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THE EPHEMERAL CAPE ST. GEORGE SHIPWRECK ON THE NORTHERN GULF COAST, FRANKLIN COUNTY, FLORIDA

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First discovered in the spring of 1996, the shipwreck on the cape section of Little St. George Island in Franklin County, designated 8FR857, was recorded during July 1996 as part of an archaeological survey in the path of 1994 tropical storms Alberto and Beryl. The shipwreck is a portion of a large wooden cargo vessel believed to be American or British, which apparently wrecked some time around 1870 to 1890. It was copper-sheathed, with fasteners of copper, iron, Muntz metal, and wood (trunnels or "tree nails"). It was probably one of hundreds of vessels participating in the global commerce involving forest products and other commodities harvested throughout the nineteenth century in northwest Florida. Like any shipwreck, it must be understood within the cultural systems of its time (Gould 1983, Lenihan 1983, Murphy 1983, Watson 1983). The dynamic environment of the Gulf shore resulted in greater exposure of the wreck after it was first recorded, but it was difficult to monitor due to its isolated location. The sea and sand then reclaimed the material evidence; the wreck disappeared in a little over two years. This article expands upon the original report of this shipwreck (White 1996:70-72) in order to describe the evidence, place the ship within its historical and socioeconomic context, and show the behavior of natural site formation processes in this very dynamic coastal environment.

Cultural and Environmental Setting

A barrier island chain drapes around northwest Florida's Apalachicola Bay (Figure 1) from west to east like a sparkling white necklace. The islands are around 4,000 years old, shaped by the wind, water, and gravity of marine, estuarine, and fluvial processes. The Apalachicola River brings sand down to the coast from the Appalachian mountains far into the interior. St. George Island, the longest one at nearly 48 km, bends at the western end to create a cape, with a shorter western arm running northwest-southeast about 7 km and a longer eastern arm extending some 40 km to the northeast. Dimensions of barrier islands are often approximate, since they are constantly changing. One storm can chop off hundreds of meters of land from one end and deposit it on the other or cut inlets or passes dividing lengthy strips into smaller pieces. Bob Sikes Cut, named after a long-term U.S. Congressional representative from this region, was dug near where a natural channel had periodically opened in St. George Island, and is now formally maintained for navigation with a pair of jetties. This cut insulates the "developed" (heavily inhabited) portion of the island from the triangular, uninhabited, 14-km-long triangle of Cape St. George, also known as Little St. George Island, the pendant jewel in the necklace.

All these barrier islands except St. Vincent (which is wide and very close to shore) are thin, far less than 1 km wide in some washover areas. Composed of unconsolidated sand, with dunes sometimes overlying peat deposits, the barrier islands are the most dynamic part of the watery landscape, changing yearly, seasonally, sometimes weekly, and often radically, with both violent storms and also slow erosional processes (Livingston 1989; Dickinson et al. 1992:7-8; Champion 1996; Randazzo and Jones 1997; Morton et al. 2004). They are important buffers for the bay waters and range from a few hundred meters to many km offshore, separated from the mainland by Apalachicola Bay and various sounds. Vertical relief on the barrier islands is primarily due to wind deposits, with the overall shape of the cape determined by the sea (Gore 1992:126).

The waters of this area are some of the most productive fisheries in Florida, famous for oysters, shrimping, crabbing, and finfishing. Prehistoric use of the barrier islands is seen in shell midden ridges lining the bayshores, which were more sheltered and offered fresh water sources. Seasonal, short-term seafood harvesting is documented from as early as the Late Archaic (some 4000 years ago) through protohistoric times (Donoghue and White 1995; White et al. 1995, 2002; White 1997, 2005). Historic European and American uses of the islands have also been mostly ephemeral, until recently (Owens 1966; Rogers 1986, White et al. 1995; Damour et al. 2001; Meide et al. 2001; Damour 2002; McCarthy 2004; Horrell 2005). The Spanish and British conducted brief military activities in these isolated locales, and there were always people camping to fish and hunt.

The islands' forests became important to harvest for the shipbuilding and naval stores industries by the early nineteenth century and continuing through the mid-twentieth century. Lighthouses were built to aid navigation. During the Civil War, brief military activities took place, but afterwards, cutting the timber, turpentining, and raising cattle became the main uses for these remote places (along with occasional smuggling and moonshining). In addition, some wealthy men bought portions of the islands to use not only as investments in those resources, but also as seasonal hunting and fishing retreats, even introducing exotic game on St. Vincent Island.

During World War II a military base covered the isolated islands. Troops training there considered it a miserable place,

