feature and two stratigraphic levels within column samples), one from TU2 (a feature), and three from TU3 (one feature and two stratigraphic levels within column samples). With the exception of one sample taken from Richardson's Hammock (8GU10), all dates fall confidently within the Late Woodland Period, ca., 500-1,000 AD.

Investigations at Old Cedar by University of West Florida (2001) broadly dated the site from the Woodland through the Mississippian period, while Wayne Childers' (1984) and Nancy White's (2002) more extensive research at Richardson's Hammock dated the site from the Woodland to the Mississippian period, but with a substantially larger occupation during the latter. PCARG's test excavations were selected to complement and augment those carried out by the previous researchers. We chose areas that had not been previously tested and dug units to depths that would provide

the possibility of a sequence of occupations. Despite the location and depth of these tests, our results support substantial Late Woodland, Weeden Island settlements at both Old Cedar and Richardson's Hammock. These data are corroborated by diagnostic ceramics that likewise overwhelmingly represent Weeden Island. Moreover, the proximity of the two sites in association with comparable artifactual and radiocarbon data point to not only contemporaneous communities but also with similar production activities during Weeden Island. However, excavations indicate that there were limited residences at Old Cedar, and that most people who worked there commuted to and from the larger complex of Richardson's Hammock.

Interpretations

Testing results indicate that Old Cedar was a subsidiary of Richardson's Hammock, from the Woodland to the early Mississippian period. Old Cedar exhibits consistent stratigraphy across the site, showing a strong use of large gastropods for food consumption and tool manufacture, supplemented by vertebrate fish for culinary needs. Richardson's Hammock displayed a similar pattern but in much greater quantity and distribution than at Old Cedar [Figures 45, 46].



Figures 45, 46. Left, Ft. Walton potsherd; right, faunal material. Cultural material from project excavations, Richardson's Hammock, from processing phase.



Figures 47, 48. Left, concentration of large shells recovered from Test Unit 3, Richardson's Hammock. Right, columella tools recovered from Richardson's Hammock, and Lighthouse Bayou. After White et al. 2001, Figure 27.

At Richardson's Hammock whelks were predominantly used for ceremonial purposes, with feasting and drinking consummating gathering events held there. This is attested to by the wider variety of decorated pottery recovered from Richardson's Hammock compared to Old Cedar, and by the vast number of whelk shells with round or rectangular cuts made for meat extraction, and neat, circular perforations from which beverages could be sipped. The quantity of both was unprecedented in Test Unit 3 at Richardson's. We could barely dig the unit, it was so tightly packed with mostly large shells. It was logistically and methodologically impractical to collect all of the shell; but, another project devoted to a shell artifact count would be worthwhile. It appears that the entire ridge where Test Unit 3 is located is built on layers of such shell. Evidence further indicates that layers of crushed shell were used to create new living areas and dedicated with sumptuous meals of shellfish and other foods and concluded by smashing vessels that further added to the midden.

Moreover, both Old Cedar and Richardson's Hammock produced numerous shell tools with the most representative examples being modified Busycon columella used for perforating, drilling, and as a source of pendants and fish weights, as well as other needs; and rectangular body shell pieces used for scraping, chopping, polishing, and as blanks for adornments, in addition to other assorted purposes. The whelk drinking cup and those shells hafted and made into hammers, are key to this assemblage. This sample is interesting because it suggests that a handful of core tools could be modified and utilized for countless purposes. Various studies of prehistoric worked shell by early Florida peoples (e.g., Bullen 1953; Claassen 1998; Dietler 2008; Kuzuch 1998; Luer 1986; Marquardt 1992; White et al. 2002, to list a handful), show considerable standardization and use over time and across geographic regions. What distinguishes the sites of Richardson's Hammock and Old Cedar is that even compared to sites in Southwest Florida, these two had a strong focus on large gastropod harvest, use, modification, and likely trade. While the nature of exchange between other regions lies beyond the scope of our work, based on research of the Middle Woodland period, Hopewellian Interaction Sphere (Carr and Case 2005; Seeman 1979), there was great potential for wide trade networks of large shells that could have emanated from St. Joe, and which revolved around the sites of Old Cedar and Richardson's Hammock. During this earlier time period, extensive interaction occurred between peoples of different regions of North American. These patterns reach back into the Archaic period and demonstrate great ability and tradition among early societies to move objects and ideas.