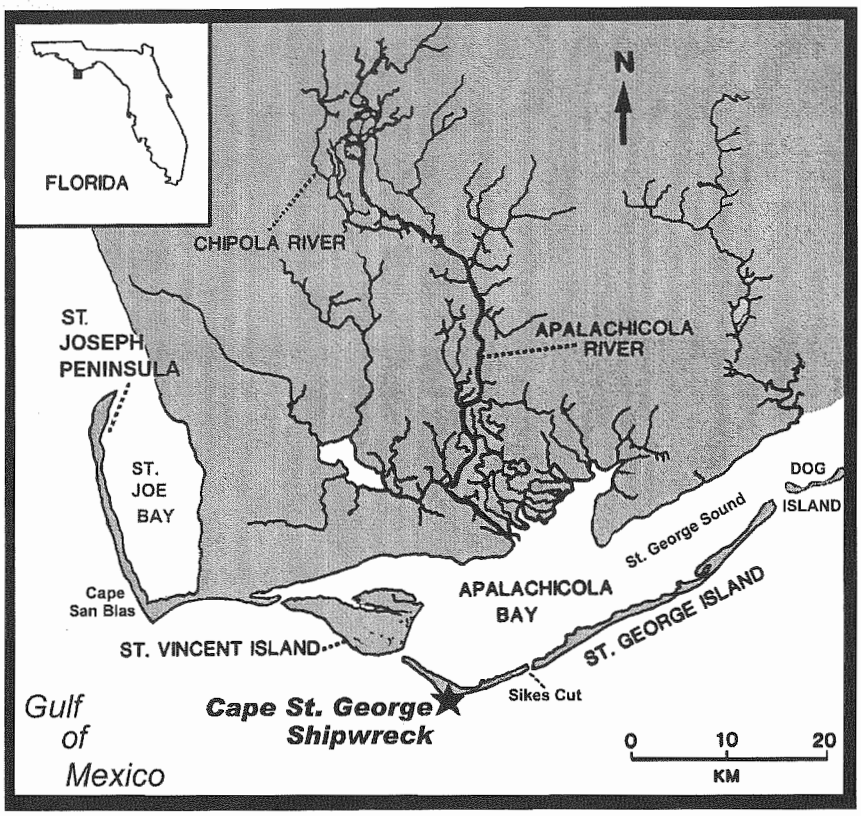

Figure 1. Location of Cape St. George Shipwreck on barrier island in northwest Florida.

with burning hot sand, little water, relentless sun and insects, and bitter winter cold (Bradley and Blair 1983:112; Huntsman 1992; Coles and Gregory 2005:7). Many of these were African-American soldiers, and the people spending the most time on the islands for at least a century were poor black laborers cutting lumber, loading ships, collecting turpentine until the 1950s. Today much of the island landscape is covered with houses and commercial establishments mostly for white middle-class and wealthier seasonal and permanent inhabitants. What I call the "coppertone culture" has transformed the former isolation and misery into dazzlingly attractive real estate, despite the high risk of hurricanes and changing landforms (Kaufman and Pilkey 1979). The perils of life in the coastal high-hazard zone were seen recently as two Category-3 storms, Ivan and Dennis, struck the panhandle, including St. George Island, within a 10-month period (Florida Department of Environmental Protection 2004, 2005).

Amid the rapid development, the Cape St. George preserve is uninhabited, managed by the Apalachicola National Estuarine Research Reserve (ANERR). It has a research station and the ruins of an old turpentine camp on the bay side, and a recently fallen 1852 lighthouse on the Gulf side on the point of the cape that protrudes southward into the Gulf. With student crews from the University of South Florida I have continually monitored site erosion on the bay beaches here, but seldom was there much of archaeological interest on the Gulf side until 1996, when the remains of a large shipwreck suddenly appeared there. Documentation of its discovery and disappearance is of interest for both its cultural and natural aspects.

Field Investigations and Description

Exposure and Field Recording

The recording of the Cape St. George shipwreck was part of the work of a two-year project entitled "Northwest Florida Flooded Sites Investigations," supported by a grant from the Florida Division of Historical Resources, Department of State, specially allocated for historic preservation studies in the wake of the record flooding of 1994. The project ran from July 1995 to August 1996. The 500-year record flooding in the Apalachicola Valley, which was unusual because it took place not during late winter-spring annual flood season but during the summer, had been caused by two tropical storms. In early July 1994 Tropical Storm Alberto hit the north Gulf Coast, damaging much of northwest Florida, south Alabama, and south Georgia. As the waters receded in early August, I took a small team of students up the river to see what damage there was to archaeological sites. On 12 August we went to Cape St. George and, contrary to our typical practice, did not spend the night on the island due to a student's injury. This proved to be lucky timing since that night Tropical Storm Beryl blew in with more rain and wind, causing even greater destruction and a few deaths in the region. In 1995 federal funds were given to the states for the grants to assess damage to historical resources from the storms and flooding.

Our two-year, post-flooding archaeological survey of the Apalachicola River valley (and parts of the lower Chattahoochee) has been reported in detail (White 1996). Meanwhile, in October 1995, between the two field seasons of this survey, Hurricane Opal battered northwest Florida. It blew off enough of the Gulf shoreline on neighboring Dog Island, to the east (see Figure 1), to expose the deeply buried peat under the white sand (which quickly came back). It may have begun or accelerated the process of uncovering the Cape St. George shipwreck, though the wreck was not yet exposed immediately after this hurricane.

The Cape St. George shipwreck (8FR857) was located on the Gulf shore of the cape, approximately 500 m west-northwest of the southernmost tip where the lighthouse stood. It was exposed right at the shoreline, straddling the sandy beach and the crashing surf. At the time of discovery, the entire beach was covered in tangles of seaweed and fallen trees from the storms mentioned above and countless others. Jimmy Moses and Pat Millender of the ANERR staff had discovered the wreck in late winter-early spring 1996. Though they only

Figure 2. Appearance of shipwreck on 2 July 1996, view facing west. Crew chief Scott Grammar inspects exposed, black planks at left, and curve of the hull is beginning to be visible at right, partially covered by a tangle of tree roots.

monitor the shoreline sporadically, they were certain that the wreck was not visible before this, and there had been a specific check of the beach after Opal. Thus it is unclear whether the wreck's appearance or exposure was due to longer-lasting consequences of the tropical storms or that hurricane or to some other geomorphological processes. The Cape is one of the most unstable segments of the Apalachicola barrier island rim (Donoghue and Tanner 1994); evidence from historic charts shows it has migrated at rates of approximately 8 meters per year over the past century.

The wreck was first formally recorded by my crew on 2 July 1996, including videotaping and photography. At this time of initial investigation, less than 25-30 m^2 (ca. 275 square feet) of it was uncovered, consisting of a hull fragment to the northwest and portions of exposed planks 6 m (20 feet) away to the southwest (Figure 2). The cluster of planking had a black pitch coating and a few brass fasteners remaining (Figure 3). One plank had been blown/washed perhaps 500 m farther west-northwest along the beach; it was brought back to the ANERR for curation, along with a sample of the metal pins.

A return visit was made on 8 July with experts from the state Division of Historical Resources: underwater archaeologist Roger Smith, museum educator KC Smith, and Bob Vickery, along with ANERR personnel. Between our initial investigation and this follow-up, less than one week later, a typical summer storm had hit and exposed the wreck further. At this time much more of it was now visible (Figures 4, 5), a section approximately 13 m (43 feet) square. New tangles of trees and roots joined what had already been on top the wreck. More video and photos were obtained, and small samples were taken to Tallahassee by Smith for curation at the DHR. Some details of this description are based on notes taken during his inspection.

Vessel Description

The wrecked remains were from a large, solidly built ocean-going cargo ship, British or American, dating to sometime in the later 1800s. The portion extant was the port stern quarter of the ship. More planks coated with pine tar were exposed during our second visit, and one retained a fragment of copper sheathing (Figures 6, 7), which was not green but unoxidized copper-colored. Possibly it had been protected by the sand covering and maybe the salt water, and was not yet patinated. The planks had brass, copper, and iron fasteners (pins, spikes, tacks) and tree nails, all of various sizes (Figures 8-12), with heads ranging from less than 3/4" to at least 1 3/8" in diameter. Tree nails are wooden spikes, also called trenails or trunnels, "round, dowel-like hardwood pegs that are inserted into drilled holes to join wooden elements." They were used as early as 1100 B.C. in Britain, and continue to be used in wooden boat and ship joinery today (Gould 2000:99). The tree nails were sometimes set with a wedge through the middle. Several tree nails that had lost one of the planks they had once joined were sticking up bare in the surf; they had also lost their wedges and they looked like a row of upside-down, old-fashioned solid wood clothespins. Tree nail holes were mostly 1 3/8" in diameter.

The brass was identified by Smith as a material called Muntz metal, which was more common in the later nineteenth century (Flick 1975). None of the wood has been identified as to species. Some pins had what appeared to be epoxy on top. Planks had many empty holes and portions where pins and

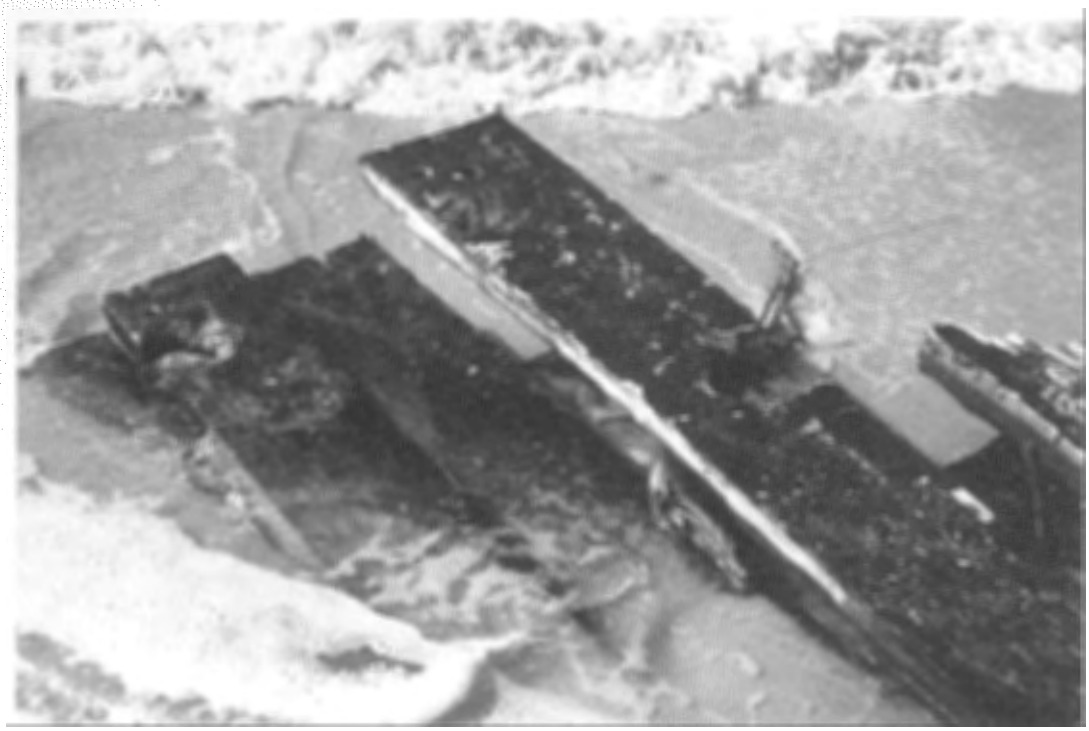

Figure 3. Closeup of planks exposed amid tree roots on 2 July 1996, showing coating of black pine tar and circular holes where fasteners once were. These were outer planks whose copper sheathing had disappeared due to either natural processes or looting.

Figure 4. The wreck on 8 July 1996, view facing west, showing curve of hull amid downed trees and tangles of roots, with photographer KC Smith.

Figure 5. Appearance of wreck on 8 July 1996, view facing west-southwest; section of hull at left was last to retain small fragment of copper sheathing, curled up on plank at left edge of photo. The seaward part in the center of the photo is what was just beginning to become visible in Figure 2.

spikes might have been salvaged or looted, including some circular cutaway portions (Figure 10) that also might have been part of the original vessel manufacture. On the west side of the wreck, 5 iron chain plates (Figure 13) remained. They were 66" long and bolted to a portion of the chain wale on the side of the hull. From the chain wale, a construction of broad, thick timbers or planks projecting horizontally from the side of the ship, the chain plates and support shrouds (ropes or cables) extended upward to hold up the mast, in this case possibly the mizzen mast, according to Smith.

Much of the outer hull planking from the side of the ship was gone, but the inner planking, known as ceiling, was there, with many iron fasteners. The ceiling planking kept the cargo or ballast from damaging the outer hull planks up the to the water line. Each frame, or rib, of the ship was formed from two sets of futtocks, the long, curved timbers chamfered together to produce the rounded framework of the hull (Figures 5 and 9). Each pair of futtocks was joined together with iron pins driven laterally. Several wooden patches were apparent in the planks of the hull (Figures 13, 14). The planks were put on mostly with copper and Muntz metal fasteners, with the iron spikes and pins above the water line (because salt water would hasten rusting) and the tree nails in various locations. This was altogether an interesting combination of old and new materials. Commonly, one metal and one wooden spike alternated per each plank.