What should be underscored is the unique environment of St. Joe Bay, which permitted a large gastropod industry there during the Late Woodland period. The enclosed bay is rare to Florida, and its fresh water is and has been rich for whelk and conch propagation. And, to complement this resource, the Gulf, flanking the western side of the St. Joe peninsula, providing an abundance of offshore resources.

These data in conjunction with radiocarbon dates support the view that the region of St. Joseph Bay and Cape San Blas was a very significant prehistoric center during the Late Woodland period, previously unrecognized in North Florida pre-Columbian history. These sites had their origin in Early Woodland and persisted into the Mississippian period, but the Weeden Island occupation was certainly the most intensive period, the focus of which was the large whelk and conch industry. Furthermore, test unit excavations support a long history of successive building and use during the Late Woodland period, based particularly on Richardson's Hammock Test Unit 3. The quantity of shell hash intermittently layered with large, intact shell deposition documents these activities.

It is believed that a much more extensive complex of sites associated with large gastropod acquisition, processing, consumption, and exchange existed (White et al. 2002). Black's Island (8GU11), Conch Island (8GU20), Gotier (8GU2), and Lighthouse Bayou (8GU114) all exhibited evidence for similar activities, which has now been compromised by early site exploration, looting, and development. Black's Island is located 8 km south-southwest of Port St. Joe and covering an area of approximately 10 acs. It is defined in the Florida Master Site File as a Ft. Walton site, concreted by environmental factors. Due to the solidified nature of the site, little testing is possible; however, artifactual data support its contemporaneity and role in the large shell complex as discussed. Conch Island is owned by the State; it is located on the east side of St. Joseph Bay and immediately east of Port St. Joe; it measures approximately 7 acs. A portion of the site has become submerged. Testing in 1971 (Percy 1971) documented a large quantity of large shell, i.e., whelks and conchs, with dates placing this island site within the "Big Shell" St. Joseph Bay complex. Lighthouse Bayou, south of Richardson's Hammock, is located on the mainland north of Eglin Air Force Base Annex and measures approximately 100 m². It must have been a significant prehistoric site at one point, contemporaneous with the others mentioned above. Investigations by Nancy White and colleagues (2001) indicate that the remaining "piles" of debris represent disturbed midden material, although subsurface evidence shows similar "footprints" of midden as have been recorded at Richardson's Hammock. Large shell concentrations and associated ceramic types place them in the same timeframe. The site of Gotier, located on the east shore of St. Joseph Bay, has been identified as a burial mound, 2.5 m high and 10 m in diameter, dating from the Middle Woodland to the Mississippian period. Dug by C. B. Moore in 1902, remains included several bundle or flexed burials. Firebreaks made by St. Joe Paper Company, owners of the property, exposed numerous artifacts, such as whelk and conch shells and tools. Additional research to demonstrate the connection these sites have with one another would be important to a better understanding of the Weeden Island period of Northwest Florida.

In summary, the settlements of St. Joe and Cape San Blas were geographically central to and likely played a significant part in the success of Weeden Island culture of Northwest Florida, providing a desirable commodity for its own communities and those with equitable materials and

goods for exchange. Most intriguing is the ritual and ceremonial value large gastropods were given to have been produced and distributed on such a large-scale basis, which endured for centuries.



Figure 49. This artistic rendering shows the placement of structures at the base of shell midden/sand dunes and on top of larger, build-ups middens. Both Old Cedar (8GU85) and Richardson's Hammock (8GU10) exhibited posthole features to indicate this practice, whereby early structures built on sand dunes gradually were elevated as middens accumulated, were capped and graded for continued use. After The Archaeology Conservancy website- <https://www.archaeologicalconservancy.org/rethinking-shell-middens/>.

Stabilization/Conservation Recommendations

One of the main objectives of the Hurricane Michael, St. Joseph Bay archaeological site assessment grant was to develop recommendations for the long-term stabilization of significant sites impacted by the storm. This section addresses the two prehistoric sites Richardson's Hammock, 8GU10, and Old Cedar, 8GU85, in terms of their stability and vulnerability to future weather events. A thorough pedestrian survey/reconnoitering of the sites was conducted prior to any excavations, and those investigations continued during the course of our excavations to evaluate the effect of Hurricane Michael on them.