The average plank thickness was 4" and width, 7-11". The ceiling planking averaged 8"-10" thick; the frames had an average molded height of 8"-9" and sided thickness (width) of 16", so the futtocks preserved had a sided thickness of 8". The pine tar and copper sheathing were on the lower section of the hull, with copper sheathing tacks spaced 14" apart (so the copper sheets were slightly wider than 14"). To the west side of the wreck there was a metal, almost cleat-shaped object that Smith identified as a davit, a hook for hanging a lifeboat. Another interesting item newly exposed after the July storm was a carved piece of wood clearly done on a lathe, much like a finial or decorative knob of furniture (Figure 15). Smith identified it as part of the chain wale.

The ship is estimated to have been about 100 feet long. With the stern off shore, it was oriented with the bow toward the shore. The extant portion, the ship's port quarter, was a little more than the outer hull, frames and other portions. There was no decking or evidence of cargo. The ship probably broke up off shore; Smith noted a weak spot in the inner planking. This segment of the vessel floated in and became buried in the sand for over a century, only to be uncovered, either by some new erosional patterns triggered by the tropical storms, or by Hurricane Opal, or by the same erosional patterns that have been in force for a century (Donoghue and Tanner 1994) that just made it as far inland as this ship by 1996. The rest of the vessel and its cargo probably lie out in the Gulf somewhere, buried in tons of sand.

Figure 6. Closeup of only hull plank to retain copper sheathing, curled up on the edge; also visible are round heads of copper and Muntz metal fasteners (nails or spikes). View facing northwest. This plank is the one extending farthest to the left in Figure 4.5

Context and Identity

Dating the Remains

Some details of construction can help characterize or date the ship, especially the form of brass (copper-zinc alloy) known as Muntz metal. This was an alloy of 60% copper and 40% zinc introduced in England in the 1830s, becoming common there in the 1840s, and used in the U.S. beginning perhaps a decade later. It was as a lighter, stronger, longer-lasting, and cheaper alternative to pure copper for ship sheathing and fastening (Flick 1975; Gould 2000:55). Also known as yellow metal, it had been developed by George Frederick Muntz, a British inventor and industrialist from Birmingham (England). This metal is still produced for various industrial uses.

Metal sheathing of ships' hulls was known as early as seventeenth-century China, but did not become common practice until the late eighteenth century. The sheathing protected ships in warm waters against burrowing molluscs and crustaceans, marine organisms such as the *Teredo* shipworms, that could damage a wooden vessel seriously enough to sink it. The metal also prevented buildup of marine growth on the hull; barnacles and other small creatures that would attach themselves absorbed poison from the metal and dropped off, leaving the ship's bottom less encumbered. Sheathed ships were faster and more maneuverable and could remain in warm waters for a couple years, with less time in the dock for repairs, while unsheathed vessels might have a half-year before needing service (Bingeman et al. 2000). By the end of the nineteenth century, sheathing was replaced by anti-fouling paints with similar chemical properties.

The fact that the Cape St. George shipwreck vessel was sheathed in copper, with only Muntz metal fasteners, does not necessarily indicate it was built earlier in the history of Muntz metal (while the colors of the yellow brass and copper in the Cape St. George shipwreck were clearly different, it should be noted that the two metals are sometimes not visually distinguishable from each other, requiring x-ray analysis for identification [Charlie Pearson, personal communication, 2005]). Copper continued to be used by many, such as the British royal navy, who had less concern for economy, long after others had turned to Muntz metal sheathing (Flick 1975:77). The royal navy had copper-sheathed wooden workboats until nearly the end of the twentieth century (Bingeman et al. 2000:224). The Muntz metal does place the shipwreck after 1840. Roger Smith estimated that it dated to between the 1870s and 1890s.

Cultural Context

Shipwrecks do not occur as isolated incidents in a cultural

Figure 7. Copper sheathing fragments and tacks displayed at the ANERR education center (scale in inches). Photo by Erik Lovestrand.

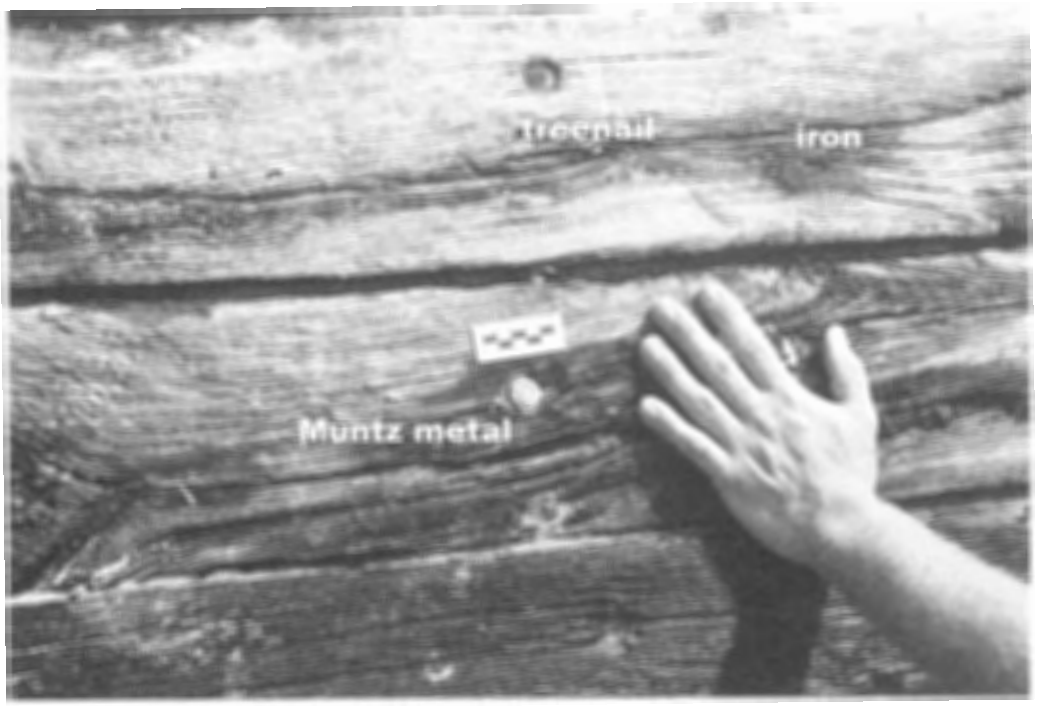

Figure 8. Closeup of planking with three different types of fasteners (scale in cm).