Numerous barrier islands/spits can be found along North Florida's coastline. They are highly dynamic landscapes that developed around 5,000 years ago and are continuously shifting because of daily erosional and accretion processes associated with longshore currents and seasonal storms (Osterman et al. 2009; Twitchell et al. 2013). The instability of the environment would not seem conducive to intensive, long term human occupations; however, significant archaeological sites from all time periods have been recorded on these constantly changing landforms.

The three sites, subject of this grant project, are located on one of these barrier island/spits, St. Joseph Peninsula. The peninsula is made up of poorly consolidated, aeolian deposited, paleo-dunes, which, from east to west, measures less than a kilometer wide, and runs from north to south for approximately 24 kilometers. The spit forms a hyper-saline lagoon 8-13 km wide, resulting from the lack of fresh water flowing into the bay. This body of water combined with associated salt marshes and sea grass beds make it a highly productive environment for the harvesting of shellfish, somewhat unique to the northern Gulf (FDEP 20002; USFW 1982).

While flowing fresh water is scarce in the adjacent St Joe Bay landforms, seeps and springs occur between the beach dunes and in the seasonal wetlands. The parallel running beach dunes are covered in slash pine, scrub oak, wax myrtle, and wiregrass typical of a xeric barrier

island landscape. The bay side of the peninsula contains several “Maritime Oak Hammocks” where the prehistoric archaeology is principally located.

“Hammock” is a term used in the Southeastern United States to describe stands of hardwoods that form an ecological island in a contrasting ecosystem. Hammocks form on elevated areas often only centimeters higher than the surrounding wetlands and salt marshes that are too wet to support them. In North Florida “maritime” or “coastal” hammocks typically form on stable dune sands away from the beach on barrier islands and on slightly elevated landforms in salt marshes (Indian River Lagoon Species Inventory 2022).

Richardson’s Hammock can be characterized as a mixed hardwood hammock dominated by Live Oak, Sabal Palm, Southern Magnolia, Red Bay, Yaupon Holly, Pignut Hickory, and American Beech trees. Following Hurricane Michael, the floor of the hammock became covered with a dense carpet of Poison Ivy and grape vine. Located on the bay side of St. Joseph Peninsula adjacent to Lighthouse Bayou (8GU114), the hammock is well protected from the Gulf of Mexico offering easy access to St. Joseph Bay’s abundant resources. Old Cedar (8GU85) is a smaller version of Richardson’s Hammock (8GU10), 4.3 miles north on the bayside of the peninsula. The area surrounding the hammocks was comprised of mostly Scrub Oak, Slash Pine, Sago Palmetto, Fetterbush, Rosemary, and Reindeer Moss.

It was in the areas surrounding the hammocks where the impact of Hurricane Michael was most visible in the form of dead and downed trees and obvious scour scars in the dunes [Figures 50, 51]. In the hammocks and on the sites themselves, the visible impact of Hurricane Michael was minimal with most of the damage resulting from a few uprooted trees, many of which were not directly attributable to Hurricane Michael. In addition, no discernable evidence of Hurricane Michael disturbance was documented in any of our excavations. The middens are a meter thick in some places, which is consistent with profile descriptions from archaeological investigations 40 years ago. PCARG staff readily located the USCG survey marker, employed by Childers (2001). It was placed at the high-water mark on the beach almost 50 years ago. It is evident that little appreciable erosion has occurred at either site since they were last investigated 40 and 20 years ago, respectively, even after Hurricane Michael.

With a 50–100 cm layer of large lightning whelk, pear whelk, scallop, and conch shell in rich cultural midden soil, built on sand dunes, these cultural strata are the beginnings of terra forming. They allow the hammock to take hold and propagate in the nutrient-rich, drier, upland created in the bayside salt marsh. Over time, the shell in the midden acts as aggregate does in concrete, holding materials together, as a rich diverse ecosystem develops. Over the course of a millennium and longer, both sites created the detritus of which the hammock grew and thrived. The hammocks remain hundreds of years after their prehistoric occupation; they have endured major storms better than any other ecosystem on Florida’s barrier islands. From an archaeological perspective, they are the most stable part of the St. Joseph Peninsula landform. It would be our recommendation and best management practices for Florida Public lands to continue to maintain these hammocks as staff at the St. Joseph Peninsula State Park and the St. Joseph Bay State Buffer Preserve have done.



Figure 50. Tree and other vegetation debris caused by Hurricane Michael, Old Cedar (8GU85).