vacuum (Lenihan 1983:49), but need to be understood within the larger global networks of social, economic, and political interaction. The nineteenth century, especially its last quarter, saw more shipwrecks in the Gulf than any previous time periods, probably not only because of increased population and commerce, but also due to increased international trade (subsequently, there were even more wrecks in the twentieth century [Pearson et al. 2002]). Beyond placing it in time, there is the need to place the ship in historic and anthropological context. The wrecking was a historical event but embedded in ongoing natural and cultural processes and conditions responsible for it (Gould 2000:13). The concept of the

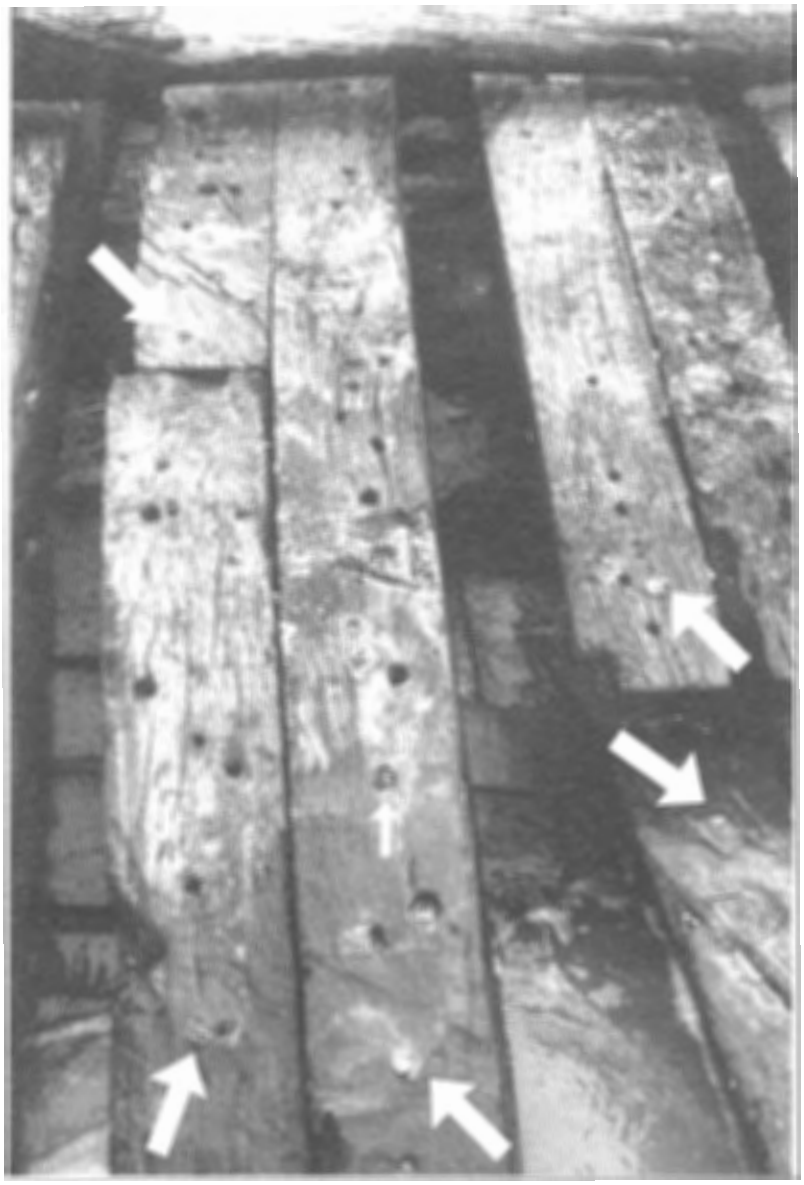

Figure 9. Planks possibly from bottom of hull, with a few Muntz metal (larger arrows) and tree nail (smaller arrow) fasteners left.

"maritime cultural landscape" includes interpreting the remnants of shipwrecks but also of harbors, fishing, shipping, navigation, and everything else pertaining to the use of the sea, on land as well as underwater (Westerdahl 1992), and understanding their relationships within larger economic and political systems. Archaeologically speaking, the wreck was not the termination of the ship, since after its intended use, a part of it transformed and remained to experience the various slow-to-violent processes of the Gulf, and then to enter a third "phase" of life as an archaeological site (Steffy 1994:189-190).

The locations and density of shipwrecks along the Gulf of Mexico are a product of complex historical and natural factors, ranging from imperialism, commerce, warfare, and technological change to currents, winds, shoals, reefs, and storms (Garrison 1998). The Apalachicola Bay and River system had a long history of maritime culture and played an important role in international shipping networks, especially because the river enabled transportation well into central Georgia. But it was always plagued with high transportation costs due in part to the shallowness of the bay and passes (Owens 1966). The hazards of navigation increase as land is approached, especially in narrow channels and shifting shallows around barrier islands. Even for experienced navigators who may be familiar with a particular stretch of coast, barrier islands are treacherous since they are constantly changing, and many wrecks have been attributed to these shallow conditions. However, this may not be what happened to the Cape St. George shipwreck, given its position on the farthest tip of land protruding out into the Gulf. Most likely the cause of its demise lay in troubles on the open sea.

We do know that mid- to late-nineteenth-century maritime commerce increasingly involved bulk cargoes of commodities such as lumber, cotton, or other agricultural products (Gould 2000:238-239). The Cape St. George shipwreck likely represents transport of the important Apalachicola cotton crop or timber or naval stores, fueling textile, shipping or other important manufacturing systems of the mid-Industrial Revolution. The best guess is that it was transporting lumber from northwest Florida to the northeast or across the Atlantic, but there are other possibilities. There was not much shipping during the Civil War (Rogers and Willis 1997; Smith et al. 1997:18) because of the Union blockade of the important cotton port of Apalachicola, which was of enormous strategic value for its river access to the interior South. After the war the region continued producing cotton, but in smaller quantities. Even before the Civil War, cotton production was declining and the area was becoming more important for its forests.

After the war, the traffic across the sea increased, and the growing forest products industries helped alleviate a postwar economic slump. Commerce expanded with European customers, especially Scandinavian ships, for the timber from both the mainland and the barrier islands (Rogers and Willis 1997:68-69; Burns 2002). Sawmills, lumber settlements, and turpentine camps and stills multiplied in the region. Ships involved in transporting lumber even had specialty cargo hatches; Meide et al. (2001:24-25) show a photo of an 1880 Finnish lumber brig with copper sheathing and a specialized bow port just above it for easier loading. A new Underwater Archaeological Preserve dedicated by the State of Florida is the wreck of the Norwegian iron-hulled barque *Lofthus*, which had been built in Britain in 1868 and went down in the Atlantic with a cargo of northwest Florida lumber en route to

Figure 10. Closeup of brass/Muntz metal spike head; note circular cut into the plank, for unknown function (scale in cm).

Buenos Aires in 1898 (Florida Department of State 2004).

The Cape St. George ship was a deep sea vessel probably involved in the forest products industries of the second half of the nineteenth century. Besides lumber, there could have been tar, pitch, charcoal, gum, turpentine, rosin, pine oil, and many other derivatives, important as naval stores and in other manufacturing processes. Florida archaeologists are familiar with sites associated with these industries, such as sawmills, turpentine stills, and the ubiquitous sherds of red clay Herty cups. The remote region of the lower Apalachicola valley and barrier islands was part of a vast international shipping network transporting these products overseas (Forney 1985; Rogers 1986; Bond 1987; Rogers and Willis 1997:83; Butler 1998). Most likely between 1870 and 1890, the ship represented by our wreck was hauling lumber out to some Atlantic destination or goods into the region to be sold for lumber, though it could have been involved also with other cargo produced in northwest Florida, including cotton, honey, oranges, other produce, cattle, fish, and even sponges (Rogers 1986; Meide et al. 2001.). If it were coming into port it could have had a cargo of finished merchant goods, or perhaps salt from England, fruit from Cuba, wine or other products (Owens 1966:206-212).

Possible Identities

The identity of the Cape St. George shipwreck is unknown. Of the wrecks recorded near St. George Island (Singer 1998; Damour et al. 2001; Meide et al. 2001; Damour 2002; Horrell 2005), it is too late to be part of the romantic stories of Monsieur Viaud's *Tiger* (lost 1766; Fabel 1990) or William Augustus Bowles's *Fox* (wrecked 1799), both of which are supposedly located at the east end of St. George Island, as much as 40 km (25 miles) away. The *George P. Arnay* was a sloop bound from St. Marks to Apalachicola reported from the Dog Island Station as lost on the north bank of St. George Island on 28 December 1872 (Singer 1998:27); this placement on the north side of the island makes it an unlikely candidate. The *Marry Me* was a 17-ton schooner built in 1878, going from Apalachicola to St. George Island and lost on the west end of the island in a gale on 7 October 1897 (Singer 1998:34), but it was far too small to be the Cape St. George wreck, which, based on its size, represented well over a 100-ton ship.

Several shipwrecks are known from around Dog Island. A terrestrial survey I did in 1995 described a couple of them easily visible near the shore, and a large scale underwater archaeology and remote sensing project undertaken from 1999-2001 by Michael Faught and Florida State University (FSU) students investigated several wrecks and possible wrecks all around the island's waters. One vessel is likely a late nineteenth-century fishing schooner, possibly the *Priscilla*, located on the Gulf side (Haiduven et al. 1987, White et al. 1995:26-27; Meide et al. 2001:88-99; Damour 2002; Horrell 2005:113-14). Another wreck, on the bay side, is likely the Norwegian lumber bark the *Vale*, one of a group of 11 ships blown down by an 1899 hurricane (Wright 1990; Huntsman 1991; White et al. 1995:27-30; Meide et al. 2001:102-131, Appendix H). While some of those other 11 ships may be likely candidates for the Cape St. George wreck, they seem all to have gone down in the bay, not the Gulf, and

Figure 11. Muntz metal fasteners on display at ANERR education center (scale in inches). Photo by Erik Lovestrand.

Figure 12. Iron spikes on display at ANERR education center (scale in inches). Photo by Erik Lovestrand.

the 1899 date might be slightly too late.

The reporting on the underwater archaeology of the Dog Island area (now available online, Florida Department of State 2005) is wonderfully thorough in describing shipping of the times and listing known vessel losses of the area (Meide et al. 2001: Appendix D, Table 22; Horrell's [2005] dissertation also lists all mid-nineteenth-century Apalachicola vessels, and those from 1870-1900). From the second half of the nineteenth century, the wrecks included barks taking cotton to Antwerp and Amsterdam, schooners and brigs, ships with lumber going to Key West and to Central America. Some did indeed end up sunk by activities of the Civil War. Others went down for various reasons besides storms; some caught fire, including one which was struck by lightning, and there was even one collision. Perhaps a good candidate for the Cape St. George shipwreck is the *George Gilchrest*, a 438-ton brig from New York sailing from Pensacola to Nicaragua with a load of yellow and pitch pine when it sprang a leak in a storm and sank some 60 miles south of Cape St. George lighthouse (Singer 1998:28; Meide et al. 2001:183).