Figure 51. Extensive scatter of large shells from Richardson's Hammock (8GU10), washed out during Hurricane Michael.

References Cited

- Anderson, David G. and Robert C. Mainford Jr. 2002. In *An Introduction to Woodland Archaeology in the Southeast*, edited by David G. Anderson and Robert C. Mainfort, Jr. pp., 1-19. The University of Alabama Press, Tuscaloosa.
- Anderson, David, and Kenneth E. Sassaman. 2012. *Recent Developments in Southeastern Archaeology: From Colonization to Complexity*. Society for American Archaeology: Recent Developments in Southeastern Archaeology, From Colonization to Complexity. Society for American Archaeology, Washington, DC.
- Azzarello, Jennifer. 1996. Archaeological Investigations at GU8. Paper written for Archeological Method and Theory, Florida State University Department of Anthropology, December. Manuscript in possession of the author.
1997. Archaeological Investigations on the St. Joseph Peninsula, Florida. Paper presented at the Gulf Coast History and Humanities Conference, October, Pensacola.
- Azzarello, Jennifer and Christine Hamlin. 1997. Results of Trip to 8Gu8, March 21 and 27, 1997. Report submitted to Bureau of Archaeological Research, Division of Historical Resources, Florida Department of State.
- Benchley, Elizabeth et al. 2001. Archaeology and History of St. Joseph Peninsula State Park: Phase I Investigations.
- Bense, Judith A. 1985. *Hawkshaw: Prehistory and History in an Urban Neighborhood in Pensacola Florida*. Report of Investigations 7, UWPCA.
- Brose, David S. and Nancy Marie White, editors. 1999. *The Northwest Florida Expedition of Clarence B. Moore*. University of Alabama Press, Tuscaloosa.
- Bullen, Ripley P. 1953. The Famous Crystal River Site. *Florida Anthropologist* 6:9-37.
- Carr, Christopher, and D. Troy Case (eds). 2005. *Gathering Hopewell. Interdisciplinary Contributions to Archaeology*. Springer, Boston, MA. https://doi.org/10.1007/0-387-27327-1_16.
- Childers, R. Wayne. 1984. *Archaeological Testing and Evaluation of Richardson's Hammock Site, Gulf County, Florida*. Report on file in the Florida Master Site File, 8GU10.
2001. History of the T.H. Stone Park, St. Joseph Peninsula, Florida. In *Archaeology and History of St. Joseph Preserve State Park* by Elizabeth Benchley and Judith A. Bense, University of West Florida Archaeological Institute Report of Investigation, Appendix I.
- Claassen, Cheryl. 1998. *Shells*. Cambridge Manuals in Archaeology, Cambridge University Press, England.
- Coker, William S. And Thomas D. Watson. 1986. Indian Traders of the Southeastern Spanish Borderlands: Panton Leslie and Company and John Forbes and Company 1783-1847. University Presses of Florida, Gainesville.
- Davis, Richard A. 1997. Geology of the Florida Coast in *The Geology of Florida*, edited by A. Randazzo and D. Jones, pp. 155-168. University Press of Florida, Gainesville.
- Dietler, John Eric. 2008. *Craft Specialization and the Emergence of Political Complexity in Southwest Florida*. Unpublished Ph.D. dissertation, University of California, Los Angeles.
- Dunbar, James S. 1991. Resource Orientation of Clovis and Suwannee Age Paleoindian Sites in Florida. In *Clovis: Origins and Adaptations*, edited by R. Bonnicksen and K. Turnmier, pp. 185-213. Center for the First Americans, Oregon State University, Corvallis.
- Dunbar, James S., and C. Andrew Hemmings. 2004. Florida Paleoindian Points and Knives. In *New Perspectives on the First Americans*, edited by B.T. Lepper and R. Bonnicksen, pp.65-72. Center for the Study of the First Americans. Texas A&M University Press, College Station.