The most likely scenario is that the Cape St. George ship went down and broke up far out to sea, or hit shoals and broke up, after which a portion floated in to be buried in the island's shifting sands. The offshore bathymetry of the Cape St. George area (Florida Department of Environmental Protection 2002) shows a large and potentially treacherous unmarked shoal that was clearly a navigation hazard for centuries. The vessel may have broken up farther southeast and floated westward, this portion ending up snagged on the projection of the cape and buried, perhaps by the same storm that destroyed it.

Discussion and Aftermath

More research is needed on this shipwreck, including species identification of the wood samples. Roger Smith continues to research the possible identity of this vessel, but we may never know its name or circumstances. Similar ship timbers wash up on many of the country's beaches. Since Hurricane Floyd hit South Carolina in 1999, for example, frames and planks with copper sheathing, tree nails, and iron spikes have been reported scattered the length of Folly Island, probably from vessels that went down in the Civil War (Harris 2000:25). Suddenly exposed wrecks are certainly common in Florida. As I was writing this article, Tropical Storm Arlene had just uncovered another one in spring 2005 along northwest Florida's coast in Walton County (Civil 2005). The Florida Museum of Natural History's (2005) website explains the history of ships and various famous wrecks, and the Florida Department of State (2004, 2005) has a maritime heritage trail and other public information on wrecks. In the aftermath of the tragedies of 2005's hurricanes Dennis, Katrina, Rita, and others on the northern Gulf, it will be interesting to see what becomes exposed as the waters recede and the sands and debris are cleared.

Cultural and Natural Formation Processes

Cape St. George is public land. The fast-traveling news of the shipwreck meant that looters came to take planks, copper sheathing, fasteners and other bits, and even during the week between our field trips. Curiously cut (see Figure 9) or broken portions of planks may have resulted from removal of brass or copper pins as souvenirs. There was talk among collectors about grabbing things from this wreck for months, though the ANERR staff stressed education, preservation, and monitoring. The island is only accessible by boat, but many people visit; the research station has been vandalized. In addition, such a high-energy environment as the crashing Gulf waves also meant the wreck was not going to last long. Wind, waves, currents, tides, all would have influenced what happened to the wrecked ship, but human interference is the most destructive force for a shipwreck in a terrestrial context; still, preservation on land is improved if the wreck lies in soft substrates such as

Figure 13. Two of the 5 remaining iron chains extend up from a piece of the chain wale, amid a tangle of tree branches; between them at bottom is a small rectangular patch, just below which are the heads of two spikes, of Muntz metal (left) and iron (right).

sand (Muckleroy 1998:267-70).

Maritime site formation processes usually result in more in destruction than preservation, especially in the dynamic shoreline environment. Muckleroy (1978; Delgado 1997:156–57) distinguished "extracting filters," which remove materials from the site, and "scrambling devices," which alter and rearrange materials. The wrecking process itself is an example of both, as are the Gulf dynamics, which would include "extraction" when this large portion of the wreck floated away and ended up on the shore. Remains became scrambled then buried on the shore. Various storm processes can continue this back-and-forth action for decades (or hours or centuries). While the June 2005 storm Arlene exposed that other panhandle wreck, the July 2005 Hurricane Dennis sent a storm surge of bay water up to cover the land with sediment.

Some shipwrecks become centers for colonization of marine life, but the Cape St. George wreck, right on the shore in the pounding waves, became a place for snagging tree branches and roots ripped from their once-firm anchor on the dune ridge back from the water. These snags are testimony to the continuous loss of shore land as the waterline advances back toward the forest, partly from still-rising, post Pleistocene sea levels, and partly from other factors (since archaeological evidence also demonstrates extreme erosion of barrier islands from the bay side in the last few decades, I suspect there are additional causes, probably relating to human activity on the planet). Official measurements show global sea level rose by an average 10-20 cm during the twentieth century, with greater numbers along particularly vulnerable coasts such as the Gulf and the Atlantic (U.S. Department of State 2002:103).

The most important route around the Gulf for the whole age of sail was the Gulf Loop Current (Garrison 1998:305), which enters the Gulf through the Yucatan Channel and the Straits of Florida. It moves in a great arc around to the mouth of the Mississippi River, driven by easterly winds, at 12 to 35 nautical miles per day. Moving northward and eastward it sends eddies and spirals, termed gyres, in various directions at different times. One gyre circles into the northeastern Gulf east of the Mississippi Delta, spinning counterclockwise in the winter months and in the opposite direction in the summer (Gore 1992: 68–72). The December Loop Current (Gore 1992: Figure 9B) shows two such gyres approaching closest to land at the Apalachicola delta and barrier islands. So the currents in panhandle Florida, running from west to east to join the Gulf Loop in winter and from east to west in summer (Smith et al. 1997:4), would have facilitated navigation toward the barrier islands and prominent cape. Only with the coming of steam-powered vessels were shipping and therefore shipwreck patterns and routes significantly changed (Garrison 1998). These currents, coupled with the effects of storms, help account for many of the Apalachicola barrier island wrecks. Cape St. George itself is generally a constructional feature instead of an erosional product (Schade 1985:123), meaning natural forces deposit things there.

There is little one can do to preserve a resource such as this shipwreck, since one cannot stop the sea. The sandy bottom easily moves around, and single storm surges may have covered and uncovered the remains repeatedly. It was important to record the information on the shipwreck before it was gone. The site was a piece of history of a type not usually available unless conditions are just right for exposure. Public archaeology was served when ANERR educational programs brought people to learn from the wreck over the months. A

Figure 14. Closeup of hull patch, rectangular wooden fragment at top, with round head of iron spike visible to the right of the scale and shells; at bottom left is a round head of a wedged tree nail (wedge is vertical central piece of slightly lighter-colored wood; scale in cm).

small display at the ANERR auditorium in Apalachicola shows the metal items recovered from the wreck. KC Smith brought students in the Museum of Florida History summer camp for two successive years (the "From Dugouts to Doubloons" camp) to learn measuring and recording at this wreck.

Within little more than two years, the wreck had completely disappeared. In September of 1998 only a small piece of the northwesternmost portion was visible, a few meters out in the water. By 2000 it was gone and the beach was smooth and flat, with no tree tangles, as if nothing had ever been there. By the following year it changed again; a little beach-front escarpment appeared, as if chopped vertically by the sea as it edged closer to the forest.

Further Research

The persistence of barrier islands themselves "in the face of the immense amount of energy imparted to them from the sea is one of nature's remarkable idiosyncracies" (Champion 1996:1). More amazing is the persistence of shipwrecks along barrier island shores. On Dog Island, those wrecks noted above, which are probably the *Vale* (lumber ship) and the *Priscilla* (fishing boat) have sat on the bay shore and the higher-energy Gulf shore, respectively, for at least a century and remained in reasonable shape for study. At the east end of Cape St. George itself, a recently abandoned, rusting, steel-hulled fishing boat beached on the Gulf shore in the late 1990s was nearly covered in sand high up on the shore, with little more than the upper cabin exposed; by the 2000s it was out in the water, more buried in sand, with its roof and cabin torn off. Whether the Cape St. George shipwreck is being preserved under the sand could be determined by subsurface testing. The most likely scenario is that it is now underwater and buried in the bottom sands.

Lately there has been recognition that beached shipwrecks offer much new knowledge for science and history. They are sometimes dismissed since they are thought to be disintegrated and lacking controlled provenience information, as opposed to offshore, underwater wrecks. They have been called restless "ghosts, tossing about with each change of wind, tide, and season" (Bright 1993:91), resting buried then remerging often to continue their journeys. However, in reality, beached wrecks are a valuable, underutilized source for archaeological inquiry that can add a great deal to the shipwreck database (Russell 2004:369; Bright 1993; Delgado 1997:57-8; Murphy 1983:77). This is especially true for the Cape St. George wreck since in Florida many beached wrecks consist of scattered artifacts with little hull structure. Though the Cape St. George wreck was only a portion of a large ship, with no evidence of cargo, it offers good potential for further study. In Delgado's (1997:58) classification system, it would be a "buoyant hull fracture," in which the vessel washes ashore and breaks up and the components scatter to be buried and reexposed at different times.

The largest part of the vessel, as well as items of metal, ceramic, and other materials that do not float, and probably much of the cargo unless it was lumber, are doubtless lying out on the sea floor or buried in sand somewhere else, while the vessel section recorded floated inland. Some cargo may have been salvaged by whoever was aware of the wreck. There may be further historic information on this wreck that could be unearthed with an intensive search (the many shipwreck inventories range from the Florida Master Site File to various federal sources; Garrison 1998:304). Further fieldwork is also possible using remote sensing such as a magnetometer or side-scan sonar on the beach and in shallow water (Hudson et al.

Figure 15. Visible only between waves, and protruding from a plank encrusted with sea life is a carved knob, part of the chain wale, and at right a bent iron spike.

1998).

The Cape St. George shipwreck data may also help us understand natural processes and relationships with human action. Since the wreck emerged several months after Hurricane Opal, it is unclear whether this storm began some new erosional patterns that led to the site's exposure. Opal uncovered the underlying peat on Dog Island's Gulf shore, blowing away the deep sand cover and exposing what might have been a very ancient shoreline or even mainland; the sand filled back in again within a few months. The presence of peat and tree stumps on these islands show that they have migrated northward, over the back-barrier marsh, exposing it to wave action (Davis 1997:183). This is probably the same set of processes that operated to expose and then reclaim the Cape St. George shipwreck. On Dog Island, past storms have exposed peat strata containing fiber-tempered pottery 2000 to 3000 years old.

The Gulf shoreline's normal migration northward toward the mainland has in recent years seemed excessive. At Cape St. George, the southwest-facing coast where the shipwreck was exposed is actually accreting, while the southeast-facing coast is retreating at about one meter per year (Donoghue and Tanner 1994). Cape San Blas, at the bottom of St. Joseph peninsula to the west, is so rapidly changing that it has moved eastward about a kilometer over the last century (Rupert 1991:10; Randazzo and Jones 1997:167). The action of just one typical summer storm exposed some 10-15 more meters of our wreck nearly between our two July visits. Yet bayshore prehistoric sites on this island were not severely affected, continuing to erode at their usual rate into the water; nor have those Dog Island wrecks disappeared after a century.

Further research on the Cape St. George vessel should also include more on its social and economic context, both local and non-local. Perhaps it was an old or poorly constructed ship at greater risk for disaster. The hull patches may indicate excessive wear and repair. Iron fasteners were easier and quicker to attach than wooden ones, allowing for the possibility of less-skilled workers to construct the ship's hull (Gould 2000:5), but the combination of all the different kinds of fasteners may suggest sophistication of design or just the opposite, using whatever was handy to keep the vessel going. Burns (2002:17) has noted how Norwegian prominence in late nineteenth-century transport of bulk cargo, especially timber from northwest Florida, relied upon secondhand sailing vessels near the end of their working lives, cheap to buy in the new age of steam.

In the end, I hope publication of this information on the Cape St. George shipwreck will help raise awareness of the fragility of this type of cultural resource that gives such tantalizing hints of the human past. Stored in the USF archaeology lab are all project records, including the videotapes that show the rapid change in the wreck's condition over the course of just a few days. The brief study of this wreck was like a 10-minute visit to surface-collect at a terrestrial site (though we spent many hours there). However the difficulty of access to the site and pounding destruction of the waves that took away pieces of the wreck even as we watched meant that very little could be recorded in the time allotted. It was an ephemeral site on an only slightly less ephemeral landform, and thus a frustrating, heart-wrenching experience for an archaeologist trying to salvage as much as possible of the information before it was gone (now you see it in the sea, now you don't).

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