- Dunbar, James S., and S. David Webb. 1996. Bone and Ivory Tools from Paleoindian Sites in Florida. In *The Paleoindian and Early Archaic Southeast*. Edited by David G. Anderson and Kenneth E. Sassaman, 331-353. University of Alabama, Tuscaloosa.
- Florida Department of Environmental Protection (Florida DEP). 2003. Located on the web at https://floridadep.gov/sites/default/files/2014_St.JosephPeninsulaStatePark_AP.pdf.
- TH Stone Memorial St. Joseph Preserve State Park Management Plan. 2014. https://floridadep.gov/sites/default/files/2014_St.JosephPeninsulaStatePark_AP.pdf.
- Florida Department of Environmental Protection, Florida Coastal Office. 2016. St. Joseph Bay State Buffer Preserve Management Plan. <http://publicfiles.dep.state.fl.us/cama/plan/st-joseph-bay-state-bp-managementplan.pdf>.
- Gannon, Michael. 1996. First European Contacts. In, *The New History of Florida*, edited by Michael Gannon, 16-39. University Press of Florida, Gainesville.
- Gremillion, Kristen J., Jason Windingstad, and Sarah C. Sherwood. 2008. Forrest Opening, Habitat Use, and Food Production on the Cumberland Plateau, Kentucky: Adaptive Flexibility in Marginal Settings. *American Antiquity* 73:387-411.
- Hann, John H. 1996. The Missions of Spanish Florida, In *The New History of Florida*, edited by Michael Gannon, pp. 78-99. University of Florida Press, Gainesville.
- Halligan, Jessi J., Michael R. Waters, Angelina Perrotti, Ivy J. Owens, Joshua M. Feinberg, Mark D. Bourne, Brendan Fenerty, Barbara Winsborough, David Carlson, Daniel C. Fisher, Thomas W. Stafford Jr., James S. Dunbar. 2016. Pre-Clovis Occupation 14,550 Years Ago at the Page-Ladson Site, Florida, and the Peopling of the Americas, *Science Advances* 2(5):1-8 (e1600375).
- Indian River Lagoon Species Inventory. 2022. *Maritime Hammock Habitats* (irlspecies.org).
- Kozuch, Laura. 1998. *Marine Shells from Mississippian Sites*. Alternate Title, *The Significance of Sinistral Whelks from Mississippian Archaeological Sites*. PhD Dissertation, Department of Anthropology, University of Florida, Gainesville.
- Luer, George, M, ed. 1986. Shells and Archaeology in southern Florida. *Florida Anthropological Society Publication*. No. 12. Tallahassee.
- Mahon, John K., and Brent R. Weisman. 1996. Florida's Seminole and Miccosukee. In *The New History of Florida*, edited by Michael Gannon, 183-206. The University of Florida Press, Gainesville.
- Marquardt, William H. ed. 1992. *Culture and Environment in the Domain of the Calusa*. Institute of Archaeology and Paleoenvironment Studies, Monograph 1. DA.
- Mayo, Karen L., and Nancy Marie White. 2001. *Archaeological Investigations on Black's Island Gulf County, Florida*. Report to Bill Koran, Port St. Joe Florida. University of South Florida, Department of Anthropology, Tampa.
- Mikell, Greg, Thomas, Jr. Prentice M., and L. Janice Campbell. 1989. *Archaeological Site Recording and Testing at Tyndall Air Force Base, Florida*. New World Research, Inc. Report of Investigations 183.
- Milanich, Jerald T. 1994. *Archaeology of Precolumbian Florida*. University Press of Florida, Gainesville.
- Moore, Clarence B. 1918. The Northwest Florida Coast Revisited. *Journal of the Academy of Natural Sciences of Philadelphia* 16:513-581.
- Morse, Dan F., and Louis D. Tesar. 1974. A Microlithic Tool Assemblage from a Northwest Florida Site, *Florida Anthropologist* 27 (3):89-106.
- Osterman, Lisa E., Davide C. Twichell, and Richard Z. Poore. 2009. Holocene Evolution of Apalachicola Bay, Florida. *Geo-Marine Letters* 29(6).
- Percy, George W. 1971.

Conch Island. Florida Master Site File GU20. Florida Division of Historical Resources, Tallahassee.

Percy, George W., and David S. Brose. 1974. Weeden Island Ecology, Subsistence, and Village Life in Northwest Florida. Paper presented at the 39th Annual Meeting of the Society for American Archaeology, Washington, D.C.

Rawls, John. 2000. Cultural Resource Overview for Gulf County, Florida. Manuscript on file, University of West Florida Archaeological Institute.

Rupert, Frank R. 1991. Geology of Gulf County, *Florida Geological Survey Bulletin 63*, Tallahassee.

Saccente, Julie Rogers, and Nancy Marie White. 2015. Fort San José, a Remote Spanish Outpost in Northwest Florida, 1700-1721. In *Archaeology of Culture Contact and Colonialism in Spanish and Portuguese America*, edited by Pedro Paulo A. Funari and Maria Ximena Senatore, pp. 297-312. Springer International Publishing, New York.

Scarry, John F. 1980. The Chronology of Fort Walton Development in the Upper Apalachicola Valley, Florida. *Southeastern Archaeological Conference Bulletin* 22:38-45.

1981 Fort Walton Culture: A Redefinition. *Southeastern Archaeological Conference Bulletin* 24:18-21.

Seeman, Mark F. 1979. *The Hopewell Interaction Sphere: The Evidence for Interregional Trade and Structural Complexity*. Indiana Historical Society. Indianapolis.

Smith, Hale G. 1963. Site forms for 8GU07 and 8GU08, on file in the Florida Master Site File, Bureau of Archaeological Research, Division of Historical Resources, Florida Department of State, Tallahassee.

Stephenson, Keith L., Judith A. Bense, Frankie Snow. 2002. Some Aspect of Deptford and Swift Creek of the South Atlantic and Gulf Coastal Plains. In *The Woodland Southeast*, edited by David G. Anderson and Robert C. Mainfort, Jr., pp., 318-351. University of Alabama Press, Tuscaloosa.

Tesar, Louis D. 1981. Fort Walton and Leon-Jefferson Cultural Development in the Tallahassee Redhills Area of Florida: A Brief Summary. *Southeastern Archaeological Conference Bulletin* 24:27-29.

1995. Post-Hurricane Opal Shoreline Erosion Archaeological Site Inspection Trip, St. Joseph Park, Gulf County. Bureau of Archaeological Research, Division of Historical Resources, Department of State, Survey Report # 4037.

Tesar, Louis, D., Susan Harp, Roy C. Ogles, Jean Marie Warzeski, and Everet Horton. 1996. *January 11, 1996 Post-hurricane Opal Site Inspection Trip to St. George Island, Franklin County and St. Joseph Peninsula, Gulf, County, Florida*. Bureau of Archaeological Research, Division of Historical Resources, Florida Department of State, Survey Report # 4181.

Tesar, Louis D., and B. Calvin Jones. 2004. Wakulla Springs Lodge Site (8WA329) in Edward Ball Wakulla Springs State Park Wakulla County, Florida: A Summary of Eleven Projects and Management Recommendations. Bureau of Archaeological Research, Division of Historical Resources, Florida Department of State, Survey Report# 06602.

Thomas, Jr. Prentice M., and L. Janice Campbell. 1985. *Cultural Resources Investigations at Tyndall Air force Base, Bay County, Florida*. New World Research, Inc. Report Investigation 84-4.

Thomas, Jr. Prentice M., and L. Janice Campbell. 1991. The Elliott's Point Complex: New Data Regarding the Localized Poverty point Expression on the Northwest Florida Gulf Coast, 2000B.C.-500 B.C. In *The Poverty Point Culture, Local Manifestation, Subsistence practices, and Trade Networks*, edited by Kathleen M. Byrd, pp. 103-119. Geoscience and Man 29, School of Geoscience, Louisiana State University, Baton Rouge.

Thomas, Jr. Prentice M., and L. Janice Campbell 1993. *Eglin Air Force Historic Preservation Plan: Technical Synthesis of Cultural Resources Investigations at Eglin, Santa Rosa, Okaloosa, and Walton Counties, Florida*. New World Research, inc. Report of Investigations 192.

Time And Date 2022. *Climate & Weather Averages in Port St. Joe, Florida, USA*. <https://timeanddate.com/weather/usa/port-st-joe/climate>.

Twichell, David C., James Flocks, Elizabeth A. Pendleton, and Wayne Baldwin. 2013. Geologic Controls on Regional and Local Erosion Rates of Three Northern Gulf of Mexico Barrier-Island System, *Journal Of Coastal Research* 63(63):32-45.

USDA 1997 General Soil Map, Gulf County, Florida. https://www.nres.usda.gov/internet/fse_manuscript/florida/fl0145/0/maps/gsm.pdf

USFW. 1982. Gulf Coast Ecological Inventory Map; Apalachicola, FL area. U.S. Fish and Wildlife Service.

White, Nancy Marie. 1992. The Overgrown Road Site (8GU38): A Swift Creek Camp in the Lower Apalachicola Valley. *The Florida Anthropologist* 45 (1):18-38.

2013 Pierce Mounds Complex. An Ancient Capital in Northwest Florida. Report on file at the Florida Division of Historical Resources, Tallahassee.

2018 Apalachicola Valley Archaeological Survey and Synthesis, Northwest Florida.

White, Nancy Marie and Richard W. Estabrook. 1994. Sam's Cutoff Shell Mound and the Late Archaic Elliott's Pont Complex in the Apalachicola Delta, Northwest, Florida. *The Florida Anthropologist* 47(1):61-78.

White, Nancy Marie, Nelson D. Rodriguez, Christopher Smith, and Mary Beth Fitts. 2002. St. Joseph Bay Shell Middens Test Excavations, Gulf County, Florida. Richardson's Hammock Site, 8GU10, and Lighthouse Bayou Site 8GU114. On file with the Florida Master Site File Survey # 7702, Tallahassee.

Wiley, Gordon R. 1998 (1949). *Archaeology of the Florida Gulf Coast*. University Press of Florida, Gainesville.

APPENDIX I

AMS/Radiocarbon Samples and Dates

Old Cedar (GU85)

GU85-1, Feature 1, FS 36; 2.7g
GU85-2, TU 1, Strat II (column sample), FS 40; .90g
GU85-3, TU 1, Feature 2, FS 37; 2.95g

Richardson’s Hammock (GU10)

GU10-1, TU 1, Feature 1, FS 17; 1.37g
GU10-2, TU 1 Feature 2, FS 12; 1.08g
GU10-3, TU 2, Feature 7 (level 7), FS 34; .30g
GU10-4, TU 3, Feature 8, FS 45; .34g
GU10-5, TU1, Level 5 (column sample), FS 27; 2.45g
GU10-6, TU 1, Level 4 (column sample), FS 26; .46g
GU10-7, TU3 , Level 1, Fs 35.23; .4g
GU10-8, TU 3, Level 2, FS 36.2; 1.8g

SAMPLE	CONVENTIONAL AGE	CALENDAR CALIBRATION	CN	SAMPLE PROV & QUANTITY
GU85-1	1120 +/- 30 BP	(92.8%) 876 - 994 cal AD	-25.1 o/oo	Feature 1, FS 36; 2.7g
GU85-2	1070 +/- 30 BP	(71.7%) 944 -1026 cal AD; (23.7%) 893 - 928 cal AD	-25.4 o/oo	TU 1, Strat II (column sample), FS 40; .90g
GU85-3	1050 +/- 30 BP	(84.5%) 949 -1034 cal AD; (10.9%) 895 - 924 cal AD	-26.1 o/oo	TU 1, Feature 2, FS 37; 2.95g
GU10- 1	1230 +/- 30 BP	(67.1%) 771 - 884 cal AD; (27.5%) 682 - 744 cal AD	-26.5 o/oo	TU 1, Feature 1, FS 17; 1.37g
GU10-2	1430 +/- 30 BP	(95.4%) 584 - 658 cal AD	-26.4 o/oo	TU 1 Feature 2, FS 12; 1.08g
GU10-3	1310 +/- 30 BP	(95.4%) 656 - 774 cal AD	-27.3 o/oo	TU1, Level 5 (column sample), FS 27; 2.45g
GU10-4	1250 +/- 30 BP	(60.3%) 673 - 778 cal AD; (26.4%) 785 - 838 cal AD	-25.7 o/oo	TU 3, Feature 8, FS 45; .34g
GU10-5	1270 +/- 30 BP	(83.7%) 663 - 775 cal AD	-26.6 o/oo	TU1, Level 5 (column sample), FS 27; 2.45g
GU10-6	1340 +/- 30 BP	(63.6%) 645 - 706 cal AD; (31.8%) 736 - 774 cal AD	-26.7 o/oo	TU1, Level 4 (column sample), FS 26; .46g
GU10-7	190 +/- 30 BP	(52%) 1724 - 1812 cal AD; (21.8%) 1648 - 1695 cal AD	-24.6 o/oo	TU3 , Level 1, Fs 35.23; .4g
GU10-8	1180 +/- 30 BP	(82.7%) 770 - 900 cal AD	-26.0 o/oo	TU 3, Level 2, FS 36.2; 1.8